GRAND VALLEY METROPOLITAN COUNCIL

LONG-RANGE TRANSPORTATION PLAN

DRAFT

NOVEMBER 24, 2010

US-131 AT THE I-196 INTERCHANGE IN DOWNTOWN GRAND RAPIDS

GVMC

MODIFIED VERSION

GRAND VALLEY METROPOLITAN COUNCIL

LONG-RANGE TRANSPORTATION PLAN

DRAFT

NOVEMBER 24, 2010

PREPARED BY THE

GVMC

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Disclaimer

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Executive Summary

The Grand Valley Metropolitan Council, as the Metropolitan Planning Organization (MPO) for Kent and Eastern Ottawa Counties, is responsible for the development of a multi-modal Long Range Transportation Plan (LRTP). This purpose of the LRTP is to ensure that transportation investments in our area enhance the movement of people and freight efficiently, effectively, and safely. The LRTP must be approved by the Michigan Department of Transportation, Federal Highway Administration, Federal Transit Administration, and U.S. Environmental Protection Agency in order for federal transportation dollars to be expended in our area. The LRTP must also be fiscally constrained, project specific, take into consideration public opinion and environmental justice, and meet established air quality standards. This LRTP has a 25 year horizon, balancing transportation investments through the year 2035.

The primary finding of the 2035 Long Range Transportation Plan is that the needs of the transportation system in our region surpass the resources available to address them. Examples include a 131% increase in ridership on The Rapid since 2000, over a quarter of the pavement on the Federal-Aid system requires an overlay or complete reconstruction, and millions of dollars of non-motorized transportation needs have been identified. The funding available for these improvements is projected to increase between 4.04% and 4.89% a year, but with project costs projected to increase at a similar rate, there is simply not enough funding to address all of the transportation objectives.

The LRTP Project List in Chapter 16 was developed to address the deficiencies identified in the plan and are limited by estimated future revenues. The first four years (2011–2014) of the LRTP Project List are equivalent to the Transportation Improvement Program project list, and demonstrate the short-term transportation projects identified for funding in this region. Other individual projects listed in the LRTP Project list reflect the projected transportation capacity deficiencies.

When the illustrative projects—those which cannot be included in the LRTP Project List because they do not have funding identified and/or are considered "financially unconstrained"—are included, there is a projected _____ million/billion shortfall in funds over the life of the plan. Fundamental changes at the local, state, and federal levels of government are required to adequately fund the transportation infrastructure we rely on for the movement of people, goods, and services.

Figure 1 – Anticipated Distribution of Transportation Funds (2011–2014)

Category	Amount	Percent	Examples of Projects
Congestion Relief	$17,212,582	9.0%	Traffic signal updates, add lanes
Preservation	$57,594,425	30.2%	Pavement overlay, road reconstruction
Safety	$5,224,991	2.7%	Intersection improvements, pavement markings
Transit	$75,297,466	39.5%	Purchase buses, construction of service center
ITS	$136,930	0.1%	Pavement sensors, freeway cameras
Transportation Enhancement	$7,922,134	4.2%	Construction of shared-use path, bicycle facilities, streetscaping
Congestion Mitigation & Air Quality	$24,659,722	12.9%	Addition of left turn lanes, weave/merge lanes on freeways, new bicycle facilities, bus replacement
Small Urban	$1,426,310	0.7%	Projects in areas with pop. between 5,000 and 50,000
Planning Studies	$1,002,000	0.5%	Transit need studies, etc.

Chapter 1: Introduction

The Grand Valley Metropolitan Council Metropolitan Planning Organization (MPO) area consists of all of Kent County including the Cities of Grand Rapids, Wyoming, Kentwood, Walker, Grandville, East Grand Rapids, Rockford, Cedar Springs, and Lowell. In addition, eastern Ottawa County is represented by the City of Hudsonville, and the townships of Jamestown, Georgetown, Allendale, and Tallmadge.

The 2000 Census defined urban area for the Grand Rapids Metropolitan area shows growth into two additional townships in Ottawa County: Blendon and Wright. A map depicting the MPO study area and the 2000 Census defined urban area follows on page 9.

Transportation Planning in Grand Rapids Past and Present

Beginning in 1961 with the establishment of the Kent County Planning Commission, comprehensive planning in the Grand Rapids area was done by the Kent County Planning Department. In the Mid-1960's, this agency began a comprehensive land use/transportation planning program encompassing the entire sphere of planning related activities in the Grand Rapids area. This program was designed to fulfill requirements of the Federal Aid Highway Act of 1962 as well as other federal, state and local planning requirements.

In 1964, the Grand Rapids and Environs Transportation Study (GRETS) Technical and Policy Committees were established. GRETS was formed to guide and direct the planning and development of the transportation infrastructure in the metropolitan area. Membership in GRETS originally included Grand Rapids, Wyoming, Walker, East Grand Rapids, Grandville, Kent County, Ottawa County, Kent County Road Commission, Ottawa County Road Commission, Michigan Department of State Highways, and the Federal Highway Administration. In 1967, the City of Kentwood was admitted. In 1974, the City of Rockford was added to the list of participants. Other participants include the Grand Rapids Area Transit Authority (now the Interurban Transit Partnership also known as The Rapid), the Grand Rapids Chamber of Commerce, and the Kent County Department of Aeronautics.

In 1966, the Kent-Ottawa Regional Planning Commission was formed because of a requirement by the Department of Housing and Urban Development that an agency be in existence to undertake comprehensive planning for the region. From 1966 to 1972, the Kent County Planning Commission and the Kent-Ottawa Regional Planning Commission (generally utilizing staff from the Kent County Planning Department) worked together within the broad conceptual framework provided by the comprehensive development plan for the region. Through an agreement with the GRETS Policy Committee, the Kent-Ottawa Planning Commission served as staff for the Metropolitan Planning Organization (MPO) carrying out all transportation related planning activities for the designated study area.

The Kent-Ottawa Regional Planning Commission became the official, independent, metropolitan planning agency responsible for coordinating all planning activities, in 1972, for the Kent-Ottawa Region, and was the coordinating agency for all transportation planning activities within the GRETS Study Area.

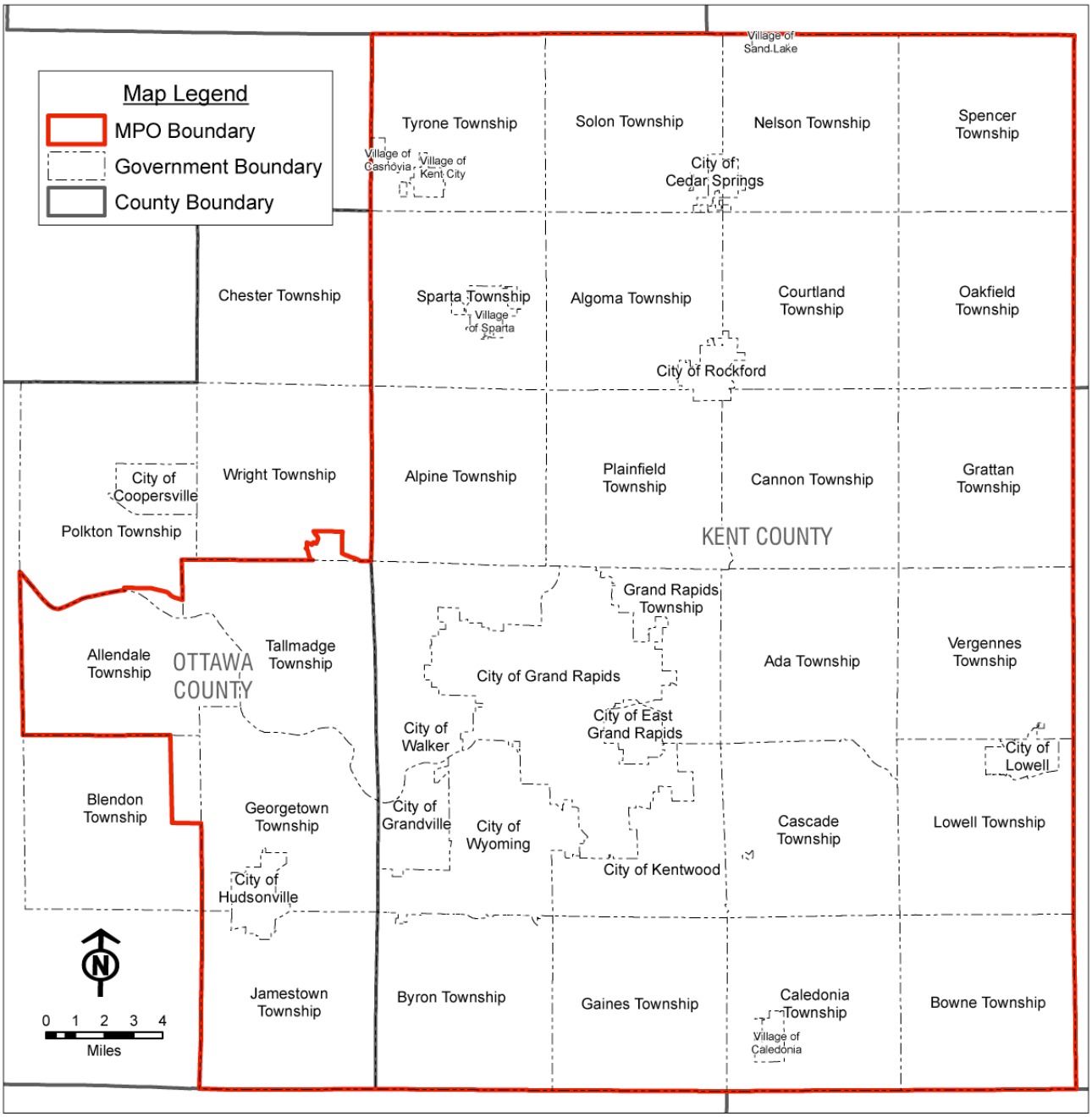
In 1974, the Kent-Ottawa Regional Planning Commission was dissolved and a new nine county region was formed by executive order of the Governor of the State of Michigan. The West Michigan Regional Planning Commission (WMRPC) was formed and given the responsibility for coordinating the GRETS Transportation Program. This relationship lasted until July 1990, when the State of Michigan in conjunction with the GRETS Policy Committee withdrew the MPO designation from

the WMRPC. In October 1990, the GRETS Policy Committee recommended the Grand Valley Metropolitan Council as the MPO for the Grand Rapids Metropolitan Area.

Metropolitan Planning Organization Boundary

GVMC 2035 Long Range Transportation Plan

The MPO Area Includes Kent County and a Portion of Eastern Ottawa County



Map 1 – MPO Boundary Map

The Grand Valley Metropolitan Council (GVMC), as the currently designated MPO for the Grand Rapids Metropolitan Area, is responsible for carrying out all transportation related planning activities for the designated study area. Those duties include preparation of a Unified Work Program (UWP), Transportation Improvement Program (TIP), and the development and maintenance of the Long Range Transportation Plan (LRTP).

The 2035 Long Range Transportation Plan (LRTP) update is a vital step in allowing federal funds to be spent in the Grand Rapids area on transportation projects. Without a federally approved LRTP in place, federal transportation dollars cannot be expended. The LRTP looks at the most recent data available to assess transportation needs and priorities for the region including items such as traffic volumes, population, employment, and financial forecasts. As the region changes over time, the transportation infrastructure must change as well, to accommodate for the growth in West Michigan. The development and interpretation of the data for the area leads to informed analysis, identification, and prioritization of transportation related projects and programs.

Purpose of the Long Range Transportation Plan

Since the inception of the Kent County Planning Commission in 1961, officials in the Grand Rapids Area have been committed to developing and maintaining a comprehensive transportation planning process that included the long range planning of transportation infrastructure.

In 1974, GRETS completed a comprehensive long range transportation plan with a terminal year of 1990. Between 1974 and 1988, no long range plans were completed. In the fall of 1989, GRETS approved the 2010 Long Range Transportation Plan. This plan represented the first effort in more than 15 years to provide a comprehensive long range transportation plan for the metropolitan area. Subsequently, there have been plans developed for 2015, 2020, 2025, 2030, and 2035. This document is an update to the 2035 LRTP.

Federal Transportation Legislation, Past and Present

On December 18, 1991, the United States Congress passed the Intermodal Surface Transportation Efficiency Act (ISTEA). ISTEA would forever change the way transportation planning was undertaken in urbanized areas. ISTEA required that areas with a population of more than 50,000 update their long-range transportation plans at least every three years. In the fall of 1994, largely in response to ISTEA, the GVMC completed and approved an update to the 2010 Long Range Transportation Plan. This plan would cover transportation improvements through the year 2015.

The Transportation Equity Act for the 21st Century (TEA-21) was enacted June 9, 1998 as Public Law 105-178. TEA-21 authorizes the Federal surface transportation programs for highways, highway safety, and transit for the 6-year period from 1998-2003. TEA-21 continues to emphasize increased awareness to a cooperative and comprehensive planning process that ISTEA had begun in 1991.

On August 10, 2005, the President signed into law the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU). With guaranteed funding for highways, highway safety, and public transportation totaling $244.1 billion, SAFETEA-LU represents the largest surface transportation investment in our Nation's history. The two landmark bills that brought surface transportation into the 21st century—the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) and the Transportation Equity Act for the 21st Century (TEA-21)—shaped the highway program to meet the Nation's changing transportation needs. SAFETEA-LU builds on this firm foundation, supplying the funds and refining the programmatic framework for investments needed to maintain and grow our vital transportation infrastructure. SAFETEA-LU expired in 2009 and is under extension until new federal transportation legislation can be approved by Congress.

SAFETEA-LU New Emphasis Areas

The passage of SAFETEA-LU has resulted in many changes to the transportation planning process. The more significant changes include:

Changing from a Public Involvement Plan/Process to a Participation Plan/Process.

Since the enactment of ISTEA in 1991, MPOs have been required to develop and utilize a proactive public involvement process that provides complete information, timely public notice, full public access to key decisions, and supports early and continuing involvement of the public in developing metropolitan transportation plans. SAFETEA-LU expands the public involvement provisions by requiring MPOs to develop and utilize "participation plans" that are developed in consultation with an expanded list of "interested parties." The previous requirement for a "Public Involvement Plan" was introduced through the rulemaking process; the new requirement for a "Participation Plan" is now in law.

Previously existing requirements will be largely retained. Additional emphasis will be placed on extensive stakeholder "participation," specifically requirements to:

- Hold public meetings at convenient and accessible locations and times,
- Employ visualization techniques to describe metropolitan transportation plans and TIPs, and
- Make public information available in electronically accessible formats and means (such as the World Wide Web).

Requirement to consider environmental mitigation in transportation planning.

SAFETEA-LU requires that the adopted metropolitan transportation plan contain a discussion of potential environmental mitigation activities (area-wide, not project specific). This is a new requirement and should be developed in consultation with Federal, State, and Tribal regulatory agencies responsible for land management, wildlife, and other environmental issues. The interaction with other agencies to achieve environmental mitigation is a logical part of the larger "Consultation" effort discussed in the next section.

Requirement of increased consultation with a diverse array of agencies and officials responsible for other planning activities affected by transportation.

Metropolitan planning under SAFETEA-LU requires increased consultation with a diverse array of agencies and officials responsible for other planning activities affected by transportation. It is suggested that contacts with State, local, Indian Tribes, and private agencies responsible for the following areas be contacted:

- Economic growth and development
- Environmental protection
- Airport operators
- Freight movement
- Land use management
- Natural resources
- Conservation
- Historical preservation
- Human Services Transportation Providers

Changing from a Congestion Management System/Plan to a Congestion Management Process.

This planning process change in Transportation Management Areas (TMAs-MPOs with a population of 200,000 persons and larger of which, the Grand Rapids area is one) requires making the Congestion Management Process (CMP) a more integral part of developing the Long Range Transportation Plan (LRTP) and Transportation Improvement Program (TIP).

The steps toward integration include a common set of performance measures and a common set of goals and objectives between the CMP, the LRTP, and the transportation systems operational and management strategies for a region. Items such as the regional Intelligent Transportation System (ITS) architecture and the prioritization process for improvement to be included in the plan and TIP should be consistent and seamless with the CMP. As part of developing the CMP, planners should be working in collaboration with others in the region, including public transportation operators, and State and local operations staff.

The requirement to use the CMP in TMAs designated as non-attainment for ozone or carbon monoxide to identify, evaluate, and program any project that would result in a significant increase in the carrying capacity for single occupant vehicles (SOVs) continues. Such evaluation must address the inability of all reasonable travel demand reduction and operational management strategies (including multimodal) to satisfy the need prior to choosing the SOV option.

SAFETEA-LU Planning Factors

The passage of SAFETEA-LU requires that certain factors must be considered as part of the regional transportation planning process for all metropolitan areas. In general, these factors address social, environmental and land use issues as related to the transportation system. The planning factors contained with SAFETEA-LU shape the development of goals and objectives for the Long Range Transportation Plan. Likewise, they also guide the policies and practices that the GVMC, as the MPO, follows for carrying out the transportation planning process.

Figure 2 – SAFETEA-LU Planning Factors

Factor 1	Support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency.
Factor 2	Increase the safety of the transportation system for motorized and non-motorized users.
Factor 3	Increase the security of the transportation system for motorized and non-motorized users.
Factor 4	Increase the accessibility and mobility options available to people and for freight.
Factor 5	Protect and enhance the environment, promote energy conservation, improve the quality of life, and promote consistency between transportation improvements and State and local planned growth and economic development patterns.
Factor 6	Enhance the integration and connectivity of the transportation system, across and between modes, for people and freight.
Factor 7	Promote efficient system management and operation.
Factor 8	Emphasize the preservation of the existing transportation system.

Chapter 2: Long Range Transportation Planning Process

Introduction

This 2035 Long Range Transportation Plan (LRTP) Update document is the culmination of efforts which began in 2009. The development of a comprehensive transportation plan for any Metropolitan Planning Organization (MPO) is a complex and lengthy process. Drawing on the success of the development process that was used for the 2035 Long Range Transportation Plan, Grand Valley Metropolitan Council (GVMC) staff worked closely with the Grand Rapids area's transit provider, the Interurban Transit Partnership (ITP-The Rapid), and the State of Michigan in the Michigan Department of Transportation (MDOT). Meetings were held with staff from the three agencies to discuss plan coordination and public involvement. The aim was to improve coordination and outreach among the three major transportation planning agencies in the Grand Rapids metro area. The figure below illustrates the process followed to complete the 2035 Long Range Plan. See Appendix E for a detailed chart depicting the planning process.

LRTP Development Timeline	
2009 Base Year Socio-Economic Data Developed	July–August 2009
Meetings with MPO Members, ITP, MDOT (Subregional)	September–October 2009
2035 Socio-Economic Data Developed	November–December 2009
Travel Demand Model Calibration	January–February 2010
Public Participation Plan Update, Public Comments	February–April 2010
Goals and Objectives Reviewed	March–April 2010
Transportation Needs Subcommittees – Need Identification	May–July 2010
Deficiency Analysis	July–August 2010
LRTP Kickoff Meetings	October 2010
Transportation Alternatives Analyzed	January–November 2010
Deficiencies Approved by Committees	October 2010
Financial Analysis	October–November 2010
Inter-agency Workgroup Air Quality Projects Approved	November 2010
Environmental Justice Analysis	November 2010
Environmental Mitigation Analysis	November–December 2010
Air Quality Analysis	November–December 2010
Consultation	December 2010
Presentation of Draft LRTP, Public Comment Period, Meetings	January 2011
Committee Approval of LRTP	February 2011
GVMC Metropolitan Council Board Approval of LRTP	March 2011

Figure 3 – LRTP Development Timeline

MPO Committee Representation/2035 Long Range Transportation Plan Oversight

The Grand Valley Metropolitan Council's transportation committees are comprised of membership that represents all modes of transportation throughout the local transportation community. Local governments from the MPO Study Area include 10 cities and 25 townships, which are all eligible to participate. Additionally, the Kent and Ottawa County Road Commissions, the Interurban Transit Partnership, Gerald R. Ford International Airport, Grand Rapids Area Chamber of Commerce, the West Michigan Environmental Action Council, and the Michigan Department of Transportation participate in the MPO process as well.

There are four primary committees that impact the transportation planning and decision making process in the Grand Rapids Metropolitan Area. The Transportation Programming Study Group (TPSG) is an ad-hoc committee of the Technical Committee that is charged with making programming decisions about specific transportation projects through the short range Transportation Improvement Program. The TPSG only deals with programming issues. All other issues that need to be considered are brought first to the Technical Committee and subsequently make their way "up" the committee structure that you see in Figure 4. The Technical Committee is exactly what the name would imply, the representative from each of the member agencies/communities that have an expertise in the technical areas of the transportation process. The Policy Committee is made up of representatives of each member agency who have a policy development responsibility in their respective agencies/communities. Most members are elected officials or appointed by the elected officials of their agency/community. The Grand Valley Metropolitan Council Board (GVMC Board) is usually the last committee to take action on transportation issues within the Grand Rapids Metropolitan Area. The GVMC Board is made up of the chief elected officials (and/or their designee) for the member agencies. Some of the GVMC Board members are participating in the Policy Committee so there is often a familiarity with transportation issues and discussions at this level.

Transportation Planning Study Group (Ad Hoc) Members

- City of Cedar Springs
- City of East Grand Rapids
- City of Grand Rapids
- City of Grandville
- City of Hudsonville
- City of Kentwood
- City of Lowell
- City of Rockford
- City of Walker
- City of Wyoming
- Federal Highway Administration*
- Gerald R. Ford International Airport
- Grand Rapids Chamber of Commerce*
- Hope Network*
- ITP - The Rapid
- Kent County Road Commission
- Kent County Townships (1 vote)
- Michigan Deptartment of Transportation
- Ottawa County Road Commission
- Ottawa County Townships (1 vote)
- Village of Sparta

*Non-Voting Members

Technical Committee

- Ada Township
- Algoma Township
- Allendale Township
- Alpine Township
- American Red Cross*
- Byron Township
- Caledonia Township
- Cannon Township
- Cascade Charter Township
- City of Cedar Springs
- City of East Grand Rapids
- City of Grand Rapids
- City of Grandville
- City of Hudsonville
- City of Kentwood
- City of Lowell
- City of Rockford
- City of Walker
- City of Wyoming
- Courtland Township
- Federal Highway Administration*
- Federal Transit Administration*
- Gaines Charter Township
- Georgetown Township
- Gerald R. Ford International Airport
- Grand Rapids Chamber of Commerce*
- Grand Rapids Charter Township
- Hope Network*
- ITP - The Rapid
- Jamestown Township
- Kent County Board of Commissioners
- Kent County Road Commission
- Michigan Association of Counties*
- Michigan Department of Transportation
- Ottawa County Board of Commissioners
- Ottawa County Road Commission

- Plainfield Charter Township
- Tallmadge Township
- Village of Caledonia*
- Village of Sparta
- West Michigan Env. Action Council*

*Non-Voting Members

Policy Committee

- Ada Township
- Algoma Township
- Allendale Township
- Alpine Township
- Byron Township
- Caledonia Charter Township
- Cannon Township
- Cascade Charter Township
- City of Cedar Springs
- City of East Grand Rapids
- City of Grand Rapids
- City of Grandville
- City of Hudsonville
- City of Kentwood
- City of Lowell
- City of Rockford
- City of Walker
- City of Wyoming
- Courtland Township
- Federal Highway Administration*
- Gaines Charter Township
- Georgetown Township
- Gerald R. Ford International Airport
- Grand Rapids Chamber of Commerce*
- Grand Rapids Charter Township
- ITP - The Rapid
- Jamestown Township
- Kent County Board of Commissioners
- Kent County Road Commission
- Michigan Deptartment of Transportation
- Ottawa County Board of Commissioners
- Ottawa County Road Commission
- Plainfield Township
- Tallmadge Township
- Village of Sparta
- West Michigan Env. Action Council*

*Non-Voting Members

For Technical and Policy Committee member contact information see Appendix D. The chart below represents the MPO Committee structure for the Grand Rapids metropolitan area. Public participation is provided for and encouraged at all of the committee meetings:

Technical Committee meets at 9:30 a.m. the first Wednesday of the month at the Kent County Road Commission, 1500 Scribner Ave. NE, Grand Rapids, Michigan.

Policy Committee meets at 9:30 a.m. the third Wednesday of the month at the Kent County Road Commission, 1500 Scribner Ave. NE, Grand Rapids, Michigan

GVMC Board meets at 8:30 a.m. the first Thursday of the month at the Kent County Administration Building, 300 Monroe Ave. NW, Grand Rapids, Michigan

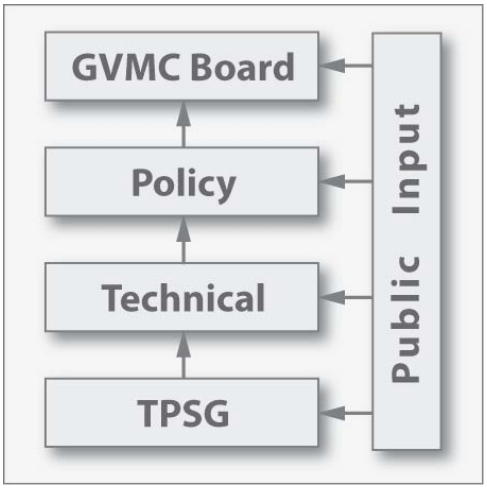


Figure 4 – MPO Committee Structure

Intermodal Focus

In order to develop a truly intermodal long range plan, issues related to more than roadways needed to be addressed. SAFETEA-LU requires that long range transportation plans be multi-modal in nature, meaning they address all modes of transportation: transit, rail, air, non-motorized, and roads. It has been common practice throughout the transportation planning profession to concentrate on

roads to the detriment of other modes of transportation. Therefore, GVMC staff has put a process in place to integrate all modes of travel pertinent to the metropolitan area.

For the development of the 2035 LRTP Update, six additional Subcommittees met to identify needs by program area including: Intermodal, Freight, Rail & Air; Non-Motorized; Transit & Passenger Rail; Congestion Management; Safety & Operations; and Pavement Asset Management. These six Subcommittees were made up of members of the Technical and Policy Committees as well as interested organizations and individuals that have technical expertise that contributes to our understanding of regional transportation needs. These Subcommittees met to identify the financially unconstrained needs by program area to provide information and resources to the Technical and Policy Committee's decision making process. The chart below outlines the various program areas that were established for the development of the long range plan.

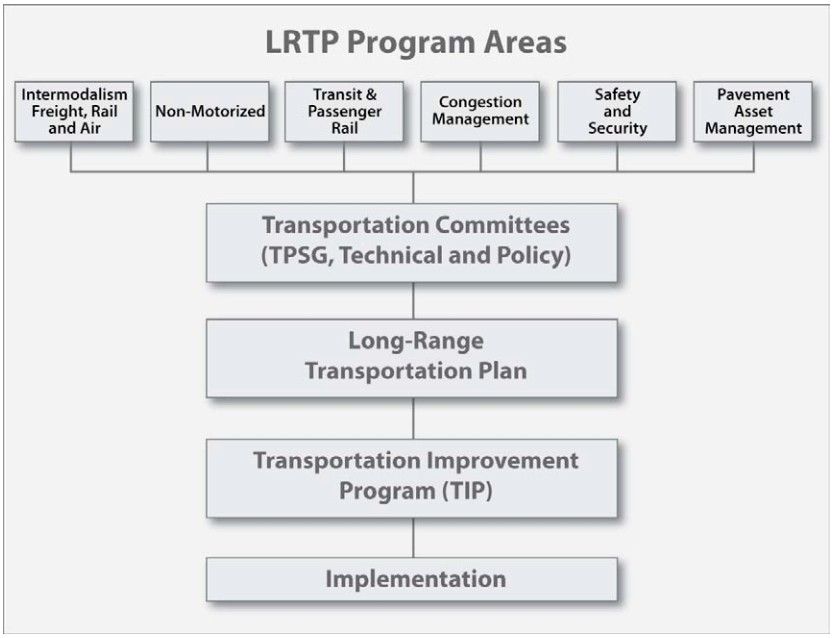


Figure 5 – Long Range Transportation Plan Program Areas

Intermodal Issues, Freight, Rail and Air ('Freight Subcommittee')

Freight movement issues are being studied by staff in partnership with the Michigan Department of Transportation, the Right Place Inc., and various trucking, rail, storage, and major employers in the region. Drawing on their inherent knowledge of issues facing freight shippers and carriers in the area, a basic understanding of the issues was established at the subcommittee meeting July 15, 2010. Representatives from the freight community as well as road agencies and private sector businesses responsible for large freight movements were brought together for the first time in a number of years. Several very pointed concerns were raised from the various representatives present at the meeting, especially concerns about the complexity and culture of the railroad companies large and small. The subcommittee was encouraged by the neutrality of GVMC and expressed a desire to continue working to improve freight conditions in our area. This effort is its incubatory stages and specific needs have not been identified to the point where they can be listed in the Long Range Transportation Plan.

Air related issues are addressed in conjunction with the region's largest provider of services, the Gerald R. Ford International Airport (GRFIA). GRFIA staff has seats and voting privileges on both the GVMC Transportation Technical and Policy Committees and participate actively in the transportation planning process. GVMC Transportation staff served as a member of the Airport's Master Plan committee during it's most recent update.

Non-Motorized

The GVMC Non-Motorized Transportation Committee, which is made up of governmental and citizen representatives continues to meet. The committee has developed a 2009 draft Non-Motorized Transportation Plan for the area which includes a list of non-motorized projects to guide the development of a comprehensive network for the area. On June 24 and July 22, 2010, GVMC staff conducted Non-Motorized Committee meetings as part of the development of the Long Range Transportation Plan (LRTP). The Non-Motorized Committee is a standing committee and is composed of 59 members from jurisdictions across the MPO, MDOT, ITP/The Rapid, trail "friends" groups, Disability Advocates of Kent County, and other non-motorized transportation advocacy organizations.

The Non-Motorized Committee is currently revisiting the MPO Policies and Practices to encourage the use of less traditional federal funding sources for these types of projects. The committee is also working to develop the types of non-motorized facilities that will be officially recognized by the MPO by setting fundamental criteria for project consideration—projects that demonstrate mode shift and projects that enhance connectivity in the transportation network. Additionally the Committee is continuing to revise prioritization criteria for non-motorized projects, including such elements as: access to schools, employment, parks, high use potential, funded maintenance plans, cost, and quality of life benefits. The Committee hopes to have criteria in place should additional funds come to the area, as part of the Rails-to-Trails effort or other means, to systematically address the development of a non-motorized transportation network.

GVMC continues to make substantial improvements to the Draft Non-Motorized Plan document, indeed GVMC was commended for this document by the Federal Highway Administration and the Federal Transit Administration at its regular Federal certification held in June, 2010.

Transit & Passenger Rail

GVMC staff works very closely with the regional transit provider, ITP/The Rapid to assess long range transit needs and incorporate those needs into the planning process (see Chapter 10). Transit programs continue to be an ongoing priority of GVMC and the two agencies meet regularly to identify, discuss, and plan for public transportation needs in the Grand Rapids urbanized area. Additionally, GVMC, in cooperation with ITP/The Rapid, successfully applied for and received a Service Development New Technology grant from the Michigan Department of Transportation to conduct a transit needs assessment for Kent County. The purpose of the Kent County Transit Needs Assessment (KCTNA) is to complete an assessment of the unmet need and demand for transit in Kent County, particularly those parts of Kent County that are not currently served by The Rapid. The information collected as part of this study will provide information about the potential expansion of transit service beyond the current scope of existing transit service providers in the county. The primary goals of the KCTNA are to a) examine the current transit use and service provided and identify gaps in service, b) anticipate future transit demand by identifying areas that may need transit to meet demand, and finally c) if a latent demand is identified, to identify options and financial implications of future public transportation service.

In December, 2009 RLS & Associates, Inc. was selected as the consultant to perform the KCTNA. The study is anticipated to take 10 months to complete, with final presentations in February/March, 2011.

Passenger Rail issues are also being studied by GVMC as a member of the WESTRAIN Collaborative. The focus of WESTRAIN is to secure and maintain passenger rail service from Grand Rapids, Michigan to Chicago, Illinois. The WESTRAIN Committee is instrumental in working closely with MDOT and AMTRAK to maintain seven-day per week service on the *Pere Marquette* line between

the two cities. Currently, the WESTRAIN Committee meets on a quarterly basis to discuss and implement effective marketing of passenger rail service. Another accomplishment of the WESTRAIN Collaborative is the continuation of minor restoration projects on the AMTRAK station in Grand Rapids.

GVMC staff conducted the first "ad hoc" Transit & Passenger Rail Subcommittee meeting as part of the development of the Long Range Transportation Plan on June 25, 2010. Participants at this meeting included five transit service agencies (of the nine invited) as well as MDOT, local jurisdictions, college/universities, and other rail and environmental advocacy groups. The group collectively discussed challenges to transit and passenger rail which touched particularly on improving transit linkages to other modes (airport, Amtrak, Greyhound), adding another daily departure on the *Pere Marquette*, improving connections between land-use decisions and transit, development of a bus rapid transit route to Allendale, and overwhelming service demands on para-transit providers.

Congestion Management

Over the years, corridor congestion has received the most attention due to the fact that it is the most visible and most cases most costly to rectify. As time has passed and the area has grown, many congestion issues have emerged or been created by poor land use decisions. 28th Street, Alpine Avenue, the US-131 S-Curve, access to the airport and I-196 in downtown are just a short list of congestion related issues that the area has been faced with. While some of these congestion issues are still active, many have been alleviated through the implementation of various very costly fixes.

The completion of M-6 (South Beltline Freeway), the reconstruction of the US-131 S-Curve, the recent reconstruction of I-196 (Gerald R. Ford Freeway), and the new access to the airport via 36th Street are a few of the improvements that have been made in recent years to address some of the worst congestion issues in the region.

While these congestion issues are corridor based and were relatively predictable, there are other sources of congestion that are just now getting attention on a regional basis. Accidents, bad weather, construction and planned events (concerts, downtown festivals and conventions) are often referred to as Non-recurring congestion due to its relatively unpredictable nature. Another source of congestion experienced in the region is attributed to intersections and poorly timed corridors.

Viable solutions that address previously defined goals have been developed through the GVMC Congestion Management Process for which more information can be found in Chapter 8.

Safety & Security

On August 10, 2005, the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) became law. With guaranteed funding for highways, highway safety, and public transportation totaling $244.1 billion, SAFETEA-LU represents the largest surface transportation investment in our Nation's history. One of the primary focuses of this landmark legislation was the increased emphasis on improving safety as the acronym implies.

GVMC has developed a comprehensive safety plan for the region. The GVMC Strategic Safety Planning Process was developed as an effort to identify and address safety related issues in the region. Over the past five years traffic crashes have cost the residents of the region an estimated average of $550 million each year. According to a AAA study completed in 2008, traffic crashes cost the residents of the GVMC region in excess of 5 times the cost of traffic congestion (5.44:1). With these statistics in mind, GVMC has undertaken an effort to focus planning resources on traffic crashes in an effort to minimize the impact they have on the economy of the region as well as the loss of human life.

MDOT has a statewide Emergency Management Steering Committee in place to address Homeland Security Issues. Any threats or potential threats identified, by the federal Homeland Security Administration (HAS) or Michigan State Police (MSP), are then communicated to MDOT field staff, to monitor specific or categories of targeted facilities, structures, etc. Monitoring can be accomplished visually by MDOT staff, local law enforcement, or using the ITS cameras which are now covering a greater portion of the state transportation system. Any unusual activities observed are reported to the MSP and/or the federal HAS. State of Michigan efforts are also coordinated with Federal Highway Administration (FHWA) and HSA activities. In addition, any potential threats identified to local facilities are communicated to local officials and/or law enforcement agencies. These focused efforts will ensure that safety and security issues are integrated into the GVMC overall transportation planning process

Pavement Asset Management

For nearly 15 years GVMC has maintained a Pavement Asset Management System (PaMS) for the federal aid system in the region. The GVMC PaMS is a full-size Ford® van equipped with state-of-the-art electronic pavement scanners, high-resolution still cameras, Global Positioning System (GPS) components and computers. Operated by experienced transportation planners from the GVMC Transportation Department, the equipment is used throughout the GVMC transportation study area to ascertain pavement conditions and enable local road agencies and the Michigan Department of Transportation (MDOT) to better manage roads, bridges and other elements of our region's surface transportation network. The GVMC PaMS van was the first mobile, semi-automated, advanced technology system to be used to gather and analyze road condition data in Michigan.

During the development of the LRTP, the GVMC PaMS committee has worked on a plan to maximize the use of all available funding that comes to this area for the purposes of maintaining and, where possible, improving the system.

Citizens

GVMC continues to make citizen participation in the transportation process a priority. As part of the passage of SAFETEA-LU, fairly significant changes were made to the GVMC Public Involvement process. The Public Involvement Plan was changed to a Public Participation Plan. Certain elements of the Plan were updated to reflect new emphasis areas in the new legislation, which was revisited at the beginning of the 2035 LRTP update process.

GVMC continues to make substantial improvements to the inclusion of the public in the transportation planning process. At its regular Federal certification held in July 2006, GVMC was commended by Federal Highway Administration and Federal Transit Administration on its public participation process.

Chapter 3: Goals and Objectives

Goals and objectives are extremely useful in the planning process as they provide the necessary direction and basic framework upon which future decisions can be made. The goals and objectives of the Long Range Transportation Plan (LRTP) will contribute strongly to the selection and evaluation of alternatives in the transportation system. As goals embody a desired state of affairs to be realized through future efforts, the transportation goals and objectives embraced by GVMC will affect an overall design for the 2035 Long Range Transportation Plan. These goals and objects also influence the development of the short range Transportation Improvement Program, and indeed are meant to guide the entire regional transportation planning process.

The goals and objectives of the Long Range Transportation Plan are revisited with each LRTP development cycle and are developed and approved by GVMC Transportation Committees. Several of the goals and objectives are more specific than the final LRTP conclusions can support. However, this specificity will become important during subsequent studies which will be completed after the LRTP is adopted. It may appear that some of the goals and objectives compete or conflict with each other. This occurs because the list that is presented below is comprehensive in nature and is designed to accommodate several different types of situations. When applying these goals and objectives to any effort, decision-makers will need to find balance between different goals and different objectives. The goals and objectives are not ranked or listed in order of importance.

Applicable policy statements related to the goals and objectives are listed in Appendix C of this document. The policy statements are intended to provide the structure and guidelines for transportation planning in the area, in addition, the policy statements improve the overall transportation planning practices currently in use in the area. The combination of the LRTP goals, objectives, and policies will help guide the implementation of the 2035 Long Range Transportation Plan.

Vision Statement

The 2035 LRTP establishes a vision of how the future multimodal transportation system will serve the people and businesses of Kent and Eastern Ottawa Counties. The vision statement, adopted the GVMC Policy Committee in March, 2010 is as follows:

> Establish a sustainable multimodal transportation system for the mobility and accessibility of people, goods, and services; it will provide an integrated system that is safe, environmentally sound, socially equitable, economically viable, and developed through cooperation and collaboration.

To achieve this vision, the transportation system must be well maintained and the region's agencies and jurisdictions must work cooperatively to develop strategies to effectively distribute transportation funding. As such, the following goals are supported by several measurable objectives that are described in association with specific transportation components.

Goals and Objectives

Goal 1: Accessibility, Mobility, Intermodalism, and Efficiency
Provide access to employment, housing, services, and recreation for people regardless of physical limitations or economic status. Design a transportation system that allows the efficient movement of motor vehicles, buses, pedestrians, bicyclists, buses, trains, and air and freight carriers through the area. Enhance the integration and connectivity of the transportation system, across and between modes. Make the best use of existing transportation facilities by integrating systems, improving traffic operations and safety and providing accurate real-time information, to increase system-wide efficiency.

Objective 1a: Maintain and enhance a roadway system comprised of existing or expanded freeways, major regional arterials and principal arterials that provide regional and statewide connectivity for the movement of people and goods.

Objective 1b: Support local streets and roadways that are consistent with community goals and provide access to and from residential and non-residential areas throughout the region.

Objective 1c: Encourage the expansion of safe, efficient, and convenient public transportation system coverage to areas with supportive land use patterns and population or employment characteristics.

Objective 1d: Sustain and develop the interconnected regional network of non-motorized transportation facilities to provide access to employment, services, schools, and other destinations.

Objective 1e: Expand opportunities for rail and air transportation for passengers and freight and maintain Gerald R. Ford International Airport's important role in connecting the Greater Grand Rapids area to the rest of the nation and the world.

Objective 1f: Encourage the coordination and integration of existing modes of transportation and promote the development of new intermodal transportation connections, facilities, and services to facilitate the movement of goods throughout the region.

Objective 1g: Provide mobility and accessibility through the transportation system for all people, particularly those that are transportation disadvantaged, and minimize transportation barriers which disadvantage mobility-limited people.

Objective 1h: Improve transportation system productivity by addressing capacity deficient roadways and funding improvements that provide sufficient capacity for the movement of people and goods throughout the region.

Objective 1i: Employ Congestion Management Process to systematically monitor, measure, and diagnose and recommend management alternatives for current and future congestion on our region's multi-modal transportation system.

Objective 1j: Enhance mobility and strengthen corridor efficiency by reducing overall travel time and delay by providing adequate intersection capacity and through continued investment in signal timing and progression efforts.

Objective 1k: Deploy and adapt Intelligent Transportation Systems (ITS) concepts such as vehicle flow treatments, national real-time system information programs, transit monitoring

systems, and real time automated incident detection technologies to improve the reliability and efficiency of the transportation system.

Objective 1l: Utilize Travel Demand Management practices to manage future traffic growth, improve system efficiency, and mitigate congestion.

Objective 1m: Promote and encourage the use of transit, ridesharing, carpooling, vanpooling, and non-motorized travel, and the spread of travel demand to non-critical times of the day.

Goal 2: System Preservation
Assure the preservation and maintenance of existing facilities and work to educate decision-makers about the need for adequate transportation funding..

Objective 2a: Allocate transportation funds to cost-effectively maintain existing infrastructure so as to protect the serviceability of previous investments.

Objective 2b: Develop and apply transportation management principles and techniques, in cooperation with state and local agencies, to identify, assess, and maintaining existing transportation infrastructure and maximize road maintenance budgets.

Objective 2c: Encourage effective and proper maintenance of state and local transportation facilities.

Objective 2d: Prioritize roadway projects that improve existing facilities over those that develop new roadways and encourage the use of existing right-of-ways for the development and expansion of the transportation system.

Objective 2e: Cooperatively work with local, state, and federal officials to educate decision-makers about transportation funding needs.

Goal 3: Safety, Security and Reliability
Improve the safety and reliability of the transportation system for motorized and non-motorized users. Improve security measures to protect the region from natural and human threats.

Objective 3a: Identify, prioritize, and design projects on existing and future facilities that will reduce the likelihood or severity of crashes involving motor vehicles, trains, bicycles, and pedestrians.

Objective 3b: Employ the use of standard traffic control devices, standards, and practices to increase system efficiency, safety, and reliability.

Objective 3c: Support the installation, operation, upgrading, and timely maintenance of system infrastructure, including regional Intelligent Transportation Systems (ITS) to reduce the potential for secondary traffic incidents and non-reoccurring congestion within the region.

Objective 3d: Collaborate with communities, public schools, and MDOT to regionally plan for safe bicycle and pedestrian routes for students to travel to and from home and school.

Objective 3e: Encourage the multiple and safe use of transportation rights-of-way by different modes, including non-motorized transportation.

Objective 3f: Coordinate with various safety and security agencies, such as the US Department of Homeland Security and the Federal Emergency Management Agency, to ensure development of safe, secure transport routes throughout the region and their connection with routes beyond the region.

Goal 4: Land Use and Transportation
Strengthen the link between transportation and land use policies to encourage people and businesses to live and work in a manner that reduces dependence on single occupancy vehicles.

Objective 4a: Integrate land use and transportation by encouraging land use patterns that provide efficient, compact uses of land that facilitate a reduced number and length of trips.

Objective 4b: Coordinate local land use and master planning with the preservation of current and future right-of-way and transportation system improvements including land uses adjacent to fixed transportation facilities.

Objective 4c: Develop transportation services to be consistent with adopted community land use plans, water quality management plans, housing plans, and recreation/open space plans.

Objective 4d: Develop transportation plan data and projections using accurate local land use data and regional population and employment forecasts.

Objective 4e: Evaluate all reasonable land use development alternatives and transportation improvement strategies before pursuing major expansion to roadways. Consider all mobility options and operational strategies in congested corridors before adding capacity for general purpose lanes or building new facilities.

Objective 4f: Manage access (curb cuts on arterials or interchanges on freeways) to improve the efficiency and flow of traffic in accordance with MDOT Access Management Program along state highways, and encourage local governments to develop similar standards for non-state roadways.

Goal 5: Public Participation, Intergovernmental Coordination, Equity and Fiscal Responsibility
Provide information to the public to allow active participation in the transportation decision-making process.
Equitably fund transportation based on need and benefit. Coordinate and design transportation improvements for all modes to assure the expenditure of resources in the most cost-effective manner.
Implement transportation improvements that foster economic development and vitality, links centers of employment, education, medical facilities, and neighborhoods.

Objective 5a: Foster environmental justice through the maintenance of a planning process that does not unfairly affect any one segment of our community regardless of race, color, national origin, age, sex, disability, religion or income.

Objective 5b: Provide early and continuing opportunities for public engagement in transportation plans, projects, and programs particularly for those in the community traditionally underserved by the transportation planning process.

Objective 5c: Allow for timely public review and comment at key decision points in the transportation planning and project development process and consider all public input in the GVMC transportation public participation process.

Objective 5d: Promote a balanced transportation system and support the economic viability, competitiveness, productivity, and efficiency of West Michigan through directed investment in improvements across modes.

Objective 5e: Support transportation improvements that are cost-effective, realistic, reliable, equitable, and maximize the long-term cost/benefits by considering the overall life cycle costs.

Objective 5f: Enhance intergovernmental coordination and cooperation for improving multimodal transportation planning.

Objective 5g: Coordinate local, regional, state, federal and private transportation investments to maximize opportunities and benefits of joint study, design, and construction of projects.

Objective 5h: Minimize capital and operating costs through transportation improvements, for all modes.

Goal 6: Environmental Quality, Livability and Sustainability
Improve air quality, water quality, reduce vehicular emissions and minimize impacts to the natural environment, social well-being, and cultural heritage. Reduce the demand for single-occupant motor vehicle travel, and conserve energy.

Objective 6a: Minimize air, noise, and water pollutant emissions and concentrations.

Objective 6b: Prioritize projects and programs that contribute to the achievement of federal air quality standards.

Objective 6c: Encourage projects and programs that use low-polluting fuels and alternative fuel and engine technology in vehicles and vehicle fleets.

Objective 6d: Develop the transportation system to minimize disruption of existing neighborhoods, households, prime farmlands, natural habitats, and open spaces.

Objective 6e: Minimize negative effects of improvements to the transportation system on commercial and industrial facilities as well as historical sites and recreational, cultural, religious and educational activities.

Objective 6f: Provide a wide variety of transportation facilities as alternatives to the single-occupant vehicle, including bus rapid transit, fixed-route, demand response, senior and disabled person transit service, and bicycle and pedestrian facilities.

Objective 6g: Focus roadway, transit, and non-motorized improvements in the urbanized area and encourage transportation projects that directly serve designated urban centers and transit oriented development.

Objective 6h: Prioritize transportation projects which reduce the frequency and length of trips, minimize the energy resources consumed for transportation, and promote a sustainable transportation system.

Figure 6 – Relating SAFETEA-LU Factors to LRTP Goals

SAFETEA-LU Planning Factors	Relevant LRTP Goals	LRTP Incorporation of SAFETEA-LU Planning Factors
1) Support the economic vitality of the United Sates, the States, non-metropolitan areas, and metropolitan areas, especially be enabling global competitiveness, productivity and efficiency	Goal 1 Goal 3 Goal 4 Goal 5 Goal 6	The projects contained in this plan preserve and enhance access (by all modes) to major employment centers.
2) Increase the safety of the transportation system for motorized and non-motorized users.	Goal 3 Goal 6	Safety improvements for all modes are encouraged in this plan, such as crash reductions at intersections, along corridors, and for different user groups like seniors, bicyclists, and pedestrians.
3) Increase the security of the transportation system for motorized and non-motorized users.	Goal 3	GVMC is employing ITS strategies to increase the security of the transportation system.
4) Increase the accessibility and mobility options available to people and for freight.	Goal 1 Goal 3 Goal 4 Goal 5 Goal 6	Mobility options for non-motorized, transit, and roadway users are increased under this plan the implementation of programs/projects proposed. Accessibility is improved, but it is recognized that additional activities should be considered to increase the accessibility of the transportation system for all users.
5) Protect and enhance the environment, promote energy conservation, improve the quality of life, and promote consistency between transportation improvements and State and local planned growth and economic development patterns.	Goal 3 Goal 4 Goal 5 Goal 6	The LRTP seeks to minimize any negative environmental impacts as a result of programs/projects. The implementation of the programs/projects contained in this plan will reduce gaps in the system and a reduction in the number of congested miles. Consistency is achieved by developing the LRTP in conjunction with GVMC members, road agencies, ITP/The Rapid, and MDOT, and by increasing the accuracy of socio-economic data input into the Transportation Model.
6) Enhance the integration and connectivity of the transportation system, across and between modes, for people and freight.	Goal 1 Goal 4 Goal 5 Goal 6	The programs/projects in the plan seek to enhance connectivity and integration between modes, for example transit and non-motorized.
7) Promote efficient system management and operation.	Goal 1 Goal 2 Goal 4 Goal 5 Goal 6	The programs/projects in this plan were developed with GVMC members, state and local transportation providers, and the general public. Such input helps ensure that the system is efficiently managed and operated and the projects proposed support the continuation of a system that is efficiently managed and operated.
8) Emphasize the preservation of the existing transportation system.	Goal 2 Goal 4 Goal 6	The LRTP considered preservation of the existing transportation system through the financial analysis that identified funds for maintenance activities. Also the project list contained preservation projects and dedicated funds for system preservation.

Chapter 4: Public Participation Process

The GVMC is committed to ensuring that citizen input will figure prominently throughout the planning processes, and contribute to transportation problem identification through public comment periods, public meetings, and review of the draft document. GVMC, as the Metropolitan Planning Organization (MPO), is also federally required to explicitly set forth public participation policies. The standards for this process are found in Title 23, Code of Federal Regulations, Part 450, and in Title 49, Code of Federal Regulations, Part 613 which requires that the public have reasonable opportunity to comment on transportation plans and programs. These policies are laid out in the Public Participation Plan (PPP), which can be found on the GVMC website.

The Public Participation Plan document describes all of the public participation goals and requirements for GVMC, including specific details regarding the development of the Long Range Transportation Plan (LRTP). These guidelines were followed by staff throughout the development of the 2035 LRTP. The update of the 2035 LRTP was a lengthy process—nearly two years in the making—that involves a variety of public outreach tools including a citizen survey, public service announcements, direct mailings, and public meetings.

Public Participation Mailing List

GVMC maintains an extensive public involvement mailing list that is used to provide information and notice to the public on transportation planning activities. The Interested Citizens/Agencies list includes many representatives such as elected officials, academic institutions, chambers of commerce, libraries, area media, neighborhood associations, government agencies and transportation service providers. This list is continually maintained and updated regularly and can be found in full in Appendix A.

The list of interested cities and agencies broken down by the type and numbers of contacts includes:

- Businesses 39
- Chambers of Commerce 9
- Community Organizations (incl. non-profits, faith-based organizations, etc.) 46
- Concerned Citizens 90
- Downtown Development Authorities (DDAs) 12
- Educational Organizations 21
- Elected Officials 32
- Environmental Organizations 12
- Governmental Entities and Organizations 34
- Historical Organizations 3
- Media 12
- Neighborhood Organizations 38
- Non-Motorized Advocacy Groups 9
- Organizations Serving the Disabled 30
- Organizations Serving Senior Citizens 16
- Transportation (including air, rail, transit, MDOT, etc.) 83
- Tribal Organizations 4
- Total 490

Public Participation Outreach

The LRTP process began with a reevaluation of the Public Participation Plan and update which sought input from our Technical and Policy Committees. Staff looked at past public participation practices to understand which worked well and what new practices could improve our efforts. The updated Public Participation Plan was approved by the GVMC Policy Committee May 19, 2010.

Staff developed an online Citizen Survey to gain public opinion regarding the LRTP update. Questions focused on what portions of the transportation system are most important to them. The survey was advertised as part of the Kick-off Meetings in the Grand Rapids Press, on the GVMC website, through a direct postcard mailing, and emailed to GVMC digital contacts. A summary of the survey results appears in Appendix A.

To provide the public with fast, easy access to all things related to the LRTP update, staff maintained the gvmc.org website through the planning process. This included posting announcements for all public participation opportunities, the LRTP survey, and other relevant background information and past planning documents.

The update of the 2035 LRTP began with eight Kick-off Meetings (2 per day, 2 hours each) October 11–14, 2010. These meetings were held at eight different locations through Kent and Eastern Ottawa Counties to provide geographic balance and convenience. The Kick-off meetings were scheduled at various times of the day, at ADA accessible venues, and three of the locations were specifically located along fixed-route bus service lines to increase ease of access. Postcard invitations to the Kick-off Meetings were sent to our entire Interested Citizens/Agency list consisting of 490 individuals and organizations who are interested in transportation planning related information. The Kickoff Meeting invitation, which included information on the online survey, was also posted on our website and published in the Grand Rapids Press on October 7, 2010.

Displayed at each of the eight Kickoff Meetings were materials such as, Title VI pamphlets, MDOT maps, ITP/The Rapid Transit Master Plan brochures, State Rail Plan brochures, as well as large area maps and transit system maps. For each meeting, staff made a short PowerPoint presentation on the development of the LRTP, the various analyses that are part of the document, and the other public involvement opportunities available. Public Comment Sheets and GVMC contact information were made available at the meetings for those who did not wish to speak to staff in person, and public comments will be accepted throughout the LRTP development process.

Figure 7 – LRTP Meeting Schedule

Meeting Location (*Locations accessible by fixed route buses.)	**Time**	**Kickoff Dates**	**Draft Review Meeting Dates**
Gaines Township Hall	9–11 am	October 11, 2010	January 17, 2011
Wyoming Public Library*	6–8 pm	October 11, 2010	January 17, 2011
GVMC Offices*	1–3 pm	October 12, 2010	January 18, 2011
Lowell City Hall	6–8 pm	October 12, 2010	January 18, 2011
The Rapid Central Station*	10 am–12 pm	October 13, 2010	January 19, 2011
Algoma Township Hall	6–8 pm	October 13, 2010	January 19, 2011
Georgetown Township	1–3 pm	October 14, 2010	January 20, 2011
Hudsonville City Hall	6–8 pm	October 14, 2010	January 20, 2011

The update of the 2035 LRTP also incorporated a subcommittee process that invited detailed and technical comments for each planning area (Congestion; Intermodal, Freight, Rail, & Air; Non-motorized; Pavement Asset Management; Safety & Security; and Transit & Passenger Rail.) Organizations, businesses, advocacy groups, individual experts, all provided a cross-section of data for each program to better define and narrow the transportation "needs" for the area.

Once the transportation deficiencies are identified and the Draft LRTP document was complete, a 30-day public comment period will be held from January 1–30, 2011. Notices of the public comment period will be posted in the Grand Rapids Press and sent to all on the Interested Citizens/Agencies List. Throughout, the 30-day public comment period, the draft document will be made available for the public to view in hard-copy format at nearly every local unit of government, the Kent and Ottawa County Road Commissions, ITP/The Rapid, local libraries, as well as on the GVMC website. In addition, the Draft 2035 LRTP will be available at the GVMC offices with staff available to respond directly to any public questions or concerns.

All written public comments received during the Kickoff Meetings as well as during the official public comment period, including comment forms received at the public meetings, can be found in Appendix A. Also any phone conversations with citizens who did not want to submit and official comment will be documented. All public comments received will be provided to the GVMC Technical and Policy Committees for consideration, and the inquirer may be directed to the respective road or transit agency for more project specific details.

Eight public meetings for the Draft 2035 LRTP Update are scheduled for January 17-20, 2011. The DRAFT 2035 LRTP Project List, Air Quality Conformity Findings, Environmental Justice and Environmental Mitigation Analysis results will be described at these meetings during a staff PowerPoint presentation. The Draft Review Meetings will be held at various times of the day, at ADA accessible venues, and three of the locations are specifically located along fixed-route bus service lines to increase ease of access. Invitations will be sent to our entire Interested Citizens/Agencies List, and will included information on how to access the document, Air Quality Conformity Findings, and other related documents. Concurrent with the meeting announcement mailing, the meeting information, methods for making public comment, and related information (Air Quality Conformity Analysis, Environmental Justice Analysis, and draft project lists) will be posted on our website and published in the Grand Rapids Press.

In addition to the public meetings, opportunities for public comment are available at monthly Technical Committee, Policy Committee, and GVMC Board meetings. Agendas and minutes for these meetings are regularly posted on the gvmc.org website.

All documents, events, and public comment opportunities will be published on the GVMC website throughout the LRTP development process and also made public through paid advertisements and press releases to local media. Additionally, to provide ample time for staff to incorporate comments received, GVMC Board approval is not anticipated until 32 days (March 4, 2011) after the close of the public comment period.

Conclusion

Throughout the 2035 LRTP development, all pertinent public participation information will be taken to the GVMC Technical and Policy Committees for their review and consideration. This committee review will aid staff during the process, helping to make decisions regarding the plan along the way. All comments received will be reviewed and incorporated into the LRTP when and where appropriate. Specifically, all written public comments will be recorded in Appendix A along with staff responses. An evaluation of the 2035 LRTP public participation efforts will be made through our Public Participation Plan process to identify areas of success and areas that can be improved upon for future plan development.

Please Note: This is a DRAFT document and Appendix A is incomplete at this time. It will not be complete until after the Public Comment period concludes and staff can appropriately incorporate all comments received.

Chapter 5: Consultation

A new addition from the current federal transportation legislation, SAFETEA-LU, to transportation planning is the Consultation Process. This is considered to be a separate and discrete process from the general public participation process and is meant as a way to better consider the needs of "consulted" agencies. There are specific requirements that outline what types of agencies or stakeholders need to be consulted during the transportation planning process and the type of information that needs to be shared with these interested parties. It is suggested that contacts with State, local, Indian Tribes, and private agencies responsible for the following areas be contacted:

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

The overarching goal of this process is to eliminate or minimize conflicts with other agencies' plans, programs, or policies as they relate to the Long Range Transportation Plan. By consulting with agencies such as Tribal organizations or land use management agencies during the development of the LRTP, these groups can compare the LRTP project lists and maps with other natural or historic resource inventories. GVMC will also be able to compare the Draft LRTP to any documents received and make adjustments as necessary to achieve greater compatibility.

The consultation process that GVMC will undertake is based on recommendations from the Federal Highway Administration and the Michigan Department of Transportation.

Consultation Agency List

The organizations from the Interested Citizens/Agencies list that GVMC maintains for transportation public participation was used as a starting point for the consultation process, as this list encompasses many of the types of agencies and contacts targeted for this process. The Consultation List is as follows:

- ACSET-Latin American Services, Grand Rapids, Michigan
- ACSET-West Side Complex, Grand Rapids, Michigan
- Aero Med-Air Medical Transport, Grand Rapids, Michigan
- Air Ambulance by Life EMS, Grand Rapids, Michigan
- Allendale Township DDA, Allendale, Michigan
- AMB-U-CAB by G.R. Veterans, Grand Rapids, Michigan
- Ambucab Neighbors International Transport, Grand Rapids, Michigan
- Ambulance Service By American, Grand Rapids, Michigan
- American Red Cross - Lisa Marks, Grand Rapids, Michigan
- American Red Cross - Lois Brinks, Muskegon, Michigan
- American Red Cross of Greater Grand Rapids - Mark Burgess, Grand Rapids, Michigan
- Amtrak, Chicago, Illinois
- Annis Water Resources Institute, Muskegon, Michigan

- Area Agency on Aging of Western Michigan, Grand Rapids, Michigan
- Arts Council of Greater Grand Rapids, Grand Rapids, Michigan
- Association for the Blind & Visually Impaired - Amy B. Schreiner, Grand Rapids, Michigan
- Association for the Blind & Visually Impaired - Michelle E Cameron, Grand Rapids, Mich.
- Association for the Blind & Visually Impaired - Rosemary Ramos, Grand Rapids, Michigan
- Blandford Nature Center, Grand Rapids, Michigan
- Byron Township DDA, Byron Center, Michigan
- Calder City Taxi, Grand Rapids, Michigan
- Cascade Charter Township DDA, Grand Rapids, Michigan
- Cedar Springs DDA, Cedar Springs, Michigan
- Cherry Hill Historic District, Grand Rapids, Michigan
- City of Grand Rapids - Connie Bohatch, Grand Rapids, Michigan
- City of Grand Rapids Economic Development - Kara Wood, Grand Rapids, Michigan
- City of Grandville DDA, Grandville, Michigan
- City of Hudsonville DDA, Hudsonville, Michigan
- City of Rockford DDA, Rockford, Michigan
- City of Wyoming DDA, Wyoming, Michigan
- Columbian Distribution, Grand Rapids, Michigan
- Comstock Park DDA, Comstock Park, Michigan
- Conrail, Grand Rapids, Michigan
- Con-Way Central Express Inc., Grand Rapids, Michigan
- CSX Transportation, Grand Rapids, Michigan
- Cutlerville-Gaines Chamber of Commerce - Robin Halstead, Grand Rapids, Michigan
- Disability Advocates - Dave Bulkowski, Grand Rapids, Michigan
- Dwelling Place, Grand Rapids, Michigan
- Environmental Protection Agency - Region 5, Chicago, Illinois
- EPA, Office of Federal Activities, NEPA, Washington, DC
- Fair Housing Center of West Michigan, Grand Rapids, Michigan
- Faith in Motion, Grand Rapids, Michigan
- Federal Aviation Administration - Great Lakes Region, Romulus, Michigan
- Federal Highway Administration, Michigan Division - Sarah Van Buren, Lansing, Michigan
- Fish-For-My-People, Grand Rapids, Michigan
- Friends of the White Pine Trail - David Heyboer, Belmont, Michigan
- Friends of the White Pine Trail - January Preoli, Belmont, Michigan
- Friends of the White Pine Trail - Richard Granse, Belmont, Michigan
- Friends of Transit, Grand Rapids, Michigan
- Gainey Transportation Services, Grand Rapids, Michigan
- Genesis Non-Profit Housing Corporation, Grand Rapids, Michigan
- Gerald R. Ford International Airport - Roy Hawkins, Grand Rapids, Michigan
- Gerald R. Ford International Airport, Grand Rapids, Michigan
- Grand Action, Grand Rapids, Michigan
- Grand Rapids Air Pollution Control, Grand Rapids, Michigan
- Grand Rapids Area Chamber of Commerce - Jeanne Englehart, Grand Rapids, Michigan
- Grand Rapids Area Coalition to End Homelessness, Grand Rapids, Michigan
- Grand Rapids Audubon Club, Grand Rapids, Michigan
- Grand Rapids Convention & Visitors Bureau, Grand Rapids, Michigan
- Grand Rapids DDA, Grand Rapids, Michigan
- Grassmid Transport, Zeeland, Michigan

- Greyhound Bus Lines, Grand Rapids, Michigan
- GROW, Grand Rapids, Michigan
- Habitat for Humanity of Kent County - Mary Buikema, Grand Rapids, Michigan
- Hispanic Center of West Michigan, Grand Rapids, Michigan
- Historic Preservation, Grand Rapids, Michigan
- Hope Network - Joan Konyndyk, Grand Rapids, Michigan
- Indian Trails Motorcoach, Grand Rapids, Michigan
- Inner City Christian Federation, Grand Rapids, Michigan
- ITP - The Rapid, Grand Rapids, Michigan
- Izaak Walton League - Dwight Lydell Chapter - Ron Waybrant, Belmont, Michigan
- John Ball Park Community Association, Grand Rapids, Michigan
- John Ball Zoo, Grand Rapids, Michigan
- Kent Conservation District, Grand Rapids, Michigan
- Kent County - Mary Hollinrake, Grand Rapids, Michigan
- Kent County - Ron Stonehouse, Grand Rapids, Michigan
- Kent County Community Development & Housing Commission - Linda Likely, Grand Rapids, Michigan
- Kent County Dept. of Human Services, Grand Rapids, Michigan
- Kent County Dept. of Parks, Grand Rapids, Michigan
- Kent County Dept. of Public Works - Curt Kemppainen, Grand Rapids, Michigan
- Kent County Dept. of Social Services, Grand Rapids, Michigan
- Kent County Drain Commission - Bill Byl, Grand Rapids, Michigan
- Kent County Farm Service Agency, Grand Rapids, Michigan
- Kent County Home Repair Services, Grand Rapids, Michigan
- Kent County, Michigan State University Extension, Grand Rapids, Michigan
- Kent Intermediate School District, Grand Rapids, Michigan
- Land Conservancy of West Michigan - Peter Homeyer, Grand Rapids, Michigan
- Land Conservancy of West Michigan, Grand Rapids, Michigan
- LGROW - Brian Donovan, E. Grand Rapids, Michigan
- Little River Band of Ottawa Indians - Dan Shepard, Manistee, Michigan
- MARP, Grandville, Michigan
- Match-E-Be-Nash-She-Wish Band of Potawatomi Indians - Monte Davis, Dorr, Michigan
- Mercy Ambulance Service, Grand Rapids, Michigan
- Michigan Dept. of Agriculture, Lansing, Michigan
- Michigan Dept. of Community Health, Lansing, Michigan
- Michigan Dept. of Natural Resources & Environment, Grand Rapids, Michigan
- Michigan Dept. of Transportation - Dennis Kent, Grand Rapids, Michigan
- Michigan Dept. of Transportation - Passenger Transportation Division - Dean Peterson, Lansing, Michigan
- Michigan Dept. of Transportation - Sandra Cornell-Howe, Lansing, Michigan
- Michigan Dept. of Transportation - Steve Redmond, Grand Rapids, Michigan
- Michigan Dept. of Transportation - Therese Cody, Lansing, Michigan
- Michigan Economic Development Corporation, Lansing, Michigan
- Michigan Historical Center, Lansing, Michigan
- Michigan Housing Development Authority, Lansing, Michigan
- Michigan Land Use Institute, Traverse City, Michigan
- Michigan State Historic Preservation Office, Lansing, Michigan
- Michigan United Conservation Clubs, Grand Rapids, Michigan

- Mid-Michigan Railroad Co. - Jack Bixby, Vassar, Michigan
- Native American Community Services - Betty Shelby, Grand Rapids, Michigan
- Norfolk Southern Corporation, Grand Rapids, Michigan
- North Country Trail-West Chapter, Grand Rapids, Michigan
- Nottawaseppi Huron Band of Potawatomi, Fulton, Michigan
- Ottawa County Dept. of Parks & Recreation - John Scholtz, West Olive, Michigan
- Ottawa County Drain Commission, West Olive, Michigan
- Ottawa County Farm Bureau, Allendale, Michigan
- Pioneer Resources - Tiffany Bowman, Muskegon, Michigan
- Ready Ride Transportation, Inc., Wyoming, Michigan
- Rental Property Owners Assn., Grand Rapids, Michigan
- Riverview Aviation, Jenison, Michigan
- Roadway Express, Wyoming, Michigan
- Rockford Area Chamber of Commerce, Rockford, Michigan
- Sierra Club - Mackinac Chapter, Lansing, Michigan
- Standale DDA, Walker, Michigan
- Sunshine Transportation, Grand Rapids, Michigan
- Take Pride! Community, Grand Rapids, Michigan
- The ARC Kent County, Grand Rapids, Michigan
- The Rapid Wheelmen, Grand Rapids, Michigan
- The Right Place, Inc., Grand Rapids, Michigan
- The TLC Group, Inc., Holland, Michigan
- Thornapple Trail Assn., Middleville, Michigan
- Towne Air Freight Inc., Grand Rapids, Michigan
- U.S. Army Corps of Engineering, Detroit District, Detroit, Michigan
- U.S. Department of Agriculture - Michigan State Office, East Lansing, Michigan
- U.S. Dept. of Agriculture - Natural Resource of Conservation Service, East Lansing, Mich.
- U.S. Dept. of Commerce - National Oceanic & Atmospheric Administration, Washington, DC
- U.S. Dept. of Housing & Urban Development - Steven Spencer, Detroit, Michigan
- U.S. Dept. of Housing & Urban Development, Detroit Office, Detroit, Michigan
- U.S. Fish & Wildlife Service, East Lansing, Michigan
- U.S. Geological Survey - Lansing District Office, Lansing, Michigan
- United Growth for Kent County, Grand Rapids, Michigan
- United Methodist Community House, Grand Rapids, Michigan
- Village of Sparta DDA, Sparta, Michigan
- West Michigan Environmental Action Council, Grand Rapids, Michigan
- West Michigan Mountain Biking Association - Nate Phelps, Grand Rapids, Michigan
- West Michigan Regional Planning Commission - Dave Bee, Grand Rapids, Michigan
- West Michigan Strategic Alliance, Grand Rapids, Michigan
- West Michigan Trails & Greenways Coalition, Comstock Park, Michigan
- West Side Connection, Grand Rapids, Michigan
- Wyoming-Kentwood Chamber of Commerce - John Crawford, Wyoming, Michigan

Consultation Agency Notification

For those agencies targeted for consultation, a process of notification and information has been chosen. The following materials will be sent to the consulted agencies on December 1, 2010:

- a letter explaining the consultation process, the Long Range Transportation Planning process, and the role of the Grand Valley Metropolitan Council
- an invitation to a meeting on December 16, 2010 from 1 to 3 p.m. at the GVMC Offices (678 Front Ave NW, Suite 200)
- directions on how to provide input on the planning process and the project list, as well as how to contact GVMC staff
- the 2035 LRTP Project List
- a map of the LRTP projects

The Consulted Agencies will be contacted prior to the general Public Participation comment period in order to provide additional time for their review and to give GVMC the opportunity to make changes to the LRTP before the official public comment period begins. The Consulted Agencies public comment period is scheduled for December 1–30, 2010.

A sample of the letter and materials sent to the Consulted Agencies follows.

<Consultation mailing materials>

Consultation Meeting

GVMC intends to host a Consultation meeting December 16, 2010 at the GVMC Offices (678 Front Ave NW, Suite 200, Grand Rapids, Michigan) to provide a formal opportunity for GVMC to directly speak with the Tribal Organizations and other consulted agencies and to gain their input on the proposed LRTP prior to its public release. At the meeting, the Draft LRTP document and project list will be reviewed and discussed with regard to other ongoing land use, environmental, or community plans, to explore how the transportation projects or programs might interact. Potential environmental impacts and mitigation strategies will likely be discussed as well, since many of the consultation agencies are also contacted as part of the Environmental Mitigation process.

Documentation of Consultation

The intent of the consultation requirement is to exchange information with the consulted agencies and compare plans, maps, and inventories developed with the LRTP to ensure compatibility. To document this exchange, notes from the consultation meeting, comments from consulted agencies paired with staff responses, and documentation of a comparison of any plans received to the Draft LRTP, may be found in Appendix A.

Please Note: This is a DRAFT document and Appendix A is incomplete at this time. It will not be complete until after the Public Comment period concludes and staff can appropriately incorporate all comments received.

Chapter 6: Socio-Economic Data Projections

One of the most important elements in the development of a long range transportation plan is an assessment of population and employment data for the region. Socio-Economic (SE) data forecasts are essentially an inventory of what currently exists in terms of population and employment and what will exist for the Year 2035. For the LRTP, GVMC transportation and land use staff, in collaboration with the Transportation Committees and local jurisdictions, collected population and employment projections through the year 2035 for use in the transportation model.

Population and employment projections developed by GVMC for the 2035 Long Range Transportation Plan used nationally recognized data sources such as U.S. Census Data, American Community Survey (ACS) data, Claritas Business Facts data, and Regional Economic Model Inc (REMI) data as the basis for projections. Local data such as building permits and examining the accuracy of employer data helped to refine the national data sets and better reflect regional trends. Together the population and employment projections are referred to as the socio-economic projections and they serve as the basis for projecting future travel patters and for identifying current and future deficiencies in the transportation system.

The SE data collected is recorded by Traffic Analysis Zone (TAZ), as this is the unit used in the Transportation Planning Model. The boundary of a TAZ is usually a major street or highway, body of water, or any other major physical feature, and there are approximately 864 of them in the area. The TAZs allow for the transportation network to be divided up into smaller pieces having similar transportation characteristics to allow for more effective analysis of travel patterns and a better simulation of future transportation activities.

Population and employment information is populated into the Transportation Planning Model by TAZ to help understand the number of trips produced and attracted to each zone. With information about the number of trips by zone, the model can calculate those road segments anticipated to be over capacity (capacity deficient) in the future. It is important to keep in mind that GVMC is responsible for modeling for some areas beyond the MPO boundaries by the Michigan Department of Transportation (MDOT). These areas, including Blendon, Polkton, Wright, and Chester Townships and the City of Coopersville, are not part of any MPO, but they were included in the SE data collection process. (See the Subregional Map.)

2009 Base Year Data

To initiate the SE data process, staff first established a 2009 base for population and employment, from which projections into the outer years of the LRTP could be made from. Much of this work was conducted with assistance from GIS software, as this data is geographical in nature.

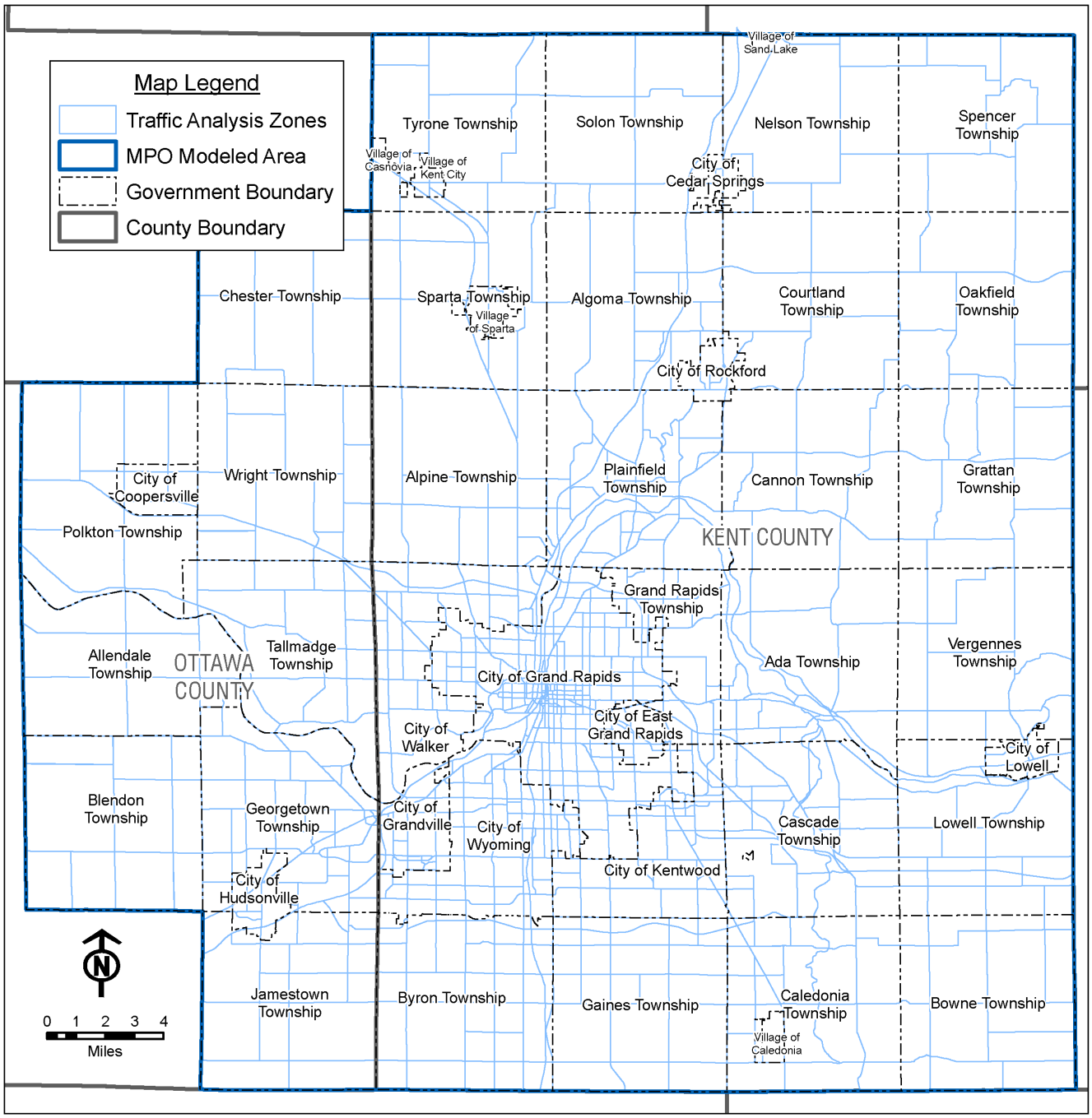
Population – 2009

Since the last census was completed nearly 10 years ago, staff has worked with U.S. Census population estimates for 2008 as well as 2005-2007 American Community Survey (ACS) Census data to establish a 2009 base population at the Traffic Analysis Zone level throughout the MPO.

Traffic Analysis Zones

GVMC 2035 Long Range Transportation Plan

Traffic Analysis Zones are used to Project Future Trips and Population Growth

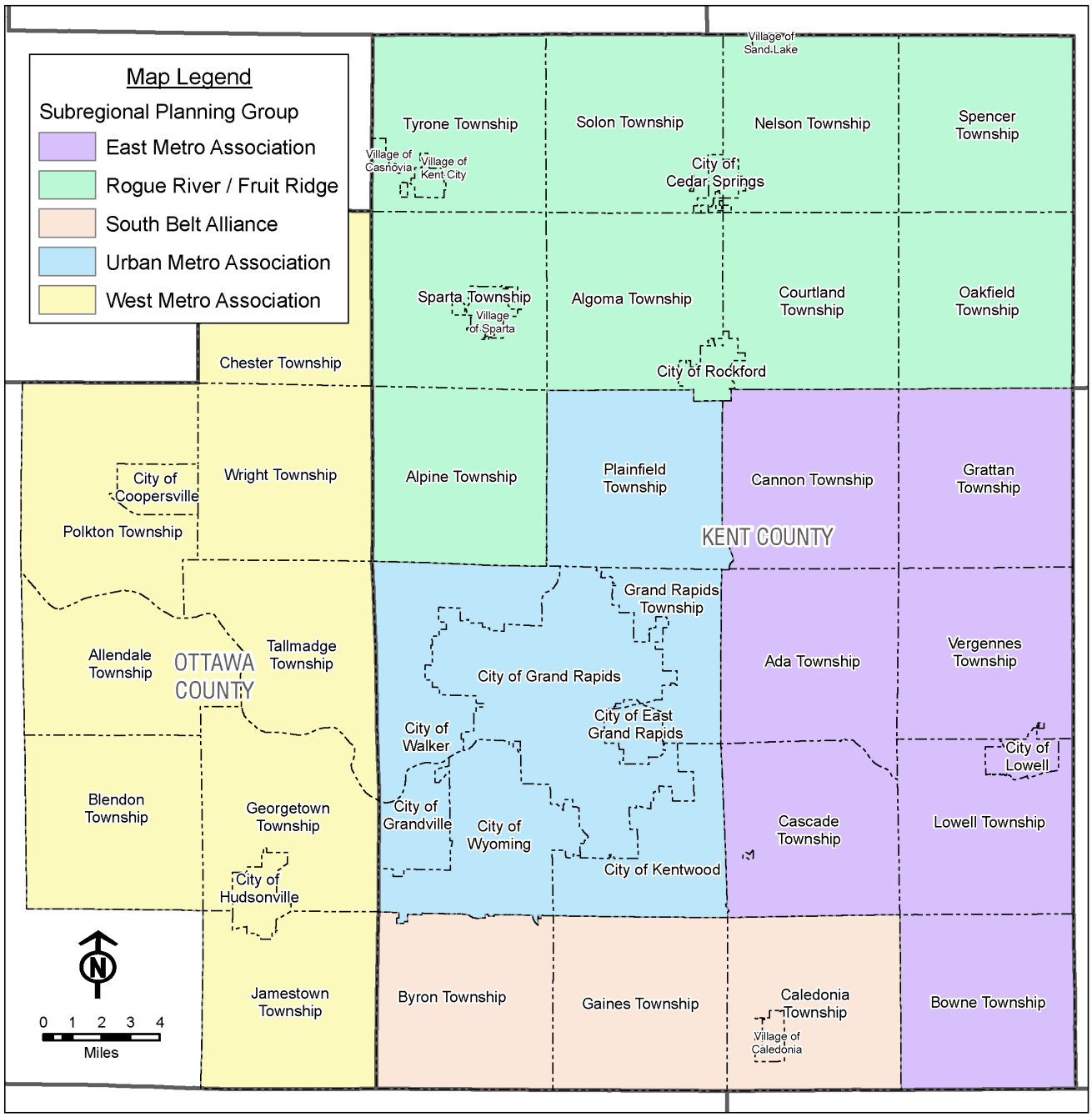


Map 2 – TAZ Map

Subregional Planning Association Groups

GVMC 2035 Long Range Transportation Plan

Subregions were Organized to Plan Future Population and Employment Growth



Map 3 – Subregional Planning Association Groups Map

Methodology

Staff compared the U.S. Census population estimate for 2008 with the 2000 Census population to get the population change. The change in each jurisdiction was then divided by the number of years (8) and projected that difference to create a population estimate for 2009. At this point, staff used the 2009 population projection developed, as compared with the 2000 Census figures, to determine the projected change in population.

Once staff had 2009 estimates the population change from 2000 could be examined by jurisdiction and TAZs identified that significantly increased or decreased. Within those jurisdictions that showed an increase in population, the difference (between 2000 and 2009) was placed a portion of that growth into TAZs known to have development. Unassigned growth was distributed to the remaining TAZs weighted by the population densities from the 2000 census within each jurisdiction. If a jurisdiction experienced a decrease in population, the population change was similarly dispersed by TAZ.

Retail/Non Retail Employment – 2009

In order to have a picture of employment by TAZ in 2009, staff relied on data purchased from Claritas, as has been done for the last several LRTPs. Claritas is a source of accurate, up-to-date demographic data about the population, consumer behavior, consumer spending, households and businesses within any specific geographic area.

Methodology

The Claritas data comes in the form of geographic point data, were each point represents a record of information for each business as well as the name of business, address, number of employees by type (either "retail" or "other"), etc. By geographically joining the TAZ layer with the Claritas point file, staff could summarize the business by TAZ number and summate to determine the number of retail and non-retail employees in each TAZ.

Subregional Process

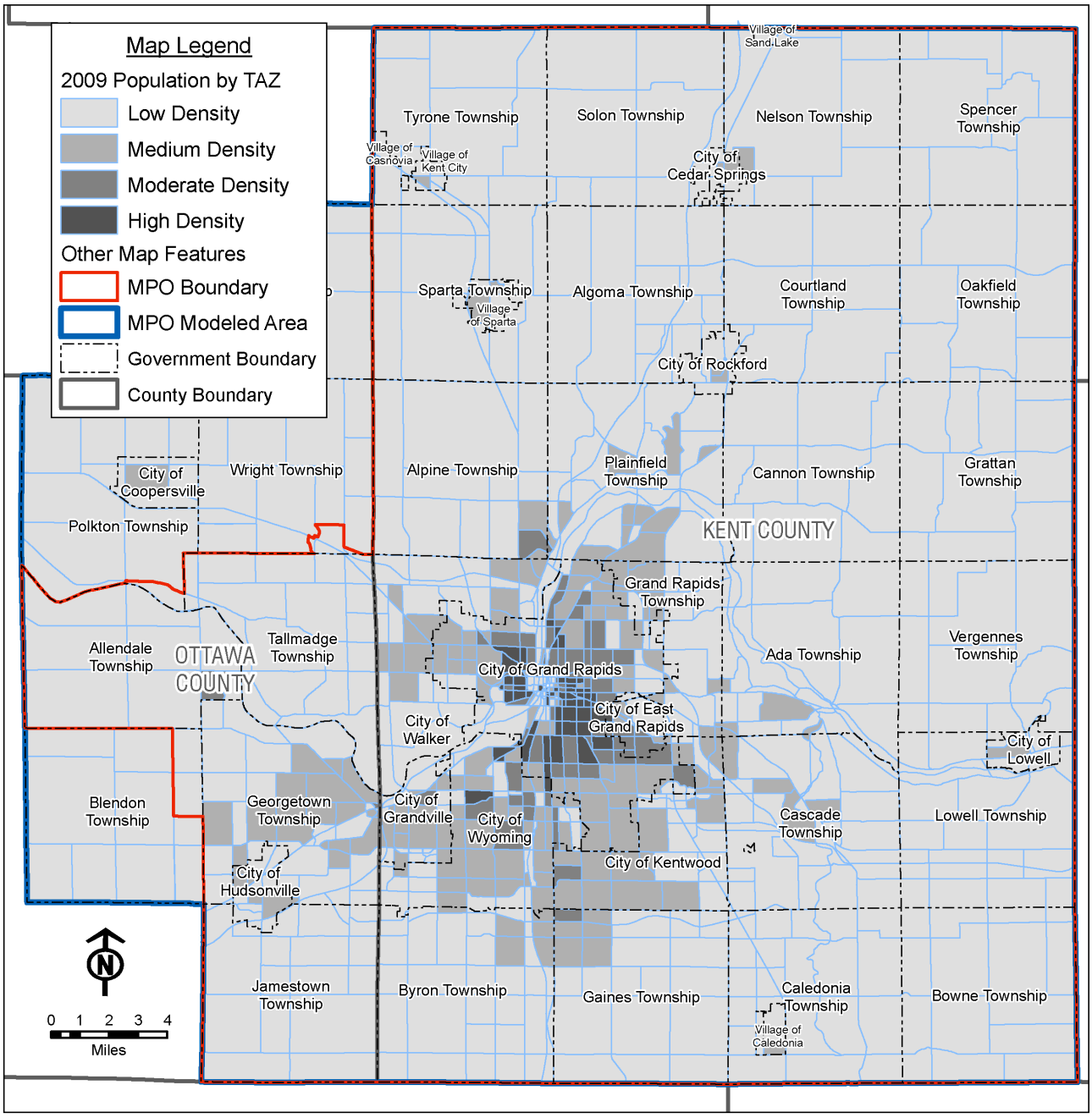
For the 2035 Long Range Transportation Plan Update, a slightly different data collection and projection process was used for the socio-economic data. Instead of collecting the information from a small number of local representatives without input from neighboring communities, each MPO jurisdiction was assigned to one of five subregions. This new methodology is intended to 1) supply the transportation model with more realistic and accurate projections for SE data, 2) assure the broadest participation possible from every MPO jurisdiction and relate transportation decisions between jurisdictions better, 3) and further align the transportation planning process with future land use.

Staff met with each of the MPO jurisdictions on a sub-regional basis with representatives from planning, engineering, public works, as well as elected officials. At these five subregional meetings (one meeting for each subregion) staff explained exactly what socio-economic data we must collect for the transportation model and LRTP, review results from the previous Planning Department Framework study, summarize new REMI population and employment projections for the county, and show how much land-area would be required for the additional residents/employees. At each subregional meeting, the groups narrowed down the total population and employment projections for their area and simultaneously think about the style of development that the growth would take. Each group worked together to lay "chips" for population and employment of various land use types (such as two acre lot subdivision style development or infill mixed use development) on a base map. The base map depicted information as varied as zoning layers, where sewer is available, to data about the most fertile crop land—to give assist the jurisdictions in their decision making.

Current Areas of Population Concentration

GVMC 2035 Long Range Transportation Plan

Population Densities Normalized by Area using Traffic Analysis Zones (TAZ)

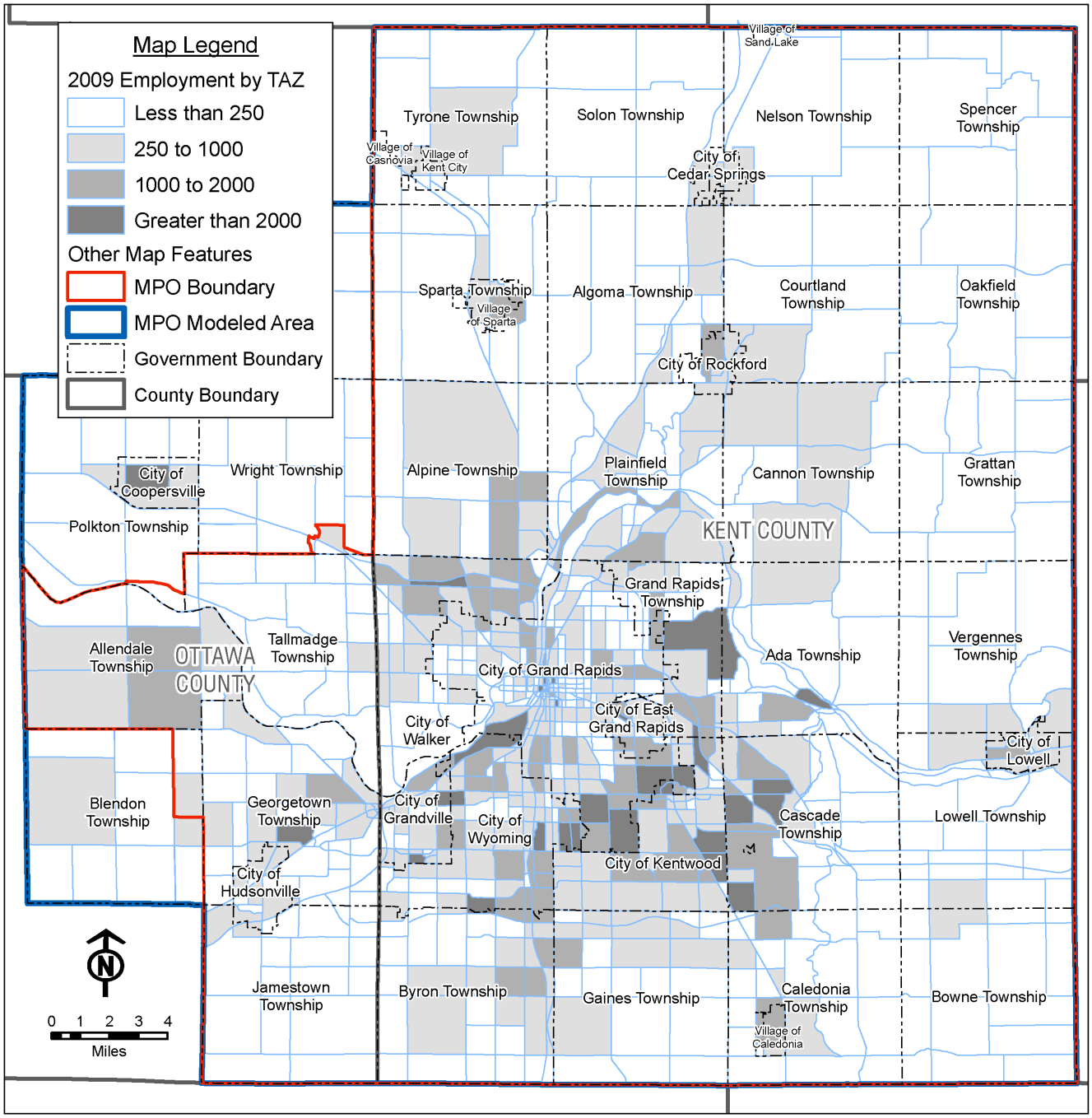


Map 4 – Current Areas of Population Concentration

Current Areas of Employment Concentration

GVMC 2035 Long Range Transportation Plan

Current Employment Densities by Traffic Analysis Zone (TAZ)



Map 5 – Current Areas of Employment Concentration

In the end, the base maps with chips indicated both the style/density of development as well as the geographic location of population increase. Employment numbers were generated alongside population using the same "chip" methodology. These maps were then photographed and overlaid in GIS with the TAZ boundaries. Staff was able to derive population and employment numbers from these maps with minimal modifications.

By holding meetings at a subregional basis, jurisdictions gained a better sense of neighboring growth and transportation needs for collaborative transportation and land use decisions. If a local jurisdiction had private concerns staff was available to meet individually.

Population – 2035

The University of Michigan Regional Economic Model Inc. (REMI) is a great source of information for county-wide population projections in the State of Michigan. For Kent and Eastern Ottawa County, REMI projects a population increase of 135,000 people over the next 26 years. During the subregional meetings, each subregion agreed on what percentage of the growth they felt would/should occur for every subregion. As with previous studies, the subregions were in agreement for the most part about where growth would occur; and after all of the subregional meetings were concluded, staff summarized the meeting input to arrive at basic percentages by subregion.

Figure 8 – Subregional Population Distribution

Subregion	% Future Pop. Increase	Additional Pop. Growth 2009-2035
Rogue River/Fruit Ridge (Tyrone, Solon, Sparta, Alpine, Algoma, Nelson, Courtland, Spencer and Oakfield townships; Villages of Casnovia, Kent City, Sparta; Cities of Cedar Springs and Rockford)	11%	14,850
East Metro (Cannon, Grattan, Ada, Vergennes, Cascade, Lowell and Bowne townships; City of Lowell)	14%	18,900
West Metro (Chester, Polkton, Wright, Allendale, Tallmadge, Blendon, Georgetown and Jamestown townships, Cities of Coopersville and Hudsonville)	17%	22,950
South Belt (Byron, Gaines and Caledonia townships; Village of Caledonia)	19%	25,650
Urban Metro (Plainfield and Grand Rapids townships; Cities of Grand Rapids, Walker, East Grand Rapids, Grandville, Wyoming and Kentwood)	39%	52,650
Total	100%	135,000

Methodology

As described above, each subregion geographically placed their growth upon the base maps and that information was converted to GIS in order to derive population numbers by TAZ. Staff made three modifications to the population data as it was recorded at the subregional meetings.

1. Some of the subregional meetings had enough participation that multiple maps were created. For those subregions staff aggregated the mapped data into a single map.
2. Staff allocated one-third of the total population growth (45,900) to be distributed to every TAZ based on the individual TAZ's growth rate from 2000 to 2009. The remaining two-thirds of the growth was distributed to the TAZs based on the geographic placement provided through the subregional process. The rationalization behind the allocation of one-third "ambient" or "natural" growth to every TAZ based on its historic growth rate is because:
    a. While every jurisdiction was invited, not every jurisdiction participated in the subregional meetings;
    b. It is unrealistic to expect vast geographic areas as having zero growth over the next 26 years, as some of the maps indicated.

3. Staff weighted the increase in population more heavily in the last 10 years (2025-2035). This was done simply because the further into the future one projects, the more uncertain the projections.

Retail/Non Retail Employment – 2035

Using population growth rates and information from REMI it is estimated that the area will see an increase of approximately 74,000 jobs between 2009 and 2035. Of these jobs, about 14% will be retail, 81% will be office jobs, and about 4% will be other non-retail jobs. It is anticipated that there will be about 15% fewer industrial jobs between 2009 and 2035.

Methodology

Through the subregional meeting process population placement, jurisdictions also placed where they anticipated job growth to occur. In addition to employment "chips," some of the population development styles, such as "Infill neighborhood" or "Town Center," included both population and employment totals within a single "chip." To the employment data provided through the subregional process staff made three modifications.

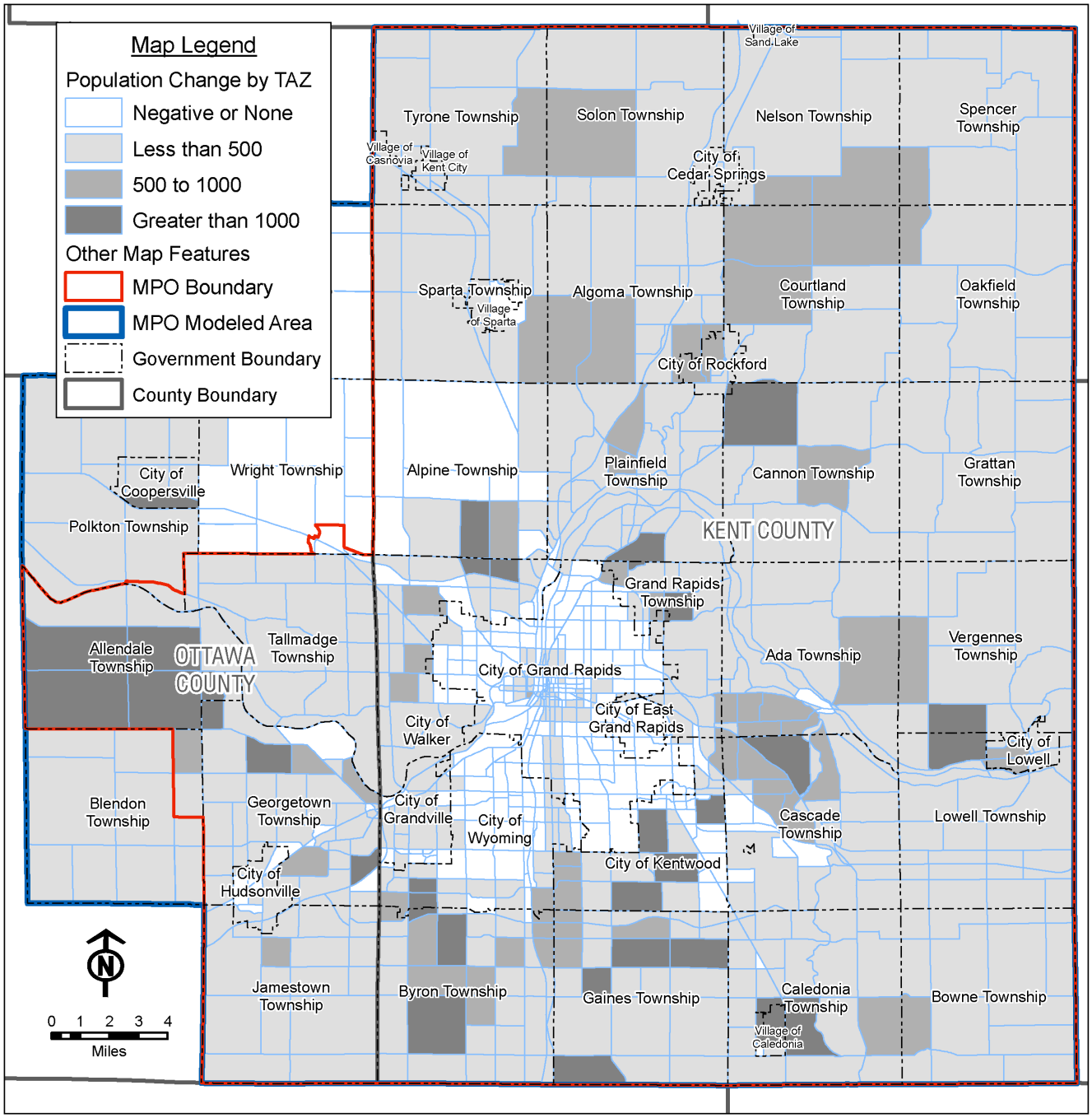
1. As described above, when multiple maps were created, staff consolidated the information (both population and employment) into a single map.
2. Two-thirds of the employment growth between 2009 and 2035, or 49,299 jobs, were distributed as "ambient" or "natural" employment growth to every TAZ based on the percentage of total employment that TAZ had in 2009. Again, the "natural" employment distribution was incorporated because:
    a. Some jurisdictions chose not to participate;
    b. It is unrealistic to expect vast geographic areas as having zero growth
    c. The Subregional meeting process, as designed by the GVMC Land-Use Department for previous growth scenarios, is strongest for recording population growth/style.
3. The remaining one-third or 24,723 jobs were distributed to the TAZs based on the geographic placement provided through the subregional process
4. Staff weighted the increase in employment more heavily in the last 10 years of the plan to track population growth and because projections far into the future are increasingly uncertain.

Once the SE data was prepared, it was forwarded to the GVMC Technical and Policy Committees for review and revision. Every jurisdiction was given the opportunity to adjust the TAZ population and employment projections for accuracy. Once approved the SE data was incorporated into the Transportation Modeling Process.

Projected Areas of Population Change

GVMC 2035 Long Range Transportation Plan

Population Change Projected to 2035 using Traffic Analysis Zones (TAZ)

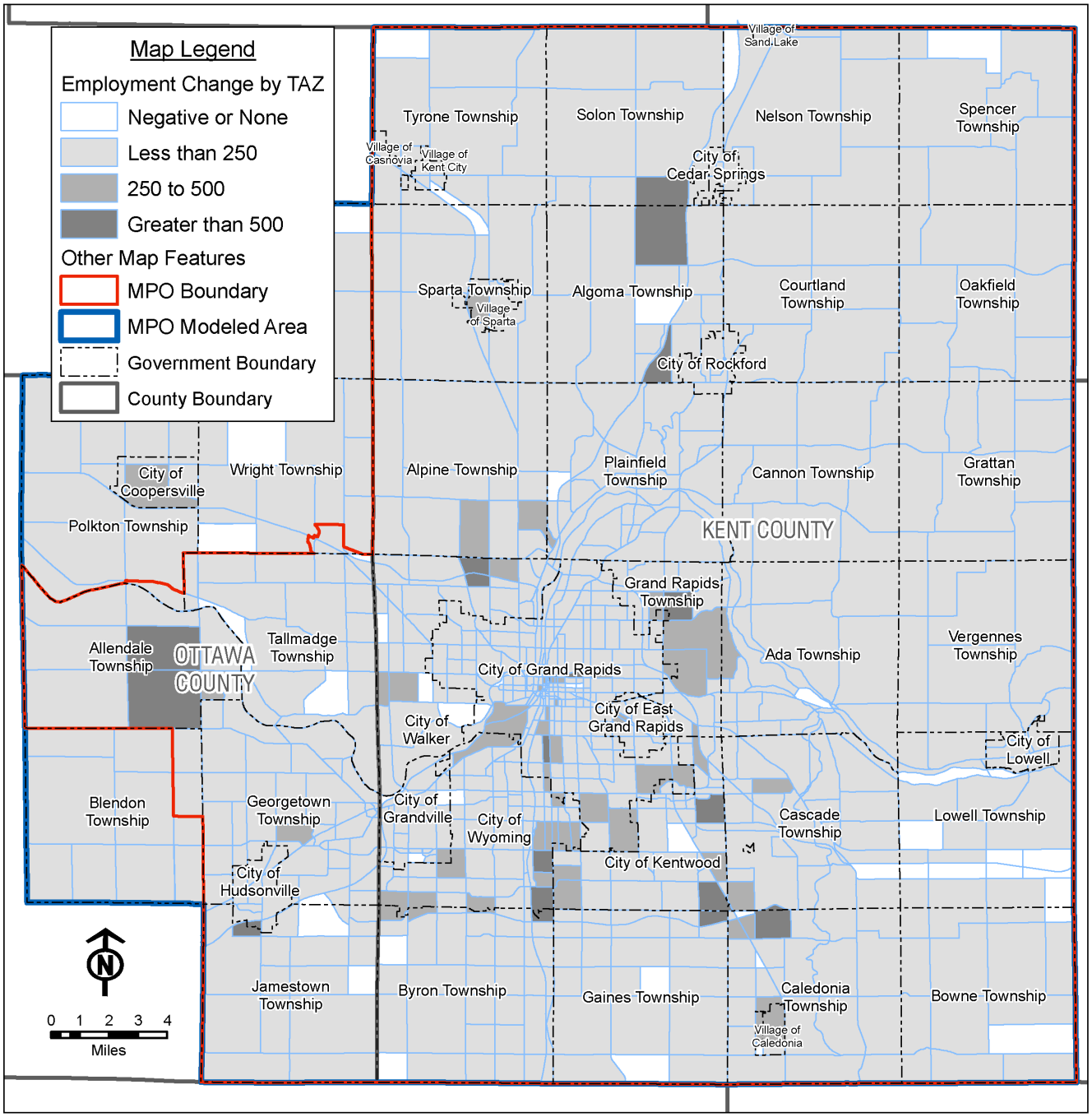


Map 6 – Population in 2035

Projected Areas of Employment Change

GVMC 2035 Long Range Transportation Plan

Employment Change Projected to 2035 using Traffic Analysis Zones (TAZ)



Map 7 – Employment in 2035

Chapter 7: Transportation Modeling Process

GVMC Travel Demand Model

Once all of the socio-economic data, including population, employment, dwelling units, income group, etc., has been gathered and the most recent traffic counts are compiled, a transportation model is then used to project where roadway deficiencies are likely to occur by the year 2035. Information on current highway geometric is gathered and included in the model. Information such as number of lanes, capacity, roadway length, traffic count and speed are included in modeling calculations. The GVMC travel demand model steps are summarized as follows:

- Network and traffic analysis zone (TAZ) definition and development. The GVMC roadway network was established based upon the approved National Functional Classification for the region. Every facility that is eligible for federal funding has been included in the model. The Traffic Analysis Zone (TAZ) is the geographic unit used for trip making data in the model. TAZs are used to divide the entire region into manageable "zones" to which socioeconomic data can be associated. (See TAZ Map in Chapter 6.)
- External Trips. External trips are trips with at least one trip end outside of the model area. External stations are determined by GVMC and Michigan Department of Transportation (MDOT) staff to represent the major roadways that lead into and out of GVMC model area.
- Trip generation. Trip generation forecasts the number of motorized personal trips produced and attracted in each TAZ in the study area. Socioeconomic data are used to estimate the number of personal motorized trips within the study area.
- Trip distribution. Trip distribution procedure determines the destination of the trips produces in each zone and distributes the trips to all other zones in the study area.
- Trip assignment. Trip assignment procedure determines the street network paths that the distributed trips will take. The assigned traffic volume on each link can then be compared with observed traffic counts to validate travel demand model.

The results of the Grand Rapids regional model represent calibration to the year 2009. The last full calibration was completed in 2009. Based on discussions between GVMC and MDOT staff, four townships in Ottawa County has been added into GVMC model area. Therefore, the model network and TAZs have been rebuilt to accommodate the changes. This is why the Socio-economic data collected was for an area larger than the MPO boundaries and included Chester, Polkton, Wright, and Blendon Townships. (See Subregional Map in Chapter 6.)

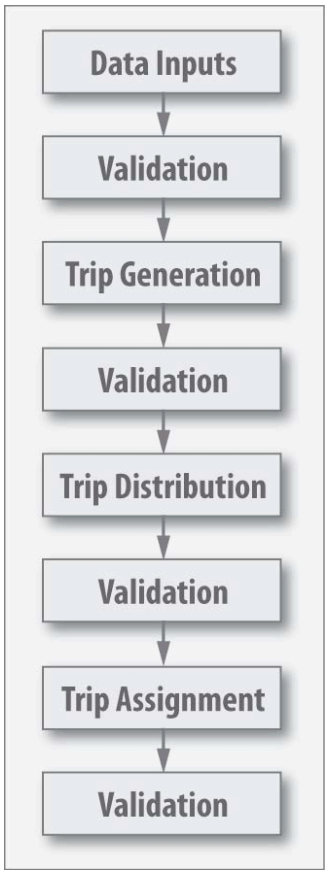


Figure 9 – Reasonableness Check Process

The GVMC travel demand model deploys TransCAD software to develop four-step modeling process. GVMC Transportation staff maintains a stand-alone document called the Model Calibration Report. This report provides documentation and technical details of the model calibration process. The report also provides a more detailed look at the modeling process. In addition, a reasonableness

check is performed after each individual modeling step instead of a reasonableness check based on the overall results of the travel model. The advantage of this approach is that it can reduce aggregation errors in each modeling step. The figure at right shows the process of reasonableness check.

The primary goal of the model calibration is to replicate existing traffic conditions for the base year, and then determine a deficiency list (road segments anticipated to be over capacity) for current and future planning. Model results are used to develop the Congestion Management Process as well as the Long Range Transportation Plan. As the analysis in the calibration report indicates, the GVMC model accomplishes this with a high level of accuracy. The model calibration result demonstrates that the GVMC model exceeds the calibration criteria established by the Federal Highway Administration (FHWA) and the MDOT and the much stricter standards traditionally used by GVMC staff. Based upon the calibration results presented in the calibration report, the GVMC model is understood to be fully calibrated and will serve as an accurate tool for highway transportation planning within the study area for the future years. The calibration report can be found on the GVMC website.

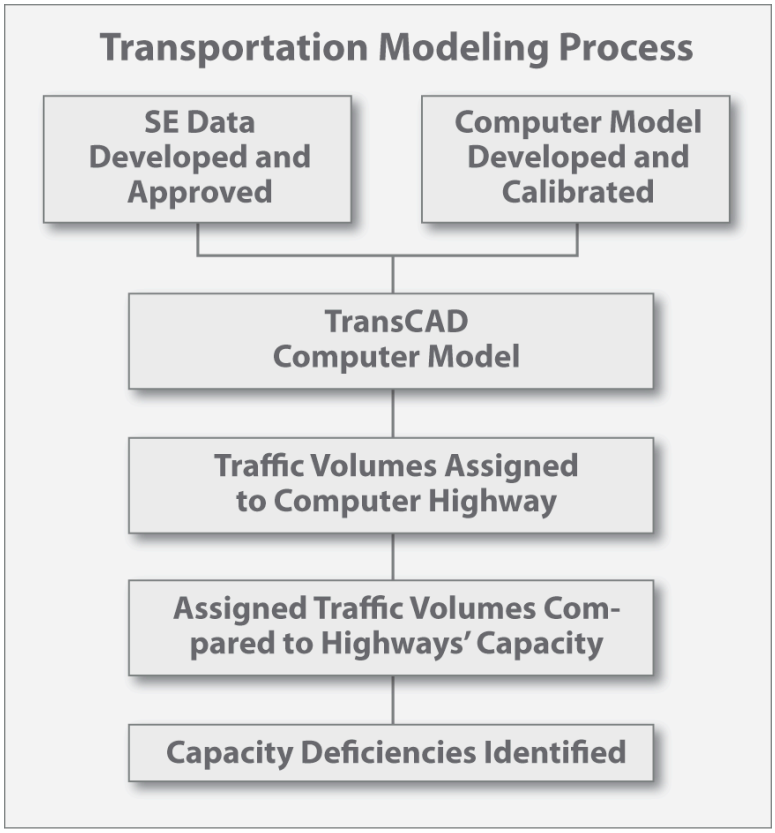


Figure 10 – Transportation Modeling Process

After deficiencies have been identified through the modeling process, GVMC staff use the GVMC Congestion Management Process (CMP) to determine the best strategy for addressing each identified congested location. A preferred group of alternatives are identified at this stage and an air quality analysis is completed to confirm that the activities proposed in the LRTP are not detrimental to air quality conditions in the metropolitan area. A more in depth explanation of the process used to make this determination is contained in the Air Quality Conformity Analysis in Chapter 17 and in Appendix F.

The figure below summarizes the Transportation Modeling Process undertaken in the Grand Rapids metropolitan area.

Chapter 8: Congestion Management Process

The Congestion Management Process (CMP) is intended to be a systematic way of monitoring, measuring and diagnosing the causes of current and future congestion on a region's multi-modal transportation systems; evaluating and recommending alternative strategies to manage or mitigate current and future regional congestion; and monitoring and evaluating the performance of strategies implemented to manage or mitigate congestion.

Background

Federal transportation legislation (SAFETEA-LU) requires Metropolitan Planning Organizations to develop and implement Congestion Management Systems (CMP) as part of the metropolitan transportation planning process (23 CFR 500).

In Transportation Management Areas that are in non-attainment for ozone or carbon monoxide (CO) standards, Federal funds may not be expended for any new project that will significantly increase the carrying capacity for single-occupant vehicles (SOVs) unless the project results from a CMP. For the Grand Rapids area, a significant increase in carrying capacity for SOVs is defined as a project that adds one or more through-travel lanes for a distance in excess of one mile or more on a roadway classified as a Collector or higher on the Federal functional class map for the area.

GVMC MPO Road Mileage

Federal-Aid Roadways	1,564 miles
State Trunkline Highway	268.0 miles
State Trunkline Freeway	110.6 miles
Interstate Highways	54.6 miles
Non-Interstate Freeways	56.1 miles
State Trunkline Non-Freeway	157.4 miles

In the early 1990s MPO staff developed a CMP (then called Congestion Management System CMS) to meet the federal regulations and serve the transportation planning needs of the urban area. The CMP includes an ongoing method to provide information on the performance of the transportation system and on alternative strategies to alleviate congestion and enhance mobility. The CMP emphasizes effective management of existing facilities through use of travel demand and operational management strategies. In cases where these methods are deemed ineffective to resolve the congestion issue of a corridor, capacity enhancing projects may be selected as the preferred alternative.

Congestion Defined

Highway congestion is caused when traffic demand approaches or exceeds the available capacity of the highway system. Though this concept is easy to understand, congestion can vary significantly from day to day because traffic demand and available highway capacity are constantly changing. Traffic demands vary significantly by time of day, day of the week, and season of the year, and are also subject to significant fluctuations due to recreational travel, special events, and emergencies (e.g. accidents and evacuations). Available highway capacity, which is often viewed as being fixed, also varies constantly, being frequently reduced by incidents (e.g. crashes and disabled vehicles), work zones, adverse weather, and other causes.

To add even more complexity, the definition of highway congestion also varies significantly from time to time and place to place based on user expectations. An intersection that may seem very congested in a rural community may not even register as an annoyance in a large metropolitan area. A level of congestion that users expect during peak commute periods may be unacceptable if experi-

enced on Sunday morning. Because of this, congestion is difficult to define precisely in a mathematical sense—it actually represents the difference between the highway system performance that users expect and how the system actually performs.

Congestion can also be measured in a number of ways—level of service, speed, travel time, and delay are commonly used measures. However, travelers have indicated that more important than the severity, magnitude, or quantity of congestion is the reliability of the highway system. People in a large metropolitan area may accept that a 20 mile freeway trip takes 40 minutes during the peak period, so long as this predicted travel time is reliable and is not 25 minutes one day and two hours the next. This focus on reliability is particularly prevalent in the freight community, where the value of time under certain just-in-time delivery circumstances may exceed $5 per minute.

The ability to identify and measure different types of congestion is key to developing appropriate responses. Recurring congestion is defined as the relatively predictable congestion caused by routine traffic volumes operating in a typical environment. Non-recurring congestion is defined as unexpected or unusual congestion caused by unpredictable or transient events such as accidents, inclement weather, or construction. The CMP includes a third category, Corridor Progression, to addresses congestion caused within corridors at localized intersections.

Recurring Congestion

GVMC determines a roadway is congested when the total number of vehicles exceeds the number of vehicles that roadway was designed to safely carry. For instance a two-lane road in a suburban area may be designed to carry 13,200 vehicles per day. When the count reaches and average volume of 13,201 vehicles per day, that facility is deemed "congested." This does not mean that adding capacity will occur, merely the facility will be flagged as deficient and studied further to determine a means to alleviate that congested situation.

In most situations, a remedy somewhat less than added capacity is selected as the preferred alternative. This represents a change of focus from past years when a widening project may have been the only solution considered. GVMC is taking this conservative approach in a effort to provide a transportation infrastructure that is as sustainable as possible and still meets the demands of the traveling public.

Future (2035) Volume is determined using a travel demand model built on the TransCAD platform. Information regarding projected population and employment statistics are fed into the model. TransCAD uses this information to project traffic volumes/demand on each of the federal aid facilities in the region. Additional information on the model can be found in Chapter 7.

Staff processes the model output and develops a list of facilities that are expected to be deficient by the year 2035. This list is the basis for programming corridor related capacity deficiencies on the network that are included in the 2035 Long Range Transportation Plan. This deficiency list is then analyzed to determine the most efficient sustainable options for alleviating the congested conditions projected to occur in the future.

Corridor Progression/Operations

In many instances the roadway facility has not exceeded its designed capacity yet congestion will be experienced. Most times this congestion is caused by delay experienced at signalized intersections. Individual road segments can operate as they were designed, only to have a poorly timed signals cause unnecessary delay to the traveling public. GVMC has begun a program to track travel time on major corridors to determine the level of congestion on the corridor level caused by sources other than roadway capacity.

While corridor progression is vital to keeping people and goods moving efficiently, individual intersections may need upgrades both geometric and technological to maximize efficiency. With nearly 600 signalized intersections in the region, and the lack of a comprehensive inventory it is difficult to

establish a complete determination of need. In lieu of an inventory, GVMC will strive to maximize efficiencies along these corridors of significance. Through focused investment, these key corridors can be upgraded and will move people and goods as efficiently as possible.

The primary operational cost for the system is signalized intersections. There are three primary costs that have traditionally been funded through the MPO, upgrades of the physical signals including the heads, controller boxes, detectors etc, communications upgrades, and optimizing the signals to work in unison, moving people and goods throughout the area as efficiently as possible. Upgrades and communications investments are done on the entire federal aid system. The optimization efforts are focused on key transportation corridors throughout the region.

Signal/Corridor Upgrades

As is the case with the entire transportation system, signal equipment wears out or becomes obsolete and needs replacement/upgrading. There are several hundred signalized intersections on the federal aid system in the area. The reliability of this equipment is crucial to the continued and efficient operation of the transportation system. Typically one or two corridors can be upgraded in a year's time. Over the period of 15–20 years most of the major corridors can be retrofit with the latest technology.

Communications Upgrades

The ability for the individual intersection controllers to communicate with other controllers and a centralized control center is important to maintaining traffic flows in the region. Technology is being deployed that will allow for improved signal timing and real time operation of the signal system in times of planned and unplanned events that are outside the normal operating conditions of the system. These communications upgrades will make the system more responsive to real time demand.

Corridor Progression/ Signal Optimization

The third piece in the transportation operations puzzle is Corridor Progression/Signal Optimization. This process determines an optimized signal timing plan that utilizes all available technology and data to allow the corridor to operate as efficiently as possible and allow for maximum capacity, possibly eliminating the need for costly added through lanes. GVMC has supported these efforts for nearly a decade. As travel patterns change over time, these efforts will need to continue to maintain the maximum efficiency of the system. GVMC monitors corridors of significance semi-annually through the use of a Travel Time Index (TTI) effort.

Non-recurring Congestion

Non-recurring congestion includes the development and deployment of strategies designed to mitigate traffic congestion due to non-recurring causes, such as crashes, disabled vehicles, work zones, adverse weather events, and planned special events. Approximately half of all congestion is caused by temporary disruptions that take away part of the roadway from use—or "nonrecurring" congestion.

The three main causes of nonrecurring congestion are: incidents ranging from a flat tire to an overturned hazardous material truck (25 percent of congestion), work zones (10 percent of congestion), and weather (15 percent of congestion). Nonrecurring events dramatically reduce the available capacity and reliability of the entire transportation system. This is the type of congestion that surprises the traveling public. We plan for a trip of 20 minutes and we experience a trip of 40 minutes. Travelers and shippers are especially sensitive to the unanticipated disruptions to tightly scheduled personal activities and manufacturing distribution procedures. Aggressive management of temporary disruptions, such as incidents, work zones, weather, and special events can reduce the impacts of these disruptions and return the system to "full capacity."

In recent years a great deal of time and funding has been dedicated to this form of congestion. The deployment of Intelligent Transportation Systems (ITS) that includes cameras and automated detection on the freeways and main arterials has greatly advanced the areas capabilities when it comes to detecting and responding to non-recurring congestion.

Another tool in addressing non-recurring congestion is the implementation of a courtesy patrol. To improve the safety and efficiency of the freeway system, many cities and states have implemented a Freeway Service Patrol (FSP). Although the name, hours of service, operational procedures, and equipment may vary from one location to the next, the goal remains the same: to clear incidents as quickly as possible and reduce the likelihood of congestion and secondary incidents. The services provided vary depending on the situation, and typically range from providing assistance to emergency responders at the scene of a crash, to changing a flat tire or providing gas to a stranded motorist.

In 2007, the MDOT completed a feasibility study to determine if a service of this nature was warranted for the GVMC area. The findings of that report indicate that an initial overall return on investment could be as high as 5:1 with a very conservative service in place.

CMP Characteristics

The 2010 GVMC Congestion Management Process consists of 8 major characteristics. These characteristics include:

- Develop Congestion Management Objectives
- Identify Area of Application
- Define System of Interest
- Develop Performance Measures
- Institute System Performance Monitoring Plan
- Identify/Evaluate Strategies
- Implement Strategies/Improvements
- Monitor Effectiveness

1. Congestion Management Objectives

Historically GVMC has traditionally relied on measures that related to capital improvements such as volume to capacity (V/C) and level of service (LOS). This revision of the CMP does not completely abandon that traditional approach. Current and future V/C and LOS are measures that GVMC will continue to monitor. This new GVMC CMP places a new emphasis on operations oriented measures.

Operations oriented measures are intended to focus on the experience of the system users. This approach is able to address non-recurring congestion where the traditional approach could not. This shift in focus allows for a transition from facility oriented measures such as traffic counts and speed, to trip related, user oriented measures such as mobility. GVMC and its member transportation facility providers will strive to improve system performance by enhancing Mobility, Reliability, Productivity and Safety.

The following are objectives designed to address many types of congestion on many types of facilities:

Objective 1: Improve transportation system productivity by addressing capacity deficient miles on the federal aid system by funding improvements that provide sufficient capacity for the movement of people and goods throughout the region. Capacity is defined as 24 hour highway capacity or daily seats available on transit.

Objective 2: Enhance mobility by reducing overall travel times and delays along "corridors of significance" by providing adequate intersection capacity for the throughput of people and freight and by strengthening the efficiency of corridor operations through continued investment in signal timing/progression efforts.

Objective 3: Increase the reliability of the transportation system and reduce travel delay caused by incidents by continuing enhancement of real time automated incident detection technologies and working toward improved response protocol when incidents are identified.

2. Areas of Application

For each of the three CMP objectives, "Areas of Application" must be determined. An Area of Application is the geographic area that the CMP process will be applied. At a minimum the Area of Application should be the MPO study area. For the GVMC CMP this Area of Application has been determined to be all of Kent County and the eastern portions of Ottawa County including Allendale, Georgetown, Jamestown and Tallmadge Townships as well as the City of Hudsonville.

3. Systems of Interest

A "System of Interest" is the specific transportation subset within the Area of Application that will be the focus of a particular portion of the CMP. Traditionally, the entire MPO Metropolitan Area Boundary (MAB) would be the area of focus for the CMP. In the past this approach was sufficient. For many parts of the new CMP the entire transportation system within the region will serve as the System of Interest. Due to the exorbitant costs associated with the types of data required for this enhanced CMP, a subset of the entire area in some cases is deemed a more practical approach.

For Objective 1 (Improve transportation system productivity by addressing capacity deficient miles on the federal aid system) the System of Interest is defined by the transportation system in the entire MPO MAB.

For Objective 2 (Enhance mobility by reducing overall travel times and delays along "corridors of significance") the System of Interest includes a listing titled "Corridors of Significance".

For Objective 3 (Increase the reliability of the transportation system and reduce travel delay caused by incidents) the System of Interest is defined by the corridors which have closed circuit video surveillance capabilities and MDOT operations center coverage. As the coverage expands, this area will be redefined with CMP updates.

4. Performance Measures

The use of performance measures to assess the effectiveness and efficiency of the transportation network and of operations has greatly increased in recent years. Rather than using highly technical measures such as level of service, measures such as speed, travel time, and delay are used to describe mobility and access at various levels, from the entire regional system to particular corridors of significance, and even intersection level.

The GVMC CMP defines performance measures for each of the three objectives as follows:

For Objective 1 (Improve transportation system productivity by addressing capacity deficient miles on the federal aid system) there will be 2 performance measures. The primary performance measure will be the total number of capacity deficient miles on the federal aid network. The second performance measure will be the Vehicle Miles Traveled (VMT) by congestion level.

For Objective 2 (Enhance mobility by reducing overall travel times and delays along "corridors of significance") there are two performance measures. The first performance measure is the overall level of service for each of the specified intersections within the "corridors of significance." For an intersection to be selected for further analysis, it would be rated at a LOS of "D" or worse. At LOS

there is significant delay experienced. The second performance measure is travel time along identified corridors of significance subdivided by major cross streets.

For Objective 3 (Increase the reliability of the transportation system and reduce travel delay caused by incidents) the performance measure will be the incident clearance times registered by the MDOT ITS Operations Center.

5. System Performance Monitoring Plan

Historically, the availability of data has been the greatest challenge when determining if performance measures are meeting their mark. With the advent of ITS technology for freeway and arterial management, detector data is increasingly available for major facilities in many metropolitan areas. The GVMC area is no different. Beginning in 2010, the Grand Rapids Metro area will roll out the first of many phases of real time traffic detection. By the time the project is complete most of the urban freeways will be instrumented with detection at a minimum 1 mile increments. Over time this technology will be placed at strategic locations on many of the areas major arterial corridors.

The Final Rule on Metropolitan Transportation Planning calls for "a coordinated program for data collection and system performance monitoring to assess the extent of congestion, to contribute in determining the causes of congestion, and evaluate the efficiency and effectiveness of implemented actions."

Since the mid 1980s when the MPO was known as GRETS, the area has been a leader in the collection and dissemination of transportation related data. Currently, GVMC maintains a traffic count data base that includes nearly 2,000 locations. Each of the links in the modeled federal aid network are counted a minimum of every three years.

For Objective 1 (Improve transportation system productivity by addressing capacity deficient miles on the federal aid system) there will be a two fold approach to the performance monitoring plan. The first step will be to maintain the traffic count database on the entire network. Count data will be collected at each location in the modeled network. Second, GVMC will maintain a transportation travel demand model to project the impact of transportation and development projects will impact congestion levels on the transportation system.

For Objective 2 (Enhance mobility by reducing overall travel times and delays along "corridors of significance") the performance monitoring plan will involve collecting travel times for each of the identified "Corridors of Significance". In addition, intersections within the "Corridors of Significance" that exceed LOS "D" will be flagged for review. This review will take place as updates are made to the signal progression plans (every 5–7 years). A report will be generated for each MPO Long Range Plan (every 3–4 years) that identifies deficient intersections, efforts made to alleviate congested conditions, and the results of those efforts.

For Objective 3 (Increase the reliability of the transportation system and reduce travel delay caused by incidents) the performance measure will be average clearance times as noted by the MDOT ITS/Operations Center. In the past year MDOT has begun a process where incidents are monitored for clearance time efficiency. Reports are generated monthly that details detected incidents within view of the camera network available to the center. These reports will be the basis of the monitoring plan. As the camera coverage expands so to will the coverage of the reporting.

6. Identify/Evaluate Strategies

Selection of the appropriate performance measures, analytical tools, and available data enables the identification of congested locations. Congestion may be recurring or non-recurring; the CMP should be capable of analyzing both types of congestion. Recurring congestion, which takes place at predictable intervals at particular locations, can generally be traced to a specific cause, such as a physical bottleneck or to conditions such as sun glare. Causes of non-recurring congestion may be more difficult to isolate, and solutions may require non-traditional strategies.

The GVMC CMP provides information about a wide range of congestion management strategies applicable to the Grand Rapids area. Using a CMP "cafeteria plan," the MPO committees can select the appropriate solution for recurring congested locations.

GVMC CMP strategies include:

A. Highway Projects,

B. Transit Projects,

C. Intelligent Transportation System (ITS) and Transportation System Management (TSM) Strategies,

D. Transportation Demand Management (TDM) Strategies,

E. Land Development Strategies,

F. Bicycle and Pedestrian Projects, and

G. Access Management Strategies.

A. Highway Projects

The Long Range Transportation Plan for the area presents the potential highway infrastructure projects that may be applicable for the Grand Rapids area. The regional travel model is the primary analysis tool to assess transportation impacts.

B. Transit Projects

Transit services and infrastructure projects have traditionally been implemented in regions to provide an alternative to automobile travel potentially reducing peak-period congestion and improving mobility and accessibility for commuters. The new ITP Master Plan, currently under development, will present the transit projects that may be applicable for the area. These projects will tend to reduce system wide VMT in relatively small increments but do improve corridor and system wide accessibility, improve roadway travel times, and decrease congestion on the roadway system.

C. Intelligent Transportation System (ITS) and Transportation System Management (TSM)

Intelligent Transportation System (ITS) and Transportation System Management (TSM) strategies have traditionally focused on improving the operation of the transportation system without major capital investment and cost. While ITS strategies may be costly compared to more traditional TSM strategies, their relative congestion reduction impacts can be significant. The CMP Technical Report contains the ITS and TSM strategies that may be applicable for the Grand Rapids area. The strategies identified in that document can build upon current ITS initiatives in the region such as the traffic signal coordination program

D. TDM Measures

Transportation demand management (TDM) strategies are used to reduce travel during the peak, commute period. They are also used to help the area meet air quality conformity standards, and are intended to provide ways to provide congestion relief/mobility improvements without high cost infrastructure projects. The CMP Technical Report presents the TDM strategies that may be applicable for the region. These strategies can potentially build upon current initiatives being implemented in the region such as the local ride share program, funded through the MPO.

E. Land Development Strategies

Land development strategies have been used in some areas to manage transportation demand on the system, and to help agencies meet air quality conformity standards. Land development strategies can include limits on the amount and location of development until certain service standards are met, or policies that encourage development patterns better served by public transportation and non-

motorized modes. The Grand Valley Metropolitan Council Blueprint strives to work with local jurisdictions to plan for land development strategies that strike an appropriate balance between land use and transportation.

F. Bicycle and Pedestrian Projects

Non-motorized modes of transportation, such as biking and walking, are often overlooked as alternatives for alleviating congestion. Investments in these modes can increase safety and mobility in a cost-efficient manner, while providing a zero-emission alternative to motorized modes. The strategies listed can be implemented in the area with relatively little cost, but tend to have local rather than system wide impacts. The effectiveness of an investment in non-motorized travel depends heavily on coordination with local land use policies and connections with other modes, such as transit, for longer distance travel. Safety and aesthetics should also be emphasized in the design of bicycle and pedestrian facilities in order to increase their attractiveness.

G. Access Management

Access management is a broad concept that can include everything from curb cut restrictions on local arterials to minimum interchange spacing on freeways. Restricting turning movements on local arterials can reduce accidents and prevent turning vehicles from impeding traffic flow. Similarly, eliminating merge points and weaving sections at freeway interchanges increases the capacity of the facility. The access management strategies listed in the CMP Technical Document are applicable to the area, and can be used in either the modification or original design of a facility.

7. Implement Strategies/Improvements

This step involves the implementation and management of the defined strategies. GVMC will work closely with its member operating agencies that have participated in the CMP process throughout the implementation of congestion management strategies and activities. It is at this point that information gathered through the CMP process will be applied to establish priorities in the Long Range Transportation Plan and Transportation Improvement Program thereby facilitating the implementation of the congestion management process. This ensures a linkage between the CMP and funding decisions.

Integration into MPO Planning Process

The GVMC CMP is only one component of the overall metropolitan planning process. It is integrated with the Long Range Transportation Plan (LRTP), Transportation Improvement Program (TIP) and MIS and Corridor Studies through its data and analysis functions. These relationships are summarized below.

Relationship to the LRTP

The GVMC CMP is related to the development of the regional LRTP in three ways:

- The CMP provides system performance information which may be used by GVMC staff to identify corridors or segments for detailed analysis in Corridor or Major Investment Studies, as recommended by the LRTP; and
- The CMP Cafeteria Plan provides alternative congestion management strategies for consideration in MIS and Corridor Studies, which ultimately provide recommendations for preferred strategies to be incorporated into the LRTP.
- The CMP provides system performance information for local jurisdictions which sponsor improvements. This information may influence their recommended projects for corporation in the LRTP.

Relationship to the TIP

The GVMC CMP is related to the development of the regional Transportation Improvement Program in three ways:

- The CMP provides system performance information for project sponsors, which may influence their recommended projects for incorporation in the TIP;
- The CMP provides system performance information for use by GVMC in evaluating projects nominated for inclusion in the TIP; and
- The CMP provides information about alternative congestion management strategies considered for SOV capacity projects to be advanced using federal funds.

Relationship to Major Investment Studies (MIS) and Other Special Studies

The GVMC CMP is related to the development of MIS and Corridor Studies in two ways:

- The CMP provides system performance information which may be used by GVMC to identify corridors or segments for detailed analysis in Corridor or Major Investment Studies; and
- The CMP Cafeteria Plan provides alternative congestion management strategies for consideration in MIS and Corridor Studies. When traffic congestion is referenced in the Purpose and Need statement for an MIS, the MIS should consider the congestion management strategies included in the GVMC CMP Cafeteria Plan as a starting point for the development of alternative strategies. This does not preclude the MIS from considering other strategies that may not be in the CMP Cafeteria Plan, nor does it require that the MIS select a strategy from the CMP Cafeteria Plan as the preferred alternative.

Relationship to the Regional Intelligent Transportation Systems (ITS) Architecture

All ITS strategies implemented from the CMP Cafeteria Plan will be consistent with the Regional ITS Architecture. GVMC will ensure that both the Regional ITS Architecture and the CMP Cafeteria Plan are reviewed for consistency and reconciled as necessary when either is updated.

Regionally Significant Projects not in CMP

Occasionally, regionally significant projects on facilities not included on the CMP network are considered for implementation. Due to the fact that all federal aid urban facilities in the study area are included in the GVMC CMP, only new facilities would fall into the category of regionally significant facilities not in the CMP. In these cases CMP cafeteria options are followed as described below:

An analysis of alternatives, including TDM and TSM, is conducted in the context of a Major Investment Study, Corridor Study or development of a NEPA Environmental Document to develop the preferred strategy for the project;

The development of alternatives for the MIS, Corridor Study or NEPA Document includes a review of the strategies catalogued in the GVMC CMP cafeteria plan;

The documentation of the study describes how the CMP cafeteria plan strategies were addressed in the development of the preferred strategy.

8. Monitoring Strategy Effectiveness

GVMC as administrators of the CMP will periodically evaluate the effectiveness of strategies identified through the CMP. GVMC will continue to utilize the performance measures developed through the CMP to determine the effectiveness of the selected strategies. In assessing the degree to which the CMP strategies addressed the problems of congestion, GVMC will also assess the issue of how well, and to what extent the strategies were implemented, and to consider factors that may have con-

tributed to the success or failure of the selected projects or programs. This evaluation will take place prior to each full update of the regions Long Range Transportation Plan.

This approach will require a plan to collect pre-implementation data, as well as make preparations for an ongoing monitoring process. This ongoing monitoring should isolate even marginal changes in system performance that may be associated with the improvement.

Based on the feedback from the assessment process, GVMC will make appropriate adjustments. These adjustments may be with respect to the strategies considered, or may reflect back to the performance measures used; the data collection and management component of the process; or the analytical methods and tools applied. The CMP will be subject not only to periodic review, but to a timetable for upgrading the tools and methods to keep pace with current practice.

CMP Capacity Needs Lists

The full GVMC Congestion Management Process is available in our office or on the gvmc.org website. This technical document contains detailed maps, photos, segment data, and preferred alternatives for each road segment addressed in the CMP. The report also contains a list of signalized intersections with capacity related needs.

Chapter 9: Pavement Management System

For more than 100 years the municipalities in the Grand Rapids metropolitan area have been developing, improving, and maintaining a viable transportation system for the residents and businesses to use for the expressed purpose of efficiently moving people and goods throughout the region and beyond. To assist in the monitoring of the roadway infrastructure, the Grand Valley Metropolitan Council has made a conscious decision to be a national leader in the field of pavement management and was one of the first MPOs in the United States to employ a pavement management system.

Pavement Management System History

In 1995, a subcommittee of the GVMC Technical Committee was formed to evaluate various needs associated with developing a pavement management system for the area. The PaMS (Pavement Management System) Committee, with the assistance of a consultant decided that the PAVER system was the most efficient and cost effective platform for the PaMS. PAVER was originally developed by the Army Corps of Engineers, through funding provided by the U.S. Air Force, as an airport runway condition system and later modified to include highway conditions. PAVER measures for 38 unique distress types, 19 for concrete and 19 for asphalt. The PaMS data was gathered over a period of two years. Initial data gathering began in the Summer of 1996. The remainder of the network data was gathered in the Summer of 1997. Data was updated regularly in order to keep the system current.

A unique aspect of the PaMS development was that each road-providing member was given the opportunity to have data gathered on their local street system at the same cost as was provided to GVMC. In addition, training was provided on the process of pavement condition data gathering, and the use of the PAVER software. Funding was allocated through GVMC to provide software, training, and technical support to any local road-provider who would like to include local roads in their surveys. Through participation on the PaMS Committee a community was given the opportunity to maintain their own database in regard to which roadway segments have had maintenance work implemented. GVMC staff will be responsible for the maintenance of the entire system on an annual basis. Annually, staff gathered maintenance records or PaMS databases from each of the road providing jurisdictions. Then when the PAVER database was updated, new condition information could be derived.

Beginning in 1998 and running through 2005, the GVMC began gathering information on 1/3 of the system every year, so that the entire functionally classified system will be surveyed at least once every three years. Data was manually collected in the field by consultant staff physically walking each segment and manually measuring distresses. Data was collected at a rate of up to 8 miles per day. While this system served its purpose for local members, there were some drawbacks including cost per mile, which by 2005 had grown to $235 per mile. Also, data was gathered using a sampling system which reflected about 10% of the entire federal aid network.

Pavement Condition Index

The data gathered through this process served to identify the PCI (pavement condition index) for every segment of the federal aid roadway system in the Grand Rapids metro area. The PCI is the basic measurement of the PMS and gives a relative numeric value from 0 (for a roadway that has reached complete failure) to 100 (for an excellent or new roadway). The numeric score is based on the number and type of cracks and imperfections found by visual surface inspection. To maintain

consistency, the same inspector(s) conducts the inspection systematically under similar conditions on the selected sample units of pavement.

Thresholds were set by the GVMC Transportation Committees to identify roadways that were eligible for resurfacing projects (70 PCI or lower) and reconstruction projects (45 PCI or lower). Staff generates a master database/list of the PCI ratings for every segment on the network. When the project programming is done in the Grand Rapids area through the development of the Transportation Improvement Program, only segments which qualify based on their PCI can be selected for federal aid funding. All eligible segments are identified by GVMC staff and the Transportation Programming Study Group selects which segments will be included in the program.

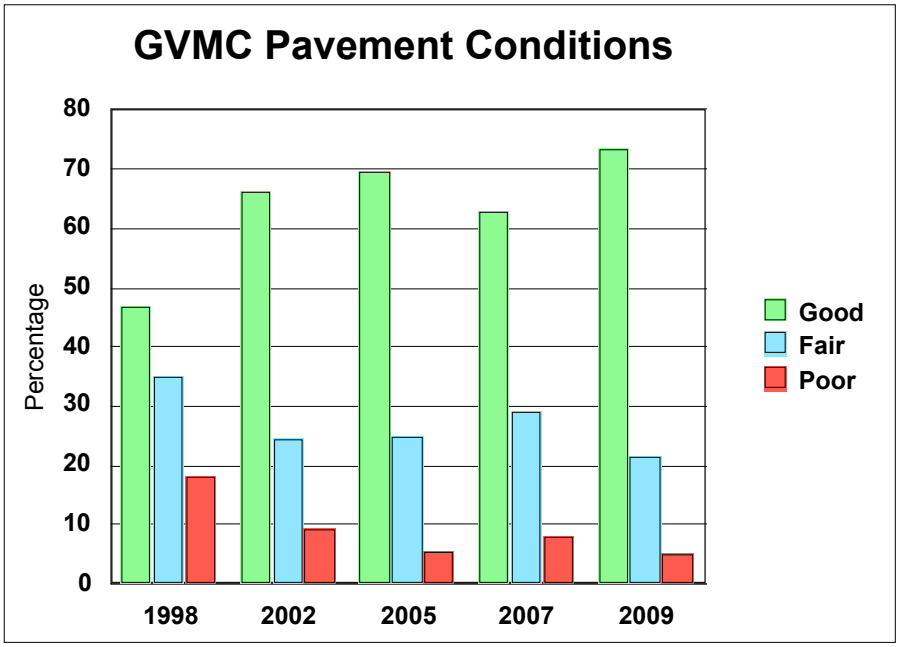
CONDITION	PCI	GVMC PROJECT ELIGIBILITY	PCI
EXCELLENT	100 86	ROUTINE	100
VERY GOOD	85 71		71
GOOD	70 56	OVERLAY	70
FAIR	55 41		46 45
POOR	40 26	RECONSTRUCT	
SERIOUS	25 11		
FAILED	10 0		0

Figure 11 – Pavement Condition Index (PCI) and MPO Programming Eligibility

Pavement Management Vehicle

In 2005, GVMC staff began a comprehensive review of the Pavement Management System with a list of goals/issues in mind including reducing the cost of data gathering for both the federal aid/MPO network and individual local jurisdictions. Other goals include improving efficiency and flexibility, generating consistent data between jurisdictions, improving safety in the data collection process, and maintaining current management systems. The recommendation by GVMC staff was the purchase of a semi-automated vehicle (about the size of a cargo van) specially equipped to perform pavement management duties. The system that was selected is equipped to produce digital downward line scan images of the pavement that reveal distresses down to 1 millimeter in size. Data can be collected at highway speeds up to 65 miles per hour and processed manually in the office on a specially designed computer system. The system also has the ability to collect digital photographs (straight forward and side right-of-way views) every 25 feet of the network. This allows for a wide variety of analysis in a controlled office setting rather than sending staff into the field and exposing them to potential harm. The side right-of-way views allow for the measurement of other roadside assets including signs, guardrail, non-motorized facilities, utilities, and geometric configuration at sub-meter accuracy. The ability to collect familiar PAVER data was also cited as an important factor in using the semi-automated vehicle. The vehicle was purchased from a vendor in the Tampa, Florida area. Staff took possession of the van in Spring of 2006.

Beyond the safety and other benefits listed above, the benefits of the semi-automated system also included long term cost effectiveness. Rather than collecting 350 miles per year at $235 per mile, upwards of 4,000 miles could be collected annually at costs of less than $100 per mile. The projected savings for member agencies amounted to approximately $75,000 per year on the local road system. The quantity of data processed has also changed greatly as previously, data was collected at eight miles per day. The semi-automated system collects up to 50 miles of data a day and the data can be processed in the office at a rate of six to eight miles per hour. Most importantly, 4,000 plus miles of the roadway system (federal aid and local) can be surveyed in a given year.



The GVMC Pavement Management System will continue to be an invaluable tool for managing and keeping a close inventory on pavement conditions throughout the metropolitan area. The PaMS will provide local decision makers with the data necessary to make well informed decisions on roadway condition improvements.

Figure 12 – GVMC Pavement Conditions 1998-2009

Pavement Condition Comparison 1998–2009				
PCI	**1988**	**2002**	**2005**	**2009**
71-100	46.87%	66.37%	69.65%	73.46%
41-70	34.97%	24.34%	24.74%	21.56%
0-40	18.16%	9.29%	5.61%	4.98%

Pavement Infrastructure Need

Recently the GVMC PaMS committee has been working on a plan to maximize the use of all available funding that comes to this area for the purposes of maintaining and where possible improving the system. The goal of this effort was to determine the absolute need for maintaining the system at various levels of condition for the next 25 years.

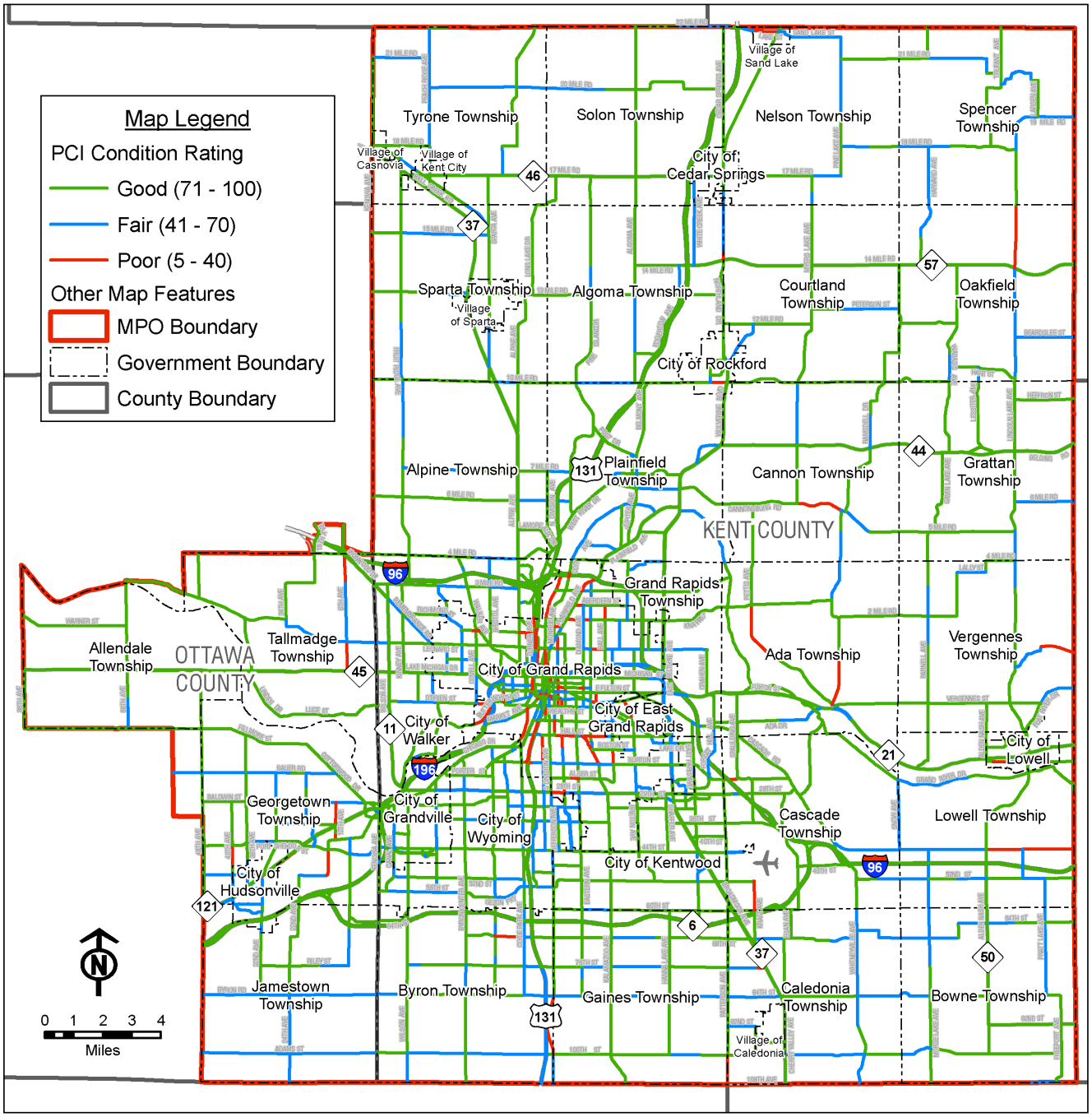
Currently, 36% of the entire non-trunkline (all the roads maintained by jurisdictions other than MDOT) federal aid system in the GVMC area is in poor condition. If the current investment levels and trends are continued through 2035, 58% of the system is projected to be in poor condition.

To maintain the system in its current state it is estimated that the investment in the system will need to nearly double to $21,500,000. To get the system up to a 90% overall good or fair condition which is considered somewhat less than ideal, it will require an investment of triple the current investment, or $33,000,000 per year. (See Figure 13 below)

Current Pavement Condition on Federal Aid Network

GVMC 2035 Long Range Transportation Plan

GVMC's Mobile Pavement Managment System was Utilized to Collect Condition



Map 8 – Pavement Management System Road Map with General Rankings

Value of the Federal Aid System

If the local federal aid system were in pristine condition it would be worth an estimated $3.15 billion. In its current condition, the system is currently worth an estimated $1.92 billion. If the current investment trends are continued into the future, by 2035 the system will have lost in excess of 60% of its estimated asset value to this community. This $1.9 billion loss is on top of the estimated $275 million that is projected to be invested over the next 25 years so the total loss to the system is in excess of $2 billion.

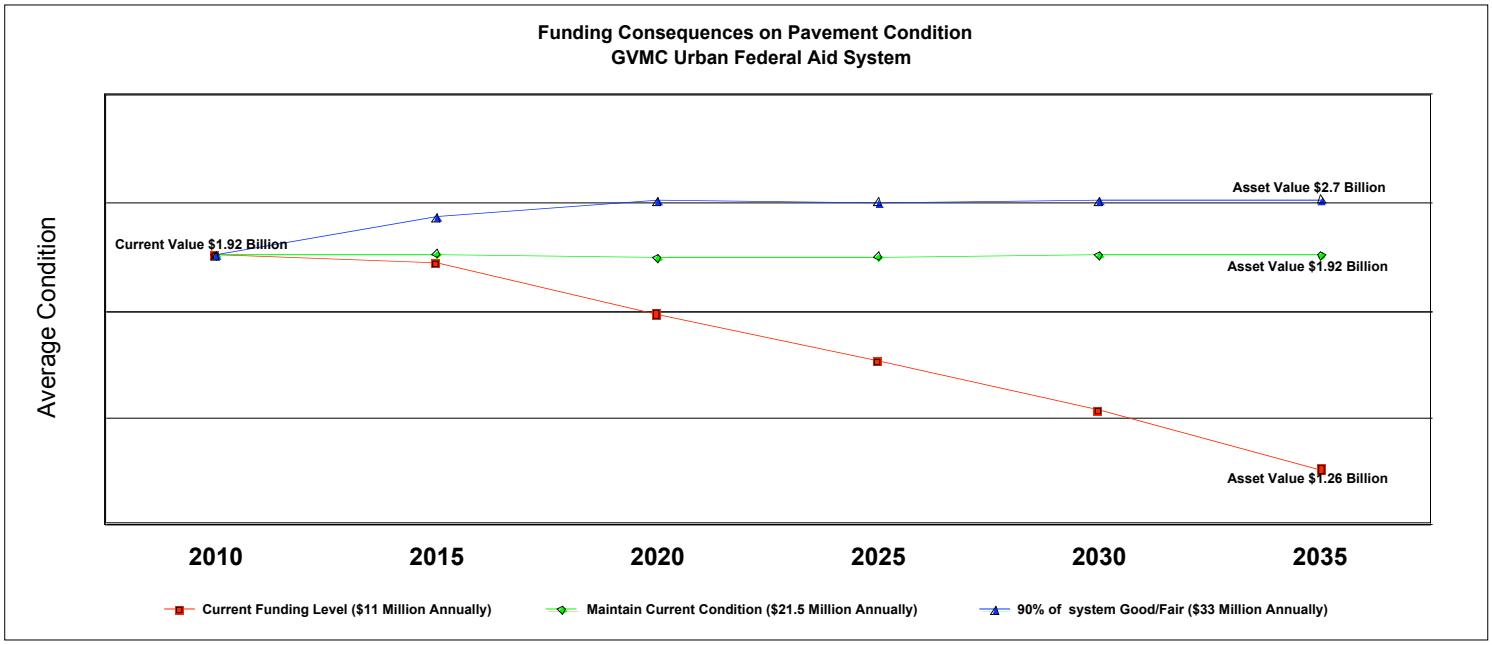


Figure 13 – Funding Consequences on GVMC Pavement Condition

Chapter 10: Transit & Transportation Demand Management (TDM)

Transit History in Grand Rapids

Grand Rapids has a long history of public transportation dating back over 130 years. The earliest years consisted of horse-drawn carriages that began in the mid-1870s. Public transportation eventually evolved into a comprehensive electric interurban streetcar system beginning in the early 1890s that became the pride of the city and represented the 'glory years' of transit in Grand Rapids. Nevertheless, certain federal, state, and local polices dating back to the end of WWII culminated in the significant and widespread disinvestment of U.S. cities and transit infrastructure. Consequently, both the investment in public transportation and corresponding ridership began to decline dramatically. Grand Rapids was no different; the streetcar system was converted to rubber-tired buses by 1935. In order to maintain public transit services that had historically been operated by private companies, the Grand Rapids Transit Authority was formed by the City of Grand Rapids in 1963. The Grand Rapids Transit Authority leased assets from Grand Rapids City Coach Lines (CCL), a private management company, and retained them to manage and operate the transit system. Nevertheless, by the mid-1960s the Grand Rapids Transit Authority experienced a significant decline in both passengers and revenues, as did most transit systems in the country. By 1968, the City of Grand Rapids began underwriting the area's transit system with payments in order to keep the essential transit services alive. The State of Michigan began offering financial operating assistance to the City for the operation of the transit system 1972 and the Federal government followed suit beginning in 1974.

In July 1978, the Grand Rapids Area Transit Authority (GRATA) was created in an effort to provide effective cross-jurisdictional public transportation services. GRATA was a voluntary association of local governments established to provide public transportation services to the cities of East Grand Rapids, Grand Rapids, Grandville, Kentwood, Walker, and Wyoming and the townships of Byron and Gaines. Service was also provided on a contract basis to the townships of Ada, Alpine, Cascade, and Plainfield.

In January, 2000, the Interurban Transit Partnership (ITP) was formed by the cities of Grand Rapids, East Grand Rapids, Grandville, Kentwood, Walker and Wyoming under Act 196 of the Public Acts of the State of Michigan. The creation of ITP allowed for the expansion of public transportation in the Grand Rapids area. Shortly after incorporating under Act 196, ITP chose the name *The Rapid* to distinguish the services it provides and promote easier identification of a transit service "brand-name." Act 196 allows *The Rapid* to ask voters for a millage election to support the funding of public transportation. On April 11, 2000 a 0.75 mill, millage election was successfully passed by a 65% (2 to 1) margin. The result was the implementation of a six-point improvement plan in the six cities beginning in October 2000.

In November 2003, voters in the six-city region passed an increase in the mill-rate for *The Rapid.* The new 0.95 millage rate replaced the pre-existing 0.75 rate approved by voters in 2000. The 0.2 mill increase covered decreased State Operating Assistance and generated revenues that were invested in modest service enhancements. These service improvements included frequency improvements, additional evening service, and additional weekend service.

The Rapid embarked on a Comprehensive Operational Analysis (COA) of The Rapid's services beginning in May 2005. The product of the COA was both a Phase 1 (near-term) and a Phase 2 (short-range) implementation plan. The Phase 1 plan was designed to provide *The Rapid* with an efficient base transit system from which to continue to improve service levels and performance in the near future with little cost increase. The Rapid Board implemented the Phase 1 improvements, with enhanced services coming into effect in May 2007.

The Phase 2 plan was designed to build upon the Phase 1 plan, and included expanded system area coverage. In addition to service alignment and service level improvements, transit passenger facility improvements were included to improve system attractiveness and ease of system use. Phase 2 required an additional $2,246,219. Therefore, in May 2007 *The Rapid* Board went to the community with a millage renewal request that included a 0.17 increase in the current 0.95 property tax millage to pay for the Phase 2 improvements. The millage was approved by the area voters and improvements were implemented in August 2007.

As a result of continued investment in public transit services, infrastructure, and passenger amenities, *The Rapid* continues to out-pace most transit systems in the United States with a substantial growth in ridership. FY 2010 ridership (9.7 million rides) has increased 131% since *The Rapid* was formed in FY 2000 (4.2 million rides).

Description of Existing Service, Travel Demand Management Strategies & Special Projects

The Rapid Transit Master Plan (TMP)

A **Transit Master Plan** or TMP is a comprehensive, 20-year plan that guides the future development of The Rapid transit system, primarily for its current service area of the cities of East Grand Rapids, Grand Rapids, Grandville, Kentwood, Walker and Wyoming.

The plan also helps The Rapid understand how our system stacks up against those of comparable cities, identify what we can learn from those systems, ways we can enhance our transit system and services, and how we can improve service, attract and retain riders, increase efficiencies, and lower costs based on peer best practices.

Three scenarios were developed varying in scope of transit investment and cost, with Scenario A being the least aggressive and Scenario C being the most aggressive. Based on the responses from the public and the Mobile Metro 2030 Task Force (MMTF), the Project Team developed a "Preferred" Scenario that matches the vision of Scenario C but at a cost closer to Scenario B. The "Preferred" Scenario incorporates the span of service improvements from Scenario A, most of the frequency improvements from Scenarios A and B, develops Bus Rapid Transit on The Rapid's two most successful transit corridors and includes the full Regional Express Bus program from Scenario C as well as a Modern Streetcar starter network that would connect the West Side, downtown Grand Rapids and Medical Mile, laying the foundation for future streetcar expansion projects (West Grand, East Grand Rapids). The "Preferred" Scenario would also include improvements to the Go!Bus system including extension of Go!Bus service to new service areas, development of an Accessibility Improvement Plan, and same day booking service (subject to space available). In presenting the recommendation on behalf of the Task Force, Bob Roth, president of RoMan Manufacturing and Chair

of the MMTF urged the Board to adopt the "Preferred" Scenario and encouraged them not to lose sight of the vision in Scenario C so that additional projects could be reincorporated at a later date.

Both the annual 2030 operating and maintenance costs and the aggregated FY 2011-2030 capital cost for the "Preferred" Scenario are roughly double today's costs after adjusting for inflation. Fortunately, the millage would not have to double. Since some of the new services and service improvements would occur outside current Rapid boundaries they would be funded as contracted services. The State of Michigan is also considering an increase in the motor vehicle fuel sales tax, from 19 to 27 cents per gallon, and some of that increase could help supplement local transit funding. Any remaining deficit would need to be funded through local sources, either as millage or as local contributions for the streetcar services. Without these additional contributions though, the "Preferred" Scenario would require an increase in the local millage rate from 1.12 mills to approximately 2.00 mills.

A more detailed description of the service improvements incorporated in the TMP is located at www.rapidtmp.org.

Fixed-Route Services

The Rapid currently operates 28 fixed-routes that provide service to the Grand Rapids Area serving the cities of Grand Rapids, East Grand Rapids, Grandville, Kentwood, Walker and Wyoming and the townships of Byron, Gaines, Cascade and Alpine. The Rapid fixed-route system is currently a radial system with three cross-town routes; the radial hub for routes is Rapid Central Station in downtown Grand Rapids. The Rapid also operates service out to Grand Valley State's Pew Campus in Allendale and runs circulator fixed routes in the Allendale area. Service frequencies are 15–30 minutes during weekday peak hours (6:15 AM – 8:45 AM and 3:45 PM – 6:15 PM) and 30–60 minutes during off-peak hours.

Aquinas College, Calvin College and Kendall College Service

Aquinas College and Calvin College subsidize their student's fare when riding The Rapid. The student pays a reduced fare and the college is billed the difference between the student payment and the full student fare price of 90-cents. Kendall College provides a semester pass to its students, and compensates The Rapid at the student rate of 90-cents a ride.

Spectrum Health

In 2007, Spectrum Health began a program where their staff can ride for free on The Rapid's fixed route bus system by showing their ID badge. Spectrum Health reimburses The Rapid at a contract rate based on the previous year's ridership. In FY 2010, there were 57,718 rides taken by Spectrum employee in this program.

The Rapid Specialized Services

The Rapid, in its role as regional coordinator for specialized transportation service, receives an annual allocation from the State of Michigan for Specialized Services Operating Assistance. Specialized Services Operating Assistance funds are used by human service agencies to provide demand response service that is beyond The Rapid's service area and/or hours.

The Rapid brings these human service agencies together on a bi-monthly basis to assist them in the coordination of service, to help prevent duplication of service, and to share information.

Six agencies receive funding under this program. Hope Network, which is the second largest provider of transportation in the MPO, offers transportation for persons with disabilities. Hope Network operates 120 vehicles per day, with approximately 60 buses operating in Kent County. In 2009, Hope Network provided 249,472 trips, and served 4,314 individuals throughout Kent County. Other transportation providers that receive funding under this program include the American Red Cross

which provides transportation to medical services for seniors and persons with disabilities. The Area Community Service Employment and Training Council (ACSET) offers transportation to seniors and persons with disabilities for their clients at their site in Cedar Springs. Senior Neighbors offers transportation for seniors at their sites in Sparta, Lowell and Grandville. Goodwill offers transportation for persons with disabilities for employment purposes, and Community Mental Health provides funding for mental health transportation services throughout Kent County.

Paratransit Service

The Rapid provides GO!Bus service to seniors and persons with disabilities who meet the Americans with Disabilities Act (ADA) guidelines. This service operates door to door on advance reservations and offers wheelchair lift equipped vehicles. The GO! Bus service area includes the entire fixed-route service area and is also offered by contract to eligible residents of Ada and Cascade townships as well as parts of Alpine, Byron and Gaines Townships that are outside the _ mile ADA transit zone and under contract with The Rapid.

The Rapid manages and oversees GO!Bus including user eligibility, trip reservations, scheduling, and service monitoring. Trip delivery is competitively procured every three to five years, however the 70 vehicles are provided by The Rapid. The fleet of GO! Bus vehicles is made up of cutaway buses. The current provider of trip delivery for GO! Bus is MV Transportation.

Supportive Housing Program (SHP) and GAP Program

The City of Grand Rapids contracts with The Rapid to provide transportation service for homeless persons participating in the Homeless Assistance programs. The GAP Program is basically for persons who fall through the cracks (or gaps) in assistance available. GAP supplies service to area churches and shelters, while the SHP Program is for individuals and families in Transitional Housing and emergency shelters. The Rapid has a contract to provide the following:

1. Mobility assessment, training and coordination.
2. Provide bus tickets and passes.

Community Mental Health

Kent County Community Mental Health Department (CMH) contracts with The Rapid to provide transportation services for persons with mental or developmental disabilities.

Travel Training

The Rapid offers the Travel Training Program that teaches individuals with disabilities to ride public transportation independently. The training process includes a series of steps which include close instructor assistance at the beginning with gradual fading assistance as the student demonstrates readiness. Participants generally include persons with developmental disabilities. The training includes route training, landmark identification, appropriate social behavior, safety and emergency training, parent, guardian, and case manager consultation, street crossing, stranger awareness, and follow-up training. Travel training is available to other groups such as senior citizens and refugees relocating to the area as time is available.

RideLink

RideLink is a collaboration between five providing agencies (Hope Network of West Michigan, Red Cross, Senior Neighbors, United Methodist Community House and ACSET) to provide low cost shared rides to persons age 60 and older throughout Kent County. The Rapid operates the call center and schedules the trips with the area providers. The program is monitored by the Area Agency on Aging of West Michigan since the majority of the funds used to provide the service come from the Kent County Senior Millage.

Business Transportation Services

The Rapid has provided assistance to individuals and employers in arranging shared ride transportation through the Business Transportation Services since 1990. Business Transportation Services includes rideshare, carpooling, GreenRide programs. Cumulatively, The Rapid's rideshare program reduces 11 million miles traveled annually. Furthermore, The Rapid continues to complete outreach to area employers and represents The Rapid at area employer fairs and other events.

The Rideshare program includes carpooling, vanpooling and any other sustainability-based program that helps remove single occupant vehicles from the roads. Currently, The Rapid has fourteen (21) RapidVan vanpools in operation,. The 21 vans in operation save 850,000 vehicle miles traveled annually.

The carpool program is enhanced by the GreenRide online carpool matching program. GreenRide software is on-line based and provides immediate, confidential carpooling results to registrants. The more user-friendly and comprehensive software has resulted in The Rapid's carpooling program growing to over 6,000 registrants, which is more than double its previous size. The GreenRide program also has an employer component that allows area companies to sign up for a separate portal allowing their employees to only ride with each other. Spectrum Health, Farmers Insurance, Haworth, Perrigo, Amway, Grand Valley State University and Grand Rapids Community College are currently in the employer program. The employers pay a $500 fee to The Rapid annually to help offset website expenses.

The Rapid is also pursuing the creation of a local employer transportation association, The Rapid's Employer Connection (TREC). The purpose of this new body will be to keep local employers informed about transportation options through The Rapid and provide incentives for employers and their employees to find alternatives to the single occupancy automobile. The Rapid is currently surveying local employers about what they would like to see in such a group and plan to launch it early in 2011.

Grand Valley State University Service

The Rapid first entered into contract with Grand Valley State University for the provision of transit route service beginning in August 2000. The services that The Rapid provides are as follows:

- **Campus Connector:** This is a limited-stop fixed-route providing connections between the GVSU Allendale and Downtown Campuses. The Campus Connector route has proved to be so successful that the service frequency has had to be continually upgraded. In FY 2001, the route operated every 30 minutes. Because of overcrowding, the frequency of service has continually been upgraded to the point where, in FY 2010, the frequency of service was improved to every 7–8 minutes.
- **GVSU Health Sciences/DASH to the Hill Shuttle:** The former DASH to the Hill route was modified effective in August 2003 to also serve the GVSU Center for Health Sciences Building on Michigan Avenue. Service operated every 4–7 minutes on weekdays.
- **Off Campus Apartment Shuttles**: The Rapid operates two circulator shuttle fixed routes that operate between GVSU's Pew Campus and the off campus apartments.

The Rapid also provides GVSU students, staff and faculty up to 1,000 free rides/day on the remainder of its fixed route system. They ride free on all GVSU purchased routes. In FY 2010, there were 2,686,290 rides taken on the GVSU purchased routes.

Grand Rapids Community College

The Rapid operates a downtown circulator shuttle between Grand Rapids Community College's two downtown campuses. All GRCC students, staff and faculty can ride free on the route. In FY 2010, there were 89,174 rides taken on this route.

Bus Rapid Transit System Update

Since the original publication of the Long Range Transportation Plan, the Federal Transit Administration (FTA) has announced their approval of the Grand Rapids South Corridor Bus Rapid Transit (BRT) project proposal. The project has been determined by the FTA to meet criteria to advance into project development. Specifically, the project calls for the development of a Bus Rapid Transit system in the South Division Corridor. The project will serve the Division Avenue corridor from 60th Street to Wealthy Street as well the Saint Mary's campus, Michigan Hill Medical Corridor, downtown Grand Rapids and Rapid Central Station. The project length is 9.6 miles, with 18 transit stations. A total of 10 hybrid electric low floor buses would be required providing a service frequency of 10 minutes during peak and 15 minutes off peak. The total projected cost is estimated to be approximately $40 million (80% Federal, $20% State match. The operating funds are expected to be locally funded through millage). Construction of the BRT system is estimated to begin in late 2011 or early 2012 with a target public opening in 2013 or early 2014. With FTA approval, the BRT project has moved from the illustrative list of the 2035 LRTP, and is included as a project.

Streetcar Update

From 2003 to 2007, the Interurban Transit Partnership (The Rapid) conducted an Alternatives Analysis in order to implement high capacity transit in Grand Rapids. The Rapid's Alternatives Analysis identified two projects that formed a "first steps" strategy. One "first step" project identified was the South Division Bus Rapid Transit (BRT) project. The second project identified was a downtown streetcar circulator, just under two miles in length and located in downtown Grand Rapids. A study body, the Public Transportation Tomorrow (PTT) Task Force, was formed comprising of community leaders under the aegis of *The Rapid.* The Task Force undertook a study to determine the feasibility of a streetcar system in greater Grand Rapids. In June 2008, The Rapid approved the Feasibility Report as recommended by the PTT. The Report reviewed ridership potential, development potential, possible alignments and destinations that might need to be served by such a system. Additionally, the Report identifies the need for the construction of the first segment of a streetcar system in Grand Rapids under a public/private partnership process, much like the Portland model. The Report also identified the first alignment, the cost and the economic development potential of the service, ridership projections as well as a timeline for construction based upon a financing model. A Streetcar Nonprofit Committee operating under a Non-Profit organization continues to oversee the activities related to funding and construction of the initial 1.7-mile corridor as well as future extensions. In 2011, The Rapid will be conducting environmental analysis and further technical assessment of the Streetcar route based upon the recommendations of the completed Feasibility study.

Amtrak Rail Relocation/Station Improvement

The existing Grand Rapids Amtrak Station is located in the northeast quadrant of the intersection of Market Street and Wealthy Street in southwest Grand Rapids. This location has served Amtrak's *Pere Marquette* Line for over 20 years. However, there are two disadvantages with this existing location. First, when passengers are boarding or alighting, either Market Street or Wealthy Street (or both) are blocked. As the morning train is scheduled during the rush hour, significant traffic delays occur. Second, after passengers alight at night, the train must be repositioned near Ann Street, three miles from the station. The train is cleaned and stored overnight at the Ann Street location. Repositioning adds cost of both labor and fuel to the operation of the *Pere Marquette* Line.

Opening of Central Station by The Rapid, the local transit agency, created an opportunity to relocate the Amtrak Station to just south of Central Station. Central Station is already intermodal with local bus routes and regional bus. Relocation of the Amtrak Station will add regional rail to the intermodal menu. In addition to the intermodal benefits (including passengers being able to reach the Amtrak Station by local bus instead of driving to the station), the location would not block any traffic when passengers are boarding or alighting, and the train can be stored at the new location, saving

crew time and fuel. The new location also will allow for an electric power hook-up for the train so that the diesel engine does not need to run to supply electricity for cleaning at night.

The total estimated cost of this Project is $4,259,000. The Federal Railroad Administration (FRA) grant provided for this project is $3,800,000 or 89.2228 percent of the total cost, while the remaining match by The Rapid is an in-kind land contribution. In addition, The Grand Rapids Downtown Development Authority (DDA) has provided $850,000 to purchase two parcels and build a new station at the new location close to the Central Station. For additional information about passenger rail and the station relocation see Chapter 11.

Chapter 11: Rail Transportation and Freight

There are approximately 3,600 total miles of active railroad lines in the State of Michigan. Freight service is provided by four Class I railroads—Canadian National (CN), Canadian Pacific (CP), CSX Transportation, and Norfolk Southern (NS)—and 24 regional or shortline railroads. Passenger service is provided by Amtrak on 521 of the total miles of railroad.

Approximately 2,990 miles (83%) of railroad lines in Michigan are owned by private freight railroad companies, 530 miles (15%) are owned by the State of Michigan, and 80 miles (less than 1%) are owned by Amtrak. The state owned lines, which are mostly light density lines in northern Michigan purchased from Penn Central to avoid rail abandonments that would have left some regions of Michigan without any rail service. These lines are operated primarily by shortline railroads, and haul natural resource products, agricultural, and other products, in the affected regions. These rail lines, purchased during the 1970-1980, are for the most part subject to mandatory divestiture policy by state statute. The objective of the policy is to return the lines to the private sector.

The Grand Rapids Metropolitan Area is fortunate to have six freight rail companies—Grand Rapids Eastern Railroad (GRE), Marquette Rail (MQT), CSX Transportation, Mid-Michigan Railroad (MM), Grand Elk Railroad (GDLK), the Coopersville and Marne Railroad—and one passenger rail option, the Amtrak *Pere Marquette*. There are approximately 128 miles of operational track in the metropolitan area, however several major corridors have been abandoned within the past decade and have been converted for use by non-motorized travel (rail-trails).

Passenger Rail – Amtrak *Pere Marquette*

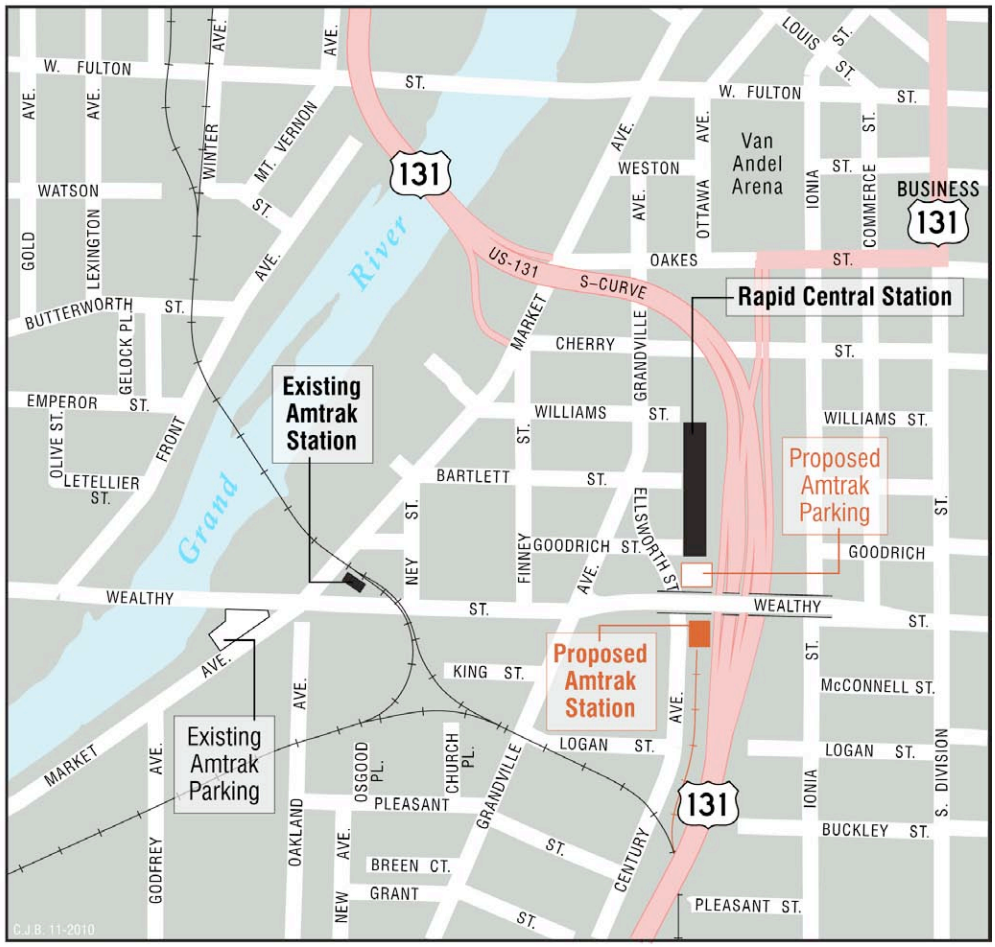
There are currently three passenger rail routes in Michigan: the *Wolverine* (Chicago-Detroit/Pontiac), the *Blue Water* (Chicago-Port Huron), and the *Pere Marquette* (Chicago-Grand Rapids). Michigan passenger rail service is provided by the National Railroad Passenger Corporation (Amtrak) which was created by the passage of the National Railway Passenger Service Act by Congress in 1970. Thirteen states, including Michigan, contract with Amtrak for the operation of trains to supplement the national Amtrak network, extending passenger rail service and/or increasing frequencies on national routes. This operating assistance helps to provide some of Michigan's heaviest travel corridors and population centers with intercity passenger rail service.

The *Pere Marquette* passenger rail service, which runs roundtrip between Grand Rapids and Chicago seven days-a-week, celebrated its 25th anniversary in 2009. Like the *Blue Water*, the *Pere Marquette* is operated by Amtrak at the request of the state of Michigan, which provides an operating subsidy for service. Between Fiscal Year (FY) 2004 and 2006 the Amtrak operating subsidy provided by the State of Michigan was $7.1 for both the *Blue Water* and the *Pere Marquette*. However between FY 2006 and 2009, the operating subsidy hovered at around $6.2 million annually, a 12 percent decrease from pervious contract years. Despite the subsidy decrease, Amtrak state supported routes continued to experience increases in ridership and revenues. In 2010, nearly 102,000 people rode the *Pere Marquette*, a slight dip from 2009 that may be attributed to ending service to and from New Buffalo along the line. The route showed a 3.3% increase in ticket revenue from the previous year. An $8.2 million operating subsidy is estimated for FY 2010 for both routes. It is hoped that continued Michigan Department of Transportation funding, through the state legislature, will provide for a better and more viable national passenger rail system.

The *Pere Marquette* operates over rail lines owned by CSX, as is typical of most Amtrak operations throughout the nation. The freight railroads used by Amtrak generally allow maximum speeds of 65-79 mph. Freight railroad ownership of the rail lines with the resulting control of dispatching duties

has caused problems with on-time performance of passenger trains. Michigan's peninsular geography also poses challenges for railroad economics (both passenger and freight), since most of the rail lines must be supported by traffic originating or terminating in Michigan.

The *Pere Marquette* in Grand Rapids is currently located at the corner of Market and Wealthy Streets; however ITP/The Rapid is slated to include the Amtrak Station as part of their intermodal transportation center, Rapid Central Station. In 2007, ITP/The Rapid purchased several parcels south of Rapid Central Station for the station relocation and then in 2009, Congressman Vern Ehlers assisted in securing $3.8 million in an appropriations bill. Those grant funds have been secured from the Federal Railroad Administration by MDOT and will be used to build a new 1,700-foot rail spur connecting from the existing CSX mainline to what is now a commuter parking lot south of Rapid Central Station. In November 2010, the Grand Rapids Downtown Development Authority approved an $850,000 outlay to ITP/The Rapid to pay for design and construction of the station and platform, and for additional property acquisition. The new station will allow Amtrak to store its trains on-site at Rapid Central Station, and is estimated to reduce the arrival trip time by 5 to 7 minutes. Design and construction of the new spur and station is expected to take between 12 and 18 months and may be complete as early as mid-2012. This new rail spur should be constructed so as not to preclude possible future connections to the Grand Elk line south to Kalamazoo to connect to the developing Michigan high speed rail corridor.

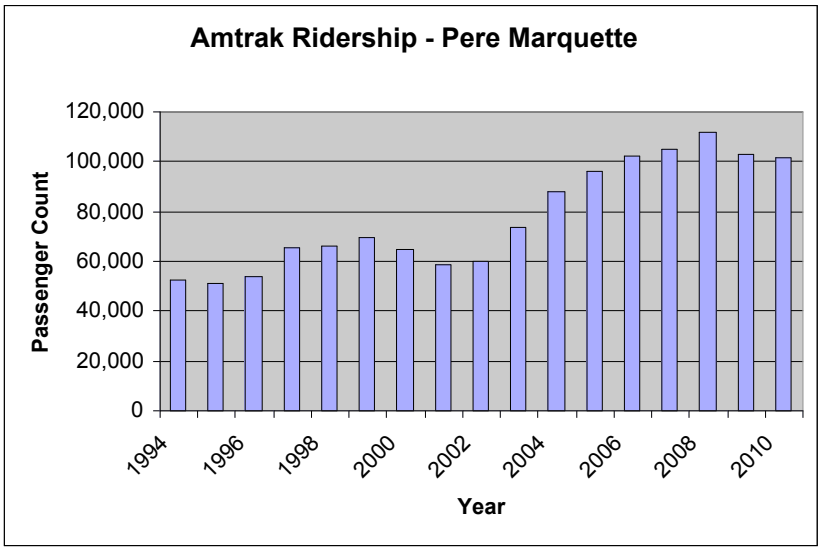


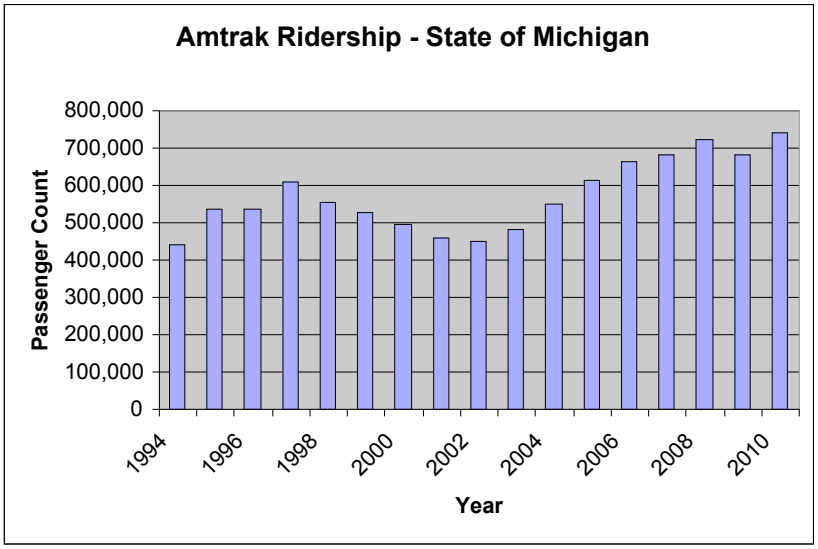
Map 9 – Proposed Amtrak Station Map

WESTRAIN

Passenger rail issues are currently being studied by the WESTRAIN Collaborative. The WESTRAIN Collaborative is a group of agencies working to further rail issues in West Michigan. Members include the Michigan Department of Transportation, the Grand Valley Metropolitan Council, the Macatawa Area Coordinating Council, the Grand Rapids Area Chamber of Commerce, the Holland Chamber of Commerce, the Cornerstone Alliance in St. Joseph, and the Southwest Michigan Planning Commission. The focus of WESTRAIN is to secure and maintain passenger rail service from Grand Rapids to communities along the *Pere Marquette* line to Chicago, Illinois and beyond. During Amtrak budget cuts in 1995, service on the *Pere Marquette* line serving Chicago was cut to Thursday through Sunday. The WESTRAIN Committee was instrumental in lobbying MDOT and Amtrak to restore daily service on the *Pere Marquette*.

The WESTRAIN Collaborative has also worked closely with Amtrak on a number of initiatives to increase awareness of and traffic on the *Pere Marquette* rail line. Utilizing special promotions, giveaways, and other marketing strategies, WESTRAIN serves to continue to help attract new riders to the passenger rail experience.





In 2007 the WESTRAIN Collaborative, in conjunction with Amtrak and the City of Grand Rapids, completed minor maintenance and renovations to the Market Street Amtrak station. A $50,000 grant from the Michigan Department of Transportation provided funds to update the exterior of the station, including the addition of a secure flagpole, new pavement and striping, increased outdoor seating, new paint, new security fencing for the propane tank, and a new illuminated clock in the building's cupola. These minor improvements are important maintenance for the *Pere Marquette* line facility which saw over 101,000 passengers in 2010.

Upper Left: Source: Michigan Department of Transportation

Figure 14 – AMTRAK Ridership *Pere Marquette* Line 1994-2010

Lower Left: Source: Michigan Department of Transportation

Figure 15 – AMTRAK Ridership State of Michigan 1994-2010

Source: Michigan Department of Transportation

Map 10 – Michigan Statewide Intercity Passenger Rail Routes and Stations

Midwest Regional Rail Initiative

The Midwest Regional Rail Initiative (MWRRI) is a cooperative effort between Amtrak, the Federal Railroad Administration, and nine states—Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Nebraska, Ohio, and Wisconsin—to develop an improved and expanded passenger rail system in the Midwest.

In September 2004, MWRRI released a report conducted by their consultant Transportation Economics & Management Systems, Inc., which outlines a new vision for passenger rail travel in the Midwest. This vision is a transportation plan known as the Midwest Regional Rail System (MWRRS), a 3,000-mile rail network serving nearly 60 million people.

MWRRS would operate as a hub-and-spoke system providing through-service in Chicago to locations throughout the Midwest. Trains operating at speeds up to 110 mph would link Chicago with Milwaukee, Madison and Minneapolis; Des Moines and Omaha; St. Louis and Kansas City; Indianapolis and Cincinnati; Grand Rapids and Detroit; Toledo and Cleveland; as well as many smaller cities and towns. Increased speeds and service efficiencies would reduce travel times dramatically. The Chicago-Detroit trip, for example, would drop from the current five hours thirty six minutes to less than four, Chicago-Twin Cities from the current eight plus to less than six, and St. Louis-Kansas City from five hours 40 minutes to just over four hours. The nearly eight plus hour Chicago-Cincinnati trip would be cut in half.

These efficiencies would be achieved through state-of-the-art train communication and control systems, highway/railroad grade crossing safety enhancements, rehabilitation of existing and construction of new track and sidings. In addition to a travel time reductions, the system would feature additional frequencies—as many as 17 daily roundtrips between Chicago and Milwaukee (including Amtrak's current long-distance trains).

Over 63 new trainsets would provide passengers with modern and spacious facilities and offer on-board amenities for business and leisure travelers. Ridership on the entire system is projected to skyrocket from the current 1.5 million passengers per year to 13.6 million passengers annually in 2025.

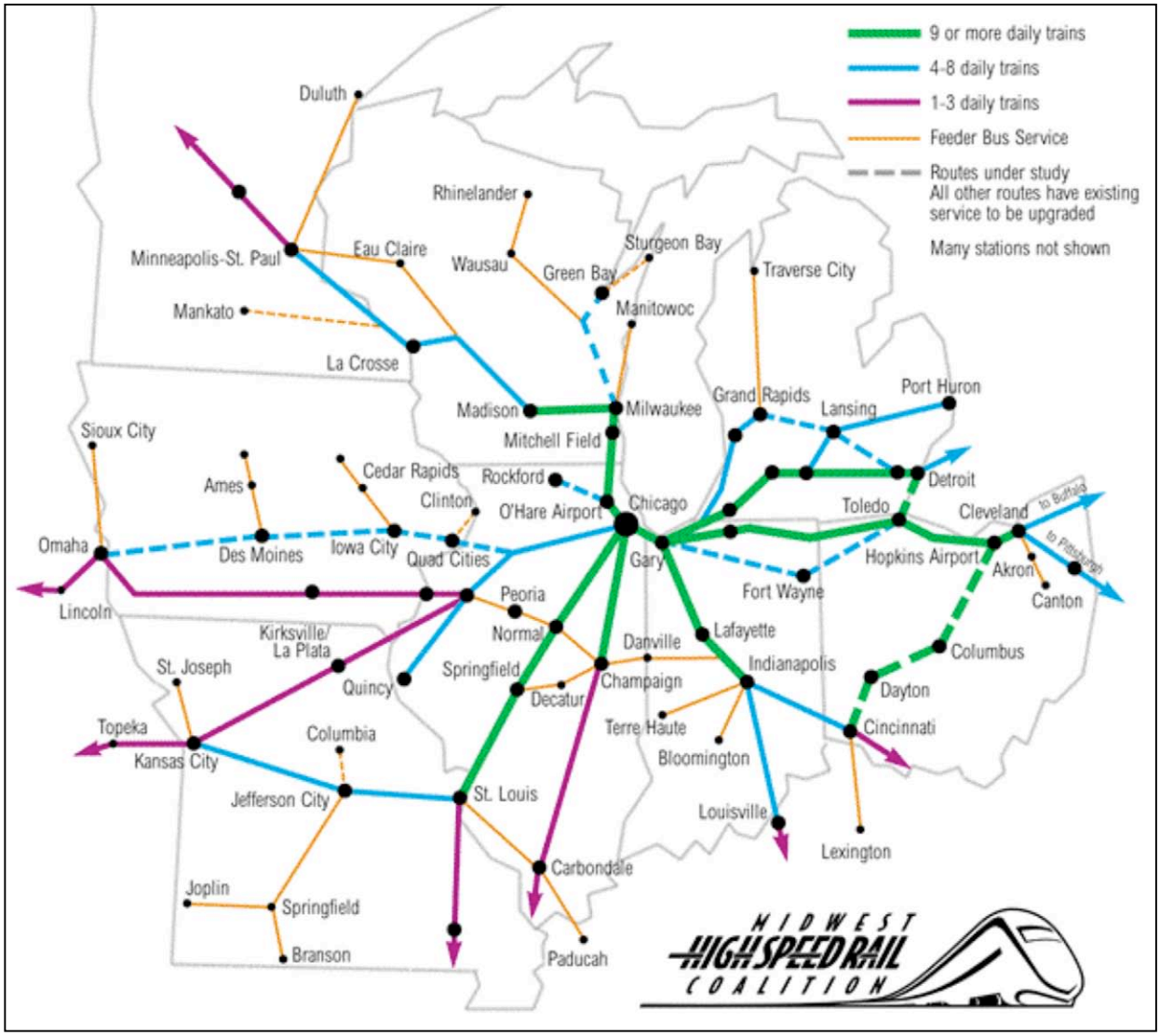
The total capital investment for the MWRRS, including infrastructure and rolling stock, is estimated to be $7.7 billion (in 2002 dollars). The rolling stock for the entire system will cost approximately $1.1 billion. Infrastructure improvements required to implement the MWRRS are estimated to cost $6.6 billion, or about $2 million per mile. This compares favorably with typical highway costs of $10 million per mile.

The funding plan consists of a mix of funding sources including federal loans and grants, state funding, general funds, and capital and revenue generated from system-related activities, such as joint development proceeds. Federal funding will be the primary source of capital funds. MWRRS funding is based on the establishment of an 80/20 federal/state funding program similar to those that already exist for highways; implementation will remain the responsibility of the states. The State of Michigan would contribute $873 million for infrastructure and $234 million for train equipment.

As technologies have emerged and priorities have changed, a second initiative has surfaced that is specifically focusing on the feasibility of high speed rail.

Source: Michigan Department of Transportation

Map 11 – Proposed Midwest Regional Rail Initiative (MWRRI) System



Source: Michigan Department of Transportation

Map 12 – Midwest High Speed Rail Coalition Map

Midwest High Speed Rail Coalition Vision for a Midwest Network

The above map shows the vision of the Midwest High Speed Rail Coalition. This group of nearly 1700 members including individuals, chambers of commerce, municipalities, and corporations throughout the Midwest, works in conjunction with the Midwest Regional Rail Initiative to promote high speed rail service. Key to the success of an advanced rail network are: frequent service, convenient schedules, and competitive travel times. An initial system based on the Midwest Regional Rail Initiative would serve all primary and secondary population centers, including over 200 cities with directly served airports. Additionally, well integrated bus connections, in coordination with Greyhound, will extend the reach of the system. Trains would travel up to 110 mph on primary corridors. Frequencies and speeds could be increased as the network gains ridership.

Michigan State Rail Plan

MDOT is developing the Michigan State Rail Plan to identify current and future needs for the Michigan rail system and define long range strategies to direct future federal and state investments for both passenger and freight rail. The plan will meet the requirements established by the federal Passenger Rail Investment and Improvement Act of 2008 (PRIIA) making Michigan eligible for new federal funding programs developed by the act for passenger rail services.

A consultant has been hired to develop the plan and will address issues such as: long term sources of capital and operating funds to maintain and improve existing passenger rail service, and freight rail line abandonment and the declining demand for freight rail services. An initial round of public meetings were held in September 2010 for the State Rail Plan, and the study is expected to be complete in June 2011.

Freight Rail and Trucking

The U.S. Transportation system moved, on average 53 million tons worth $36 billion each day in 2002. By 2008, tonnage increased by an estimated 11.2%, to 58.9 billion tons per day. Moving all of these goods requires a vast number of vehicles and vessels as evidenced by a 56 percent increase in the number of commercial trucks between 1980 and 2007. Since 1980 the number of rail freight cars has declined with improved utilization and deployment of larger cars.

This being said, truck traffic remains a relatively small share of highway traffic as a whole. In 2007, commercial trucks accounted for about eight percent of highway vehicle miles traveled nationally, with most freight trucks using the Interstate System. The figure below indicates that the level of commercial traffic on area highways is similar to the national average.

Road Segment	Highest Segment – Average Daily Traffic	Highest Segment – Average Daily Commercial Traffic	Commercial Traffic (%)
I-196 — I-96 west to M-121/Chicago Dr	66,800	3,500	5%
US-131 — I-96 north to Kent county line	51,200	3,200	6%
US-131 — M-6 north to I-96	104,900	6,400	6%
US-131 — M-6 south to Kent county line	43,200	4,800	11%
M-6 — I-96 to I-196	50,400	4,600	9%
I-96 — I-196 west to Kent county line	54,900	3,100	6%
I-96 — Kent county line east to I-196	63,300	3,900	6%

Source: Michigan Department of Transportation

Figure 16 – Percent of Commercial Traffic on Area Highways

Source: Michigan Department of Transportation

Map 13 – State of Michigan Rail Map

Freight Improvements

The GVMC interfaces with rail and truck freight/shipping interests through the Public Participation Plan mailing list, through the Intermodal, Freight, Rail, & Air Subcommittee, and by meeting with some the area's largest employers/shippers through MDOT meetings that are specifically geared toward the freight community. When the 2030 Long Range Transportation Plan was developed, a list of priorities emerged through meetings and input from these sources including:

- The expedited completion of the M-6 South Beltline Freeway
- The relocation and improvement of US-131 south to the Indiana/Michigan border
- Improved access to the Gerald R. Ford International Airport
- Improved rail and roadway access to smaller urban areas in Michigan such as Grand Haven, Battle Creek, and Mount Pleasant
- Bridge improvements along I-196 and US-131
- Improved maintenance of existing traffic during construction times and completing more construction activities during off-peak hours.

Since then, the M-6 South Beltline Corridor through the southern part of Kent County was completed ahead of schedule, and was opened to traffic in the Fall of 2005. Competition of the M-6 Corridor cost over $650 million, a tremendous investment in our region's highway infrastructure. Completion of this freeway has improved freight transportation, travel times, and access to the industrial and commercial areas in the southern metro area.

The relocation and improvement of US-131 south of Kalamazoo to the Michigan/Indiana state border has generated substantial discussion. MDOT originally studied this corridor and selected a no-build option. After considerable input from local stakeholders, MDOT has reconsidered the no-build option and an environmental assessment (EA) on the corridor was completed in 2010. The Preferred Alternative selected for this corridor identifies a $31 million (2007 dollars) project which generally keeps the roadway alignment within the existing US-131 corridor with the exception of a two-lane non-freeway bypass of the Village of Constantine. This is expected to improve travel times and access to Indiana Toll Road (I-80/I-90) for US-131 communities, including Grand Rapids, and relieve congestion in Constantine.

While the roadway system in the region carries the majority of goods and products produced and consumed in this area, there are other modes of freight movement used. Rail and Air transport are also very viable modes for the movement of goods and intermodal and storage facilities round out a family of freight options. Improvements by the railroad sector are more difficult to document as the majority of rail is privately owned. However, in the Fall of 2006, access to the Gerald R. Ford International Airport was improved through the completion of the 36th Street interchange at I-96 and the extension of 36th Street, from Kraft Avenue to Thornapple River Drive, that ties in with the interchange and local road network. This project cost $35 million and provides a more direct access to the airport/air freight operations on the east side, and the many industries and employers surrounding the airport property.

The other items mentioned above remain a priority with area freight stakeholders. In 2010, using American Recovery and Reinvestment Act funds, MDOT completely reconstructed and replaced several bridges on I-196 between the Grand River and Fuller Avenue for a total project cost of approximately $40 million. The Fuller Avenue bridge over I-196 and interchange improvements are scheduled for 2011 for a total project cost of approximately $7.8 million. The Burton, Franklin, and Hall Street bridges over US-131 are also scheduled for improvements in 2011. Bridge improvements over area highways will likely occur on an incremental basis over the next 25 years. Other regionally significant freight related projects include improvements to the I-96 Chicago Drive/Baldwin Interchange and vicinity for $44 million completed in 2009, and the US-131 and 44th Street Interchange completed in 2009 for $13.5 million. Loop ramps were also added at the US-131 and 10 Mile Road,

and the I-96 and Walker Avenue interchanges. Additional operational improvements are being considered along congested segments of US-131, including weave/merge lanes between 36th Street to 44th Street and from US-131 BR/Leonard Street to Ann Street.

Freight Interests

It is difficult to secure freight related data for planning decisions because much of this information is proprietary and thus kept private. In general, GVMC relies on our members to suggest freight related projects and often considers projects that improve roadway capacity as serving to enhance freight access. To address freight issues, GVMC uses our Congestion Management Program, which incorporates performance measures for the total number of capacity deficient miles on the freight network. GVMC also maintains an Area Freight Network Map which lists the state and county truck routes, all season routes, rail lines, intermodal facilities (such as the Gerald R. Ford International Airport), and major employers/shippers. By overlaying the projects identified in the Long Range Transportation Plan it is relatively simple to discern which projects serve to facilitate freight movement. GVMC is also working with the ten cities and two road commissions to expand the traffic count program to better record commercial traffic. Over the past few years GVMC has phased out the old counting equipment and purchased new software to initiate more comprehensive commercial traffic counting in 2011.

GVMC staff is exploring other options for connecting with the freight community to better plan for their needs and enhance the economic competitiveness of our region. In 2006, as the last LRTP was being developed, GVMC was able to partner with MDOT Grand Region staff to co-host a meeting specifically geared to the largest employers in West Michigan. GVMC used the opportunity to explain the transportation planning process, share project information for the local federal aid network, share contact information for other MPOS in Michigan, and to establish contacts for some of the larger employers in the Grand Rapids area.

During the development of the 2035 LRTP Update GVMC organized an Intermodal, Freight, Rail, & Air Subcommittee (a.k.a. Freight Subcommittee) with assistance from The Right Place, Inc, an economic development organization in Grand Rapids. This Subcommittee was charged with assisting in the identification of specific routes of interest, access issues, needed capacity improvements on commonly used routes, intersection, interchange and bridge improvements, and intermodal transfer issues. The meeting provided an opportunity for freight and logistics representatives to share their concerns and express transportation related needs. Each attendee was given a background sheet explaining the MPO's role, contact information, and recent freight related achievements. Representatives from Meijer, Amway, Michigan Natural Storage, Michigan Rail Storage, The Grand Rapids Chamber, MDOT, and others participated and provided staff with organizational background information and shipping practices. Several attendees expressed concern with:

- conflicting rail/trucking infrastructure, resulting in delays and safety concerns;
- aging or poorly maintained rail infrastructure;
- cost differentials between rail and trucking freight movements; railroads often price to be just under trucking costs, thus limiting the incentive to switch to rail;
- weight restrictions during the Spring on area roadways vs. "all season" roads;
- communication difficulties businesses experience with the rail industry,
- limitations of short-line railroad companies compared to Class I (e.g. Grand Elk vs. CSX);
- shortages and availability issues with rail equipment needed to move various commodities;
- intermodal and storage facility limitations; and
- preservation of rail corridors and spurs, particularly related to the Gerald R. Ford International Airport.

Regional Freight Network

GVMC 2035 Long Range Transportation Plan

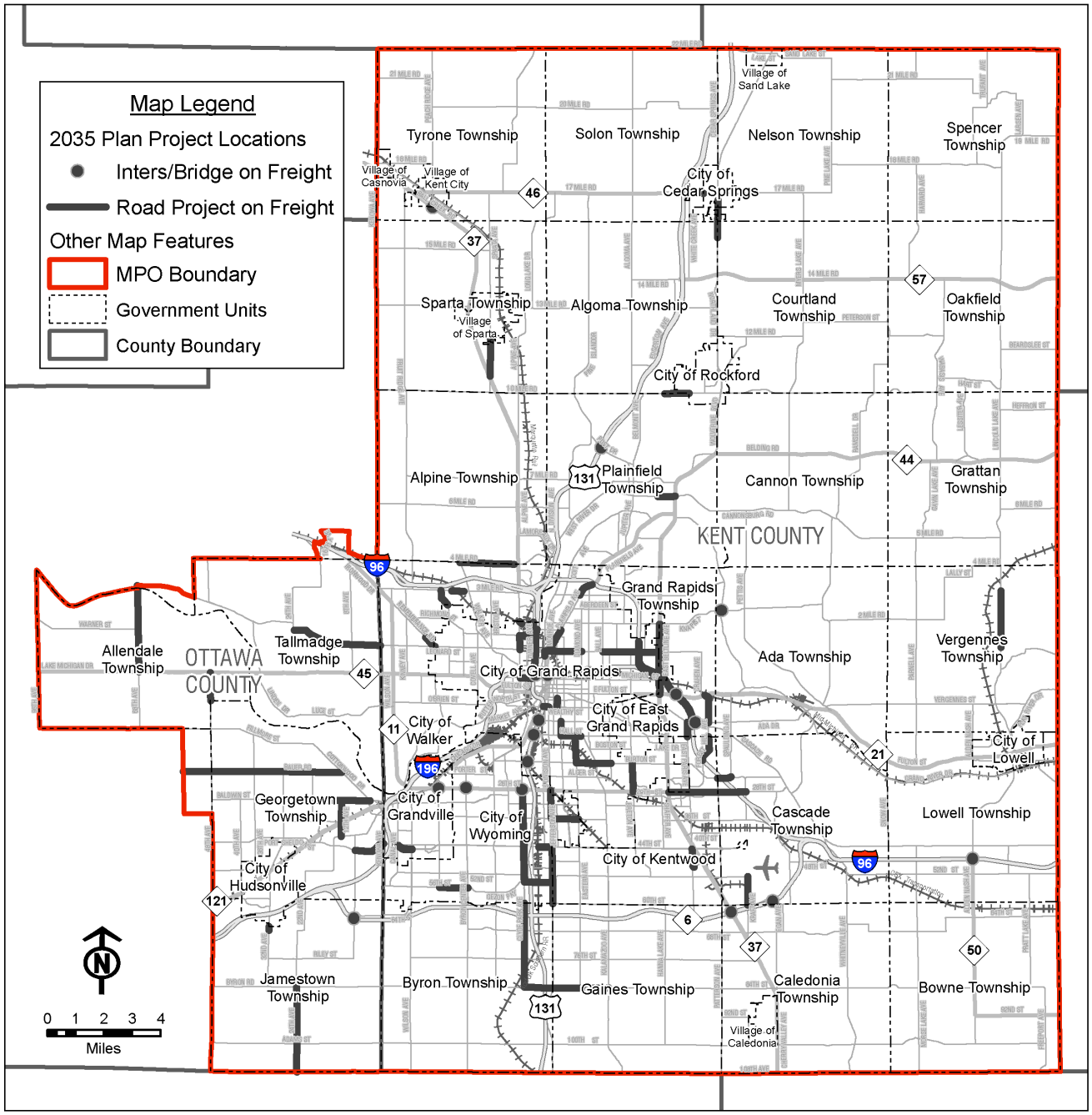
Freight Combines Air, Rail, and Ground Transport to Facilitate Regional Commerce

Map 14 – Regional Freight Network Map

Regional Freight Network - LRTP Projects Overlaid

GVMC 2035 Long Range Transportation Plan

The Project List was Overlaid onto the Freight Network to Display how Projects Influence and Improve Freight Transportation.



Map 15 – Regional Freight Network Map overlaid with LRTP Projects

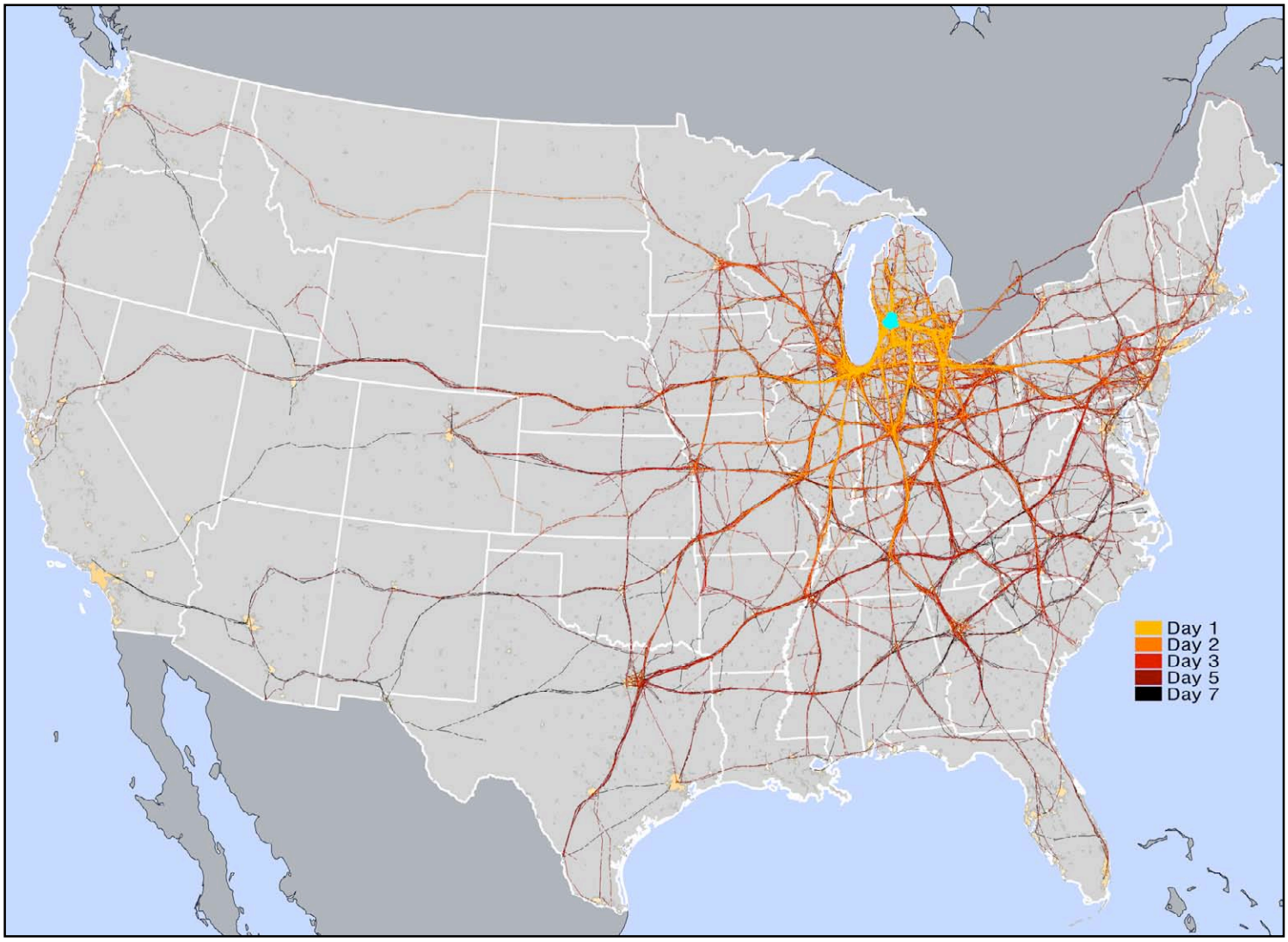
GVMC staff also worked with The Right Place Program and the MDOT Grand Region to identify and address various rail freight issues in the metro area. Some specific issues include the sale or leasing of Class I line to short-line railroads. This includes the recent sale of the Norfolk Southern line from Grand Rapids to Kalamazoo, to the Grand Elk Railroad, and the Grand rapids to Ludington/Manistee to Marquette Rail. In addition, the future ownership of the CSX lines east and west from Grand Rapids needs to be monitored. Generally, short-line railroads can provide improved customer service to their on-line customers and may have connections to multiple Class I railroads. However, the smaller railroads may not, on their own, be able to develop longer distance freight movements as economically as a Class I with a national network.

There has been on-going interest among some shippers to develop improved intermodal opportunities with the metro area railroads. In addition, the DIFT (Detroit Intermodal Freight Terminal) intermodal project in Detroit and CREATE (Chicago Region Environmental and Transportation Efficiency Program) program in Chicago directly affect intermodal potential in Grand Rapids. There are several bulk commodity distribution facilities in the MPO area, but not container (COFC/TOFC) facilities. At this point, it has been more efficient for industries in the area to truck commodities in containers to and from intermodal train yards in Detroit and Chicago, where there are multiple routing options. Fuel prices make that routing less desirable and cost effective in the future. The objective is to make efficient use of the existing rail infrastructure in the MPO area, and identify opportunities to develop public/private partnerships to enhance the system. On a smaller scale, MDOT rail loans and grants have been provided by MDOT to construct or improve siding to industries located on the existing rail corridors in the MPO area.

This information will be provided to the State Rail Plan to help identify rail related freight transportation issues in the MPO area. The MPO will also monitor and implement any policies and programs resulting from the State Rail Plan. If feasible, any additional use of the rail system can reduce truck traffic on the MPO road and highway network, and improve operations and mobility for the system. The efficient use of all transportation modes will also help to encourage economic development and promote sustainable land use patterns.

GVMC staff is looking at options to improve information about freight in our region including conducting a relatively comprehensive freight study and survey. This study would be used to determine desired routes, specific system deficiencies, commercial safety issues, and the potential for enhanced intermodalism in the freight community. Staff is also exploring the development of a sustainable freight network, developed in conjunction with the GVMC Pavement Asset Management and Freight Committees, which would incorporate acceptable levels of congestion, condition, as well as coordinated routing.

GVMC staff will continue to work with area rail/truck freight interests and consider the issues and priorities put forward by those groups and incorporate those items into the transportation planning process. GVMC also intends to continue to work with State and Federal partners to improve the level of analysis that takes place related to freight levels within the Grand Rapids area.



Map 16 – Movement of 500 Tagged Trucks From Grand Rapids over seven days in October, 2009

Chapter 12: Air Transportation

This section outlines operations at the Gerald R. Ford International Airport (GRFIA), formerly known as the Kent County International Airport.

History

In the late 1950s due to urban encroachment of development and the advent of heavier turbojet aircraft, local officials commissioned a study to identify a new location for the airport. The study revealed that the Kent County Airport should be relocated from the existing site located north of 44th Street between Jefferson and Eastern Avenues to a new location in Cascade Township east of Patterson Avenue off 44th Street. With financial backing of a taxpayer approved millage and bond issue, the new Kent County Airport was constructed on the 1,800 acre site and opened in late 1963.

This "new" airport provided a 6,600 foot east-west air carrier Runway 8R/26L, complete with an Instrument Landing System (ILS), and a 3,400 foot north-south general aviation Runway 18/36. The 1970's saw construction of a 4,000 parallel east-west general aviation Runway 8L/26R. Two subsequent runway extensions brought the primary use Runway 8R/26L to a length of 10,000 feet. At 10,000 feet long the primary Runway 8R/26L is capable of handling all aircraft except the recently produced Airbus 380 double-decker aircraft. In 1997 the Airport finished construction of a new $70 million north-south air carrier Runway 17/35. In the year 1999 the Airport saw construction of the new Air Cargo and Trade Center located on the Airport's east side. Also in 1999, the Kent County Board of Commissioners took action renaming the Kent County International Airport to the Gerald R. Ford International Airport. This was done in honor of Grand Rapids resident, longtime airport supporter, and the 36th President of the United States, Gerald R. Ford.

In the year 2000 and 2001, the Airport completed a $50 million major renovation of the passenger terminal building and a $32 million reconstruction of the primary east-west Runway 8R/26L. In 2002 the Airport expanded the parking facilities by adding a 100 space express shuttle parking lot preparation for the construction of a future parking structure. Also in 2002 the Airport became the first airport in the nation to screen 100% of checked baggage or explosives using new technology explosive detection machines. In 2003 the Airport marked the 40th anniversary at the current Cascade location. In 2004 the Airport recognized its importance as the "Gateway to West Michigan" with the construction of significant landscape improvements to the John J. Oostema Boulevard entrance drive to the Airport. Also in 2004 the Airport set a record for the passengers served in one year exceeding the two million passenger mark (2,150,125). In the mid 2000's the Airport completed many infrastructure projects which included several perimeter security roads, taxiway reconstruction projects, and the expansion of parking facilities. In 2009 the Airport completed the largest construction project in airport history (Over $120,000,000). The award winning project is know as the Terminal Area and Parking Improvement Program which included road and utility infrastructure improvements, a 5000 space parking structure, a canopy over the Terminal Drive between the parking structure and the terminal building, and enclosed pedestrian crosswalks connecting the terminal building to the parking structure.

Airfield Configuration and Information

Currently, the airport makes use of three runways. The Primary air carrier runway (8R/26L) is 10,000 feet long. The secondary air carrier runway (17/35) is 8,500 feet long and the north general aviation runway (8L/26R) is 5,000 feet in length.

The airfield has approximately 1,550,000 square yards of pavement which equates to enough concrete to construct a two-lane road (10 inches thick) from Grand Rapids to the Mackinac Bridge.

The Airport maintenance staff maintains approximately 2,000 acres of grass on the airfield. This is the equivalent of 1,515 football fields—including end zones. In an "average winter" the same staff removes approximately 83,000,000 cubic feet of snow from airfield pavement surfaces. This is enough to fill 20,000 Olympic-sized swimming pools.

Passenger Air Transportation

In 2004, the Gerald R. Ford International Airport (GFIA) posted a record 2,150,125 passengers. In 2010 several low cost carriers began operations at GFIA. With the additional seats it appears that GFIA will exceed the 2004 record.

Currently, GFIA is the 89th busiest primary commercial service airport in the nation. Nine passenger airlines serve GFIA with 126 daily scheduled nonstop flights to and from 24 major market destinations.

Recent and Future Activities

As noted, in 2004, the landscape on Oostema Boulevard was improved to reflect the West Michigan environment and act as the "Gateway to West Michigan". The landscape was further enhanced as part of the Terminal Area & Parking Improvement Program completed in 2010. Also, in 2010 the pavement on Oostema Boulevard was reconstructed in cooperation with the Kent County Road Commission and the Michigan Department of Transportation. In 2009 the Airport began adding new and replacing old Passenger Loading Bridges (PLBs) on both concourses. In the spring of 2011 the final five PLBs will be added giving GFIA 13 new PLBs which will provide that all important first impression experience for those traveling to and from West Michigan. Anticipating further growth GFIA is planning for the addition of several more passenger boarding gates on Concourse B.

Airport Property Information

The airport covers nearly 3,200 acres (over five square miles), an area almost as large as the city of Grandville and a bit larger than East Grand Rapids. There is over 12 miles of fence surrounding the perimeter of the airport property. That's enough to stretch from the airport to downtown Grand Rapids. The airport's passenger terminal building is just over 240,850 square feet; with over 170,000 square feet open to the public. There are two concourses and 13 gates in the passenger terminal building. The airport also provides approximately 9,600 public parking spaces.

Air Freight/Shipping Transportation

On October 5, 1999, a dedication ceremony welcomed the new 47-acre Air Cargo and Trade Center. The facility triples GRFIA's cargo handling capabilities with 150.000 square feet of warehouse, processing, and office space surrounded by 680,000 square feet of aircraft ramp spaces, 14 aircraft parking positions, and 61 truck bays.

Currently, there are two cargo airlines located at Gerald R. Ford International which handle approximately 209,000 pounds of air cargo each day or more than 105 tons per day. More than 76 million pounds of air cargo passed through Gerald R. Ford International in 2009.

Recent and Future Activities

The Airport Gateway was recently overhauled in 2004 thanks in part to a Transportation Enhancement grant secured through the Grand Valley Metropolitan Council, the Michigan Department of Transportation, and the U.S. Department of Transportation. Changes to the gateway include additional overhead directional signage, new trees and shrubbery, and native plants and grasses that represent West Michigan's natural environment. The airport added 750 additional spaces to its express shuttle parking lot in 2004 as well to complete the "facelift."

A new Cell Phone Lot was opened to the public in October 2006. The lot is designed as a convenient, safe and legal way for those motorists waiting for passengers to arrive. Motorists can wait just outside the airport entrance while waiting for their passengers to arrive and contact them via cell phone. Motorists can avoid continuously circling the interior airport loop or paying to park in the airport parking areas. The lot has 15 spots and a 30-minute time limit.

A new parking structure will be coming to Airport property with construction slated to begin in 2007 and lasting two years. The new structure will have approximately 4900 parking stalls, for a net increase of 3900 stalls. The structure will be a ground level and three upper levels on the west and a ground level and two upper levels on the east, because of control tower to airfield pavement line of sight restrictions, with a footprint of approximately 1200 feet by 350 feet. There will be two pedestrian bridges from the structure to the terminal building, with both escalators and elevators at the terminal to access the ticketing level. A canopy will extend from above the upper level of the structure to above the terminal roof, approximately 600 feet long. The structure will have a terra cotta paneling system and glass enclosed stair/elevator cores. An entry/welcome plaza will be constructed prior to the structure entries, along with roadway and utility improvements. The project is expected to cost about $120,000,000.

General Airport Information

- Gerald R. Ford International Airport is managed and operated by the Kent County Department of Aeronautics. The Kent County Aeronautics Board is a six-member body appointed by the Kent County Board of Commissioners with responsibility for policy setting and general oversight of the airport.
- More than 1,800 people work at the airport, the majority being employed by airport tenants.
- Replacement value of the airport, its property, and facilities is estimated at $550,000,000.
- The airport has its own police, fire, and maintenance departments.
- The airport generates over $880 million annually in economic activity throughout its West Michigan 13-county service area.
- The airport is financially self-supporting and requires no funding from property taxes, general funds, or special taxes. Airport operations and improvements generate local net airport revenue, rather than spend valuable tax dollars.
- GRFIA's capital requirements are met through various sources including earned surpluses, revenue bonds, passenger facility charges, and grants under the federal Airport Improvement Program and the Michigan state aviation grant program. Operational requirements are met through rates and charges assessed to airport tenants and airport patrons for the use of airport services and facilities.

Chapter 13: Non-Motorized Transportation

Federal statute requires metropolitan areas of a certain size, such as the Greater Grand Rapids area, to effectively plan an integrated and intermodal transportation system that includes pedestrian and bicycle facilities, the GVMC is therefore responsible for developing a non-motorized transportation plan element as a part of its Long Range Transportation Planning process. Additionally, bicycle and pedestrian projects using Federal-aid transportation funds must be included in the MPO Transportation Improvement Programs (TIP).

The Non-Motorized element identifies existing facilities, regionally-significant projects, enhances cooperation and coordination between jurisdictions for non-motorized facility development, addresses some of the challenges to non-motorized transportation facility development, and provides prioritization guidelines and funding information.

The GVMC originally developed bicycle and pedestrian plans approved in 1996 and 1997, respectively. Subsequently, non-motorized transportation issues were integrated into a single comprehensive document. In 2006 and 2009, Draft Non-Motorized Transportation Plans were completed. While neither document was ever formally adopted, many of the prioritized projects have since been completed. The current GVMC Draft Non-Motorized Plan serves as an integral foundation of the GVMC Long Range Transportation Plan.

The Non-Motorized Plan was divided into four segments. An inventory of the existing non-motorized facilities was made to help identify network deficiencies and improvement opportunities. The GVMC Non-Motorized Transportation Committee then developed a selection methodology and project list to provide a basis for future investment. Research was conducted into the various options for non-motorized transportation funding as a resource to those striving to increase these types of transportation investments. In addition to funding options for non-motorized facilities, there exist related policy decisions that may enhance the accessibility and development of pedestrian and bicycle transportation options.

Benefits of Non-Motorized Transportation

Non-motorized transportation consists of pedestrian and bicycle travel. As technology has changed, an increasing array of options for movement of people and goods have presented themselves and non-motorized transportation has become one of many options. In the past century, pedestrian and bicycle transportation had switched from a utilitarian to a more recreational mode for most people. This is partly why transportation investments have been strongly focused on the continued development of roads for automobiles. Now as the benefits of non-motorized transportation resurface, increasing attention is returning to enhancing the non-motorized transportation option. To provide for the most efficient network possible, these types of facilities must be included in transportation plans.

Transportation and Accessibility Options

Non-motorized facilities give people the option to walk, bike or use public transit if they choose. A comprehensive non-motorized network is crucial to the mobility of many older, home-bound Americans lacking transportation options. Beyond the aging populace, there is a social equity component to the provision of alternate forms of transportation. A more complete non-motorized network increases the viability of pedestrian and bicycle transportation as options and provides a mode for those unable or unwilling to use motorized vehicles. Furthermore in areas where low-income or minority populations live, the demand for non-motorized options may be greater.

Transit Support

For those who use transit as their preferred mode of travel and those for which it is the only option, non-motorized facilities support the transit system by providing access to transit stops. Walking and biking facilities tying into the transit network are critical for optimal efficiency of the transit system.

Air Quality

Regional air quality is an issue for West Michigan. The majority of the ground-level ozone pollution is caused by motor vehicles. Poor air quality due to vehicle emissions contributes to respiratory problems, especially for the very young and elderly. An improved non-motorized system gives residents the opportunity to use a non-polluting form of transportation for some trips and simultaneously reduces pollutants detrimental to human health as well as regional air quality attainment status. We can reduce greenhouse gas emissions, reduce our dependence on oil, save money, and improve regional air quality by using alternative forms of transportation such as bicycling and walking.

Economic

In Grand Rapids, the estimated cost per traveler for traffic congestion is $315 every year. Every private automobile removed from the road reduces the overall traffic congestion for an area, and while some trips are not suited to non-motorized transportation, many trips could be diverted to this mode.

The cost of owning and operating a new vehicle continues to rise, especially as fuel prices continue to increase. The cost of operating a bicycle, however, is anywhere from 1-2% of the cost of vehicle operation, with fuel cost increases having almost no impact on that amount. Aside from the personal cost savings, the infrastructure cost savings of building and maintaining non-motorized options as opposed to roads is dramatic.

Expanding non-motorized transportation also brings an economic development component with regard to the bicycle industry—a multi-billion dollar industry and a major contributor to the nation's economy—as well as increases in property values, tourism and the overall quality of life of a community. Non-motorized transportation facilities are used as a centerpiece to attract home buyers as well as focal points in chamber of commerce advertising campaigns. A great deal of tourism in the State of Michigan is derived from the value of our trail systems. While the focus of this element is bicycle transportation, recreational use of non-motorized facilities in our state is an important revenue generator. Above all, non-motorized options promote the connections that offer access to the jobs and shopping that make a community more attractive to both business and prospective employees.

Health

More than a quarter of Michiganders are considered obese. This expensive and largely preventable condition can be battled through land use and transportation planning that encourages and supports physical activity. By offering non-motorized transportation options, physical activity can be incorporated into everyday activities. The provision of a transportation system which both connects people with destinations and is a means of achieving a healthier lifestyle is paramount. Walking or bicycling to work, school, church, or for pleasure is a convenient way people can incorporate exercise into their daily lives and improve their health.

Quality of Life

An improved non-motorized system reduces water and noise pollution associated with automobile use by shifting short trips from automobiles to pedestrian options. More non-motorized transportation options could also reduce the need for parking spaces, improve safety for current users—especially the young, old, and disabled, foster community connection and interaction, and re-

duce our dependence on fossil fuels. Non-motorized transportation, in addition to being an alternative to the automobile, indirectly enhances the quality of life for a community.

Obstacles to Non-Motorized Transportation

While pedestrian and bicycle transportation has been illustrated as a viable choice, people utilizing non-motorized modes of transportation still experience a number of deterrents and obstacles. These obstacles include cross-jurisdictional cooperation, coordination among multiple users, lack of adequate facilities, seasonal weather, demand, time and distance, land use patterns, funding, safety, maintenance, and liability.

In order to ensure compatible facilities, a great deal of cooperation must take place between adjoining jurisdictions and among all the municipalities in a region. The complexity of building and maintaining a network of this sort requires partnerships between various state and local departments.

There is a lack of unified public sentiment for a particular form of non-motorized facility. Disparate groups each petition for "their" type of facility. The non-motorized advocacy community lacks a single voice or organization, thus competition exists not just between road and non-motorized advocates, but between non-motorized groups as well. The divided non-motorized lobby weakens its overall impact and ability to secure transportation dollars for projects.

Adequate facilities are lacking in many areas, like sidewalks, safe intersections, transit accessibility, bicycle lanes, bicycle parking and storage, and shared-use paths. In particular, bridge crossings in key areas, especially over and beneath limited-access highways, are a significant impediment to safe pedestrian movements.

Seasonal weather, such as cold, heat, humidity, rain, wind and snow, can hamper bicycling and pedestrian commutes. However, people can and do elect to bicycle in the warmer months, walk in the winter, or utilize sidewalks to public transportation stops when the weather becomes inclement. Municipalities can make non-motorized options more appealing, especially in the winter months, with regular snow plowing and other weather-related maintenance initiatives.

Non-motorized transportation currently makes up a very small percentage of trips taken. Some studies, however, suggest the use of alternative modes would increase dramatically if facilities were provided. Competition among projects for priority within the transportation improvement program requires a quantitative basis to demonstrate that all projects, including non-motorized ones, are essential and can reach measurable objectives. Within the MPO, non-motorized planning objectives are identified by the respective jurisdictions and these projects, facilities and plans are assumed to be representative of local demand. The reasoning remains that with more facilities, more people would take advantage of these transportation modes and rely less on the automobile.

While time and distance are perceived as obstacles to non-motorized transportation, the short distances of most commutes indicate one could walk or bicycle to destinations instead of driving a vehicle without adding significant time to their journey. Non-motorized transportation is an option that may often only add a few extra minutes, and the benefit of exercise, to the vast majority of short trips.

The density and pattern of land use greatly influences the amount of non-motorized trips. Mixed-use developments encourage more walking trips as more destinations are located within a reasonable distance. While current zoning regulations grouping similar uses together increases land use compatibility, it discourages efficient and direct pedestrian or bicycle trips. Typical suburban travel characteristics break up non-motorized routes and heighten traffic levels for non-motorized travelers. Developers, planners, and government agencies are recognizing the value of designing for "walkability"—the idea of location-efficiency—having the ability and convenience of using non-motorized modes to get to work, school, or social centers.

The cost of non-motorized facilities may be the chief deterrent to their inclusion in area road rights-of-way. Funding is limited by the historic emphasis on automobile travel, as the most demanded mode of transportation, and the perception non-motorized travel is solely recreational and, thus, ineligible for federal transportation money. Federal surface transportation law provides flexibility to organizations like the GVMC to fund bicycle and pedestrian improvements from a wide variety of programs. However, the federal funding opportunities for non-motorized projects are limited locally by the GVMC Committees. For example, the GVMC Committees have restricted the use of federal funding for sidewalks to only those road reconstruction projects where the existing sidewalk is removed but not for new sidewalk facility construction, a restriction that the federal government does not place on Surface Transportation Program funds. The GVMC Non-Motorized Committee is working to open up some federal funding categories, such as Congestion Mitigation/Air Quality (CMAQ) funds for non-motorized projects that serve a transportation purpose.

Safety is extremely important in the development of non-motorized facilities. While, nationwide, almost 12% of all traffic fatalities were bicyclists or pedestrians, that number reaches nearly 18% in Michigan. Indeed, over 100 people were killed in incidents between bicyclists or pedestrians and motor vehicles over a decade within the GVMC region. Improving the safety features of our non-motorized network will not only will protect current users, non-motorized options will be more desirable, attracting more trips to these modes.

Among the many sources of funding available for non-motorized transportation, there is a marked lack of money for ongoing maintenance of facilities. Regular maintenance, feasibility studies and engineering cannot be paid for with Transportation Enhancement (TE) grants, the primary funding source for many non-motorized facilities. While some communities may be supportive of constructing pedestrian and bicycle resources, they may be deterred by the associated ongoing maintenance costs.

Local jurisdictions are often hesitant to include bicycle lanes within their non-motorized transportation plans and street improvements due to the perceived threat of legal action. Within the last decade, court decisions have increasingly protected the liability of road agencies. Municipalities and road commissions are required to repair and maintain only; there is no general duty to make roads "safe" and there is no liability for whatever form or design a facility might take. In fact, by offering dedicated bicycle lanes, municipalities are not only free from liability for the design, but they are arguably providing a safer means of travel for both bicyclists and motorists.

Existing Non-Motorized Transportation Network

The greater Grand Rapids metropolitan area has over 1,000 miles of non-motorized infrastructure. These resources were constructed primarily by local municipalities assisted by county and state road agencies and the state natural resource department. The existing infrastructure is a tremendous resource for our community and represents millions of dollars of investment in non-motorized transportation, the majority of which was locally planned and funded.

Non-Motorized Facility Types

The American Association of State Highway and Transportation Officials (AASHTO) is considered the source for guidance and standards on the development of bicycle and non-motorized facilities. Each type of facility provides different opportunities for the non-motoring public:

Sidewalks – paved pathways paralleling a highway, road, or street and intended for pedestrians, typically from four to five and up to eight feet wide and made from concrete other materials, depending on their location.

Shared Use Paths – generally serve corridors not served by streets and highways, or where wide utility or former railroad rights-of-way exist, permitting such facilities to be constructed away from

the influence of parallel streets. Shared use paths offer opportunities not provided by the road system, like recreation or, in some instances, as direct commuter routes if cross flow by motor vehicles and pedestrians is minimized.

Bicycle Lanes – established with appropriate pavement markings and signing along streets in corridors with existing significant bicycle demand and where distinct needs are served by such facilities. Bike lanes improve conditions for bicyclists on the streets, delineating the right-of-way assigned to bicyclists and motorists and providing for predictable movements by each. They also increase the total capacities of highways carrying mixed bicycle and motor vehicle traffic.

Signed Shared Roadway – designated by bike route signs, serving to provide continuity to other bicycle facilities or designate preferred routes through high-demand corridors. As with bike lanes, signing of shared roadways indicates to bicyclists particular advantages exist to using these routes compared with other routes. This means responsible agencies have taken actions to assume that these routes are suitable shared routes and will be maintained consistent with the needs of bicyclists. Signing also serves to advise vehicle drivers that bicycles may be present.

Shared Roadways (No Bikeway Designation) – Most bicycle travel in the United States occurs on streets and highways without bikeway designations. Signing may be unnecessary or unwarranted because a community's existing street system is already fully adequate for efficient bicycle travel, or the streets and highways are unsuitable for bicycle travel, or it may be inappropriate to designate some routes as they may not be considered high bicycle demand corridors.

Bicycle Centers and Staging Areas – auxiliary facilities that increase the convenience and effectiveness of non-motorized transportation. Bicycle centers may offer indoor bicycle parking facilities, lockers, showers, snack bars, bicycle repair and rentals, and other amenities intended to encourage bicycling. Non-motorized staging areas typically have designated motorized vehicle parking areas for accessing non-motorized networks.

Pedestrian Bridges or Refuges - Occasionally significant crossings in a non-motorized network over railroads, water, other roads, or freeways, present major impediments. Many options exist to provide pedestrian access over these obstacles. Several local bridge crossings have been identified where a dedicated crossing or bridge modification for pedestrians would complete a network gap, increasing the attractiveness and safety of non-motorized travel.

Existing Non-Motorized Facilities

An extensive inventory of existing facilities already exists in the GVMC MPO area. The resources already on the ground in the Grand Rapids area are a regional accomplishment and a basis for a larger and more integrated non-motorized transportation network. GVMC staff has worked with area jurisdictions to develop a comprehensive non-motorized facility inventory including sidewalk facilities along Federal-Aid eligible roadways, shared use paths, signed shared roadways or bicycle routes and lanes, as well as Federal-Aid eligible roads with wide paved shoulders. Maps of these facilities are produced by GVMC Transportation using data collected from federal, state, regional, county and local units of government.

	PEDESTRIAN		BICYCLE			TOTAL
Jurisdiction	**Side-walk**	**Shared-Use Path**	**Bicycle Lane**	**Bicycle Route**	**4-foot Shoulders**	**Total Miles Existing Facilities**
Ada Township	4.86	14.17	0.00	0.00	0.00	19.03
Algoma Township	0.00	0.00	0.00	0.00	0.00	0
Allendale Township	7.42	0.00	0.00	0.00	0.00	0
Alpine Township	4.15	0.00	0.00	0.00	0.00	4.15
Browne Township	0.00	0.00	0.00	0.00	0.00	0
Byron Township	13.43	2.95	0.00	0.00	0.00	16.38
Caledonia Township	1.59	0.13	0.00	0.00	0.00	1.72
Cannon Township	0.43	3.94	0.04	0.00	0.00	4.41
Cascade Township	2.92	23.81	0.00	0.00	0.00	26.73
City of Cedar Springs	4.14	0.00	0.00	0.00	0.00	4.14
City of East Grand Rapids	17.82	0.00	0.77	0.00	0.00	18.59
City of Grand Rapids	227.69	13.47	1.03	0.00	7.42	249.61
City of Grandville	27.15	5.53	0.00	0.61	0.00	33.29
City of Hudsonville	14.49	1.05	0.00	0.00	0.00	15.54
City of Kentwood	78.55	12.77	0.00	0.00	0.00	91.32
City of Lowell	7.72	0.07	0.00	0.00	0.00	7.79
City of Rockford	4.83	0.56	0.59	0.00	0.00	5.98
City of Walker	28.55	7.16	0.00	0.00	0.74	35.71
City of Wyoming	93.92	14.11	0.00	7.30	0.00	115.33
Courtland Township	0.13	0.00	0.00	0.00	0.00	0.13
Gaines Township	15.09	0.45	0.00	0.00	0.00	15.54
Georgetown Township	36.03	0.00	0.00	0.00	0.00	36.03
Grand Rapids Township	7.34	9.58	0.00	0.00	0.00	16.92
Grattan Township	0.04	0.00	0.00	0.00	0.00	0.04
Jamestown Township	0.00	6.93	0.98	0.00	0.00	7.91
Kent City, Village of	0.00	0.00	0.00	0.00	0.00	0.00
Kent County Parks/KCRC	0.00	59.92	0.00	0.64	111.39	171.95
Lowell Township	0.56	0.64	0.00	0.00	0.00	1.20
Nelson Township	1.44	0.00	0.00	0.00	0.00	1.44
Oakfield Township	0.00	0.00	0.00	0.00	0.00	0.00
Plainfield Township	19.49	1.95	0.00	0.00	0.00	21.44
Solon Township	0.00	0.00	0.00	0.00	0.00	0.00
Sparta Township	0.00	0.00	0.00	0.00	0.00	0.00
Spencer Township	0.00	0.00	0.00	0.00	0.00	0.00
Tallmadge Township	0.00	0.00	0.00	0.00	0.00	0.00
Tyrone Township	2.87	0.00	0.00	0.00	0.00	2.87
Vergennes Township	0.00	0.00	0.00	0.00	0.00	0.00
Village of Caledonia	0.00	0.00	0.00	0.00	0.00	0.00
Village of Casnovia	0.00	0.00	0.00	0.00	0.00	0.00
Village of Sparta	4.12	0.33	0.00	0.00	0.00	4.45
Mich. Dept. of Nat. Resources	0.00	63.56	0.00	0.00	0.00	63.56
Mich. Dept. of Transportation	0.00	0.00	0.00	0.00	100.87	100.87
TOTAL MILES	**626.77**	**243.08**	**3.41**	**8.55**	**220.42**	**1,094.07**
NOTE: Mileage recorded by maintenance organization, therefore some jurisdictions have local facilities that are listed						

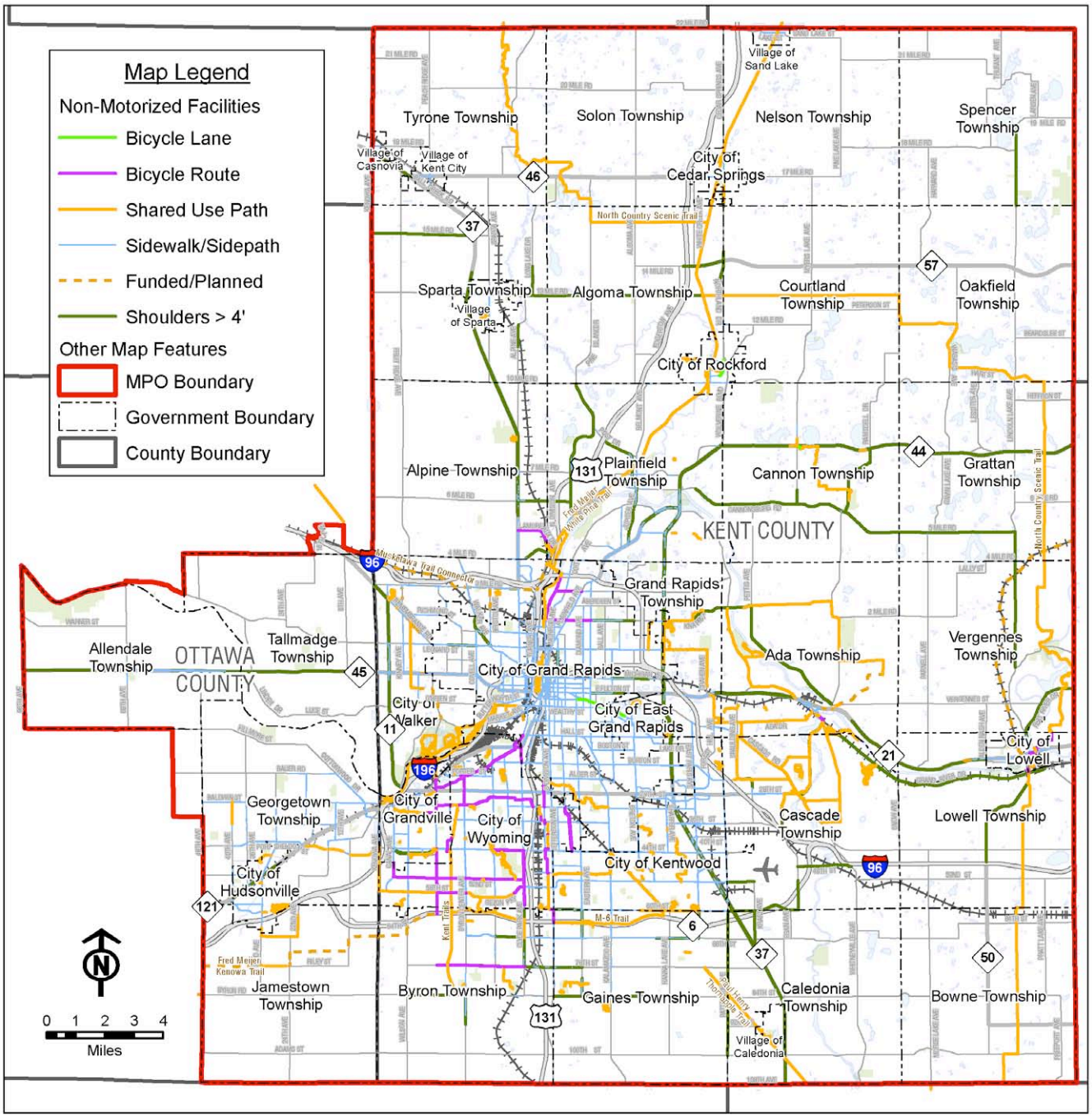
under Kent County.

Figure 17 – Existing Non-Motorized Facilities

Existing Non-Motorized Facilites

GVMC 2035 Long Range Transportation Plan

Facilities Include Sidewalks, Bike Lanes, Bike Routes, and Shared-Use Paths



Map 17 – Existing Non-Motorized Facility Map

Existing Policy Context

At the Federal and State levels, policy and existing legislation support continued development of non-motorized transportation options.

Federal

Federal transportation policy is to increase non-motorized transportation and to simultaneously reduce the number of non-motorized users killed or injured in traffic crashes. This policy is a high priority for the U.S. Department of Transportation (DOT). Improving conditions and safety for bicycling and walking embodies the spirit and intent of Federal surface transportation law and policy to create an integrated, intermodal transportation system which provides travelers with a real choice of transportation modes.

State

Act 51 of the Michigan Public Acts of 1951 distributes nearly $2 billion per year in state transportation revenues to the state transportation department, county road commissions, and municipalities for maintenance and construction of roads and support of transit systems. Section 10k states a reasonable amount of funds distributed to all levels of government shall be expended for the construction or improvement of non-motorized transportation services and facilities. This money can be used for adding sidewalks, paving shoulders for bicyclists and other facility development, redevelopment or repair.

Local

The GVMC 2035 Long Range Transportation Plan (LRTP) lays out non-motorized transportation goals for our region. Goal 1d states: "Sustain and develop the interconnected regional network of non-motorized transportation facilities to provide access to employment, services, schools, and other destinations." LRTP goals carry over the federal and state level themes of non-motorized transportation encouragement, however the GVMC does not have a specific policy laid out for non-motorized transportation. The lack of policy at the local level hinders dedicated investment in these modes of transportation.

Non-Motorized Transportation Improvements

The primary focus of the non-motorized portion of the Long Range Transportation Plan is threefold: to identify regionally significant priority projects, to enhance cooperation and coordination between jurisdictions for facility development, and thirdly, to address some of the challenges to non-motorized transportation facility development. Similar to both the Long Range Transportation Plan and the Transportation Improvement Program (TIP), the Grand Valley Metropolitan Council Non-Motorized Transportation Committee worked together to identify priority non-motorized projects for our MPO area.

Committee Makeup

A Non-Motorized Transportation Committee guides GVMC staff and directs the planning process. Representatives from local units of government, members of the GVMC Transportation Committees, advocacy groups, concerned citizens, and other stakeholders are invited to be members of the committee. Other members include local bicycle club members, MDOT, disability advocates, local environmental advocates, trail advocates, professional planners, media representatives, bicycle enthusiasts, and those who rely on non-motorized transportation as their primary mode of travel. All meetings of this group are open to the public.

In addition to providing GVMC staff with the latest information and maps of non-motorized facilities and local proposals, meetings serve to identify partnership opportunities with neighboring jurisdictions and provide opportunities for coordination of resources and plans. Through the Non-Motorized Transportation Committee, previous bicycle and pedestrian planning efforts are analyzed, network deficiencies selected, and a general course of action prescribed for addressing area priorities.

Study Process and Project Evaluation Criteria

The Non-Motorized Transportation Committee first examined the location of existing non-motorized facilities, then mapped proposed and funded projects alongside existing facilities to locate system breaks. Parallel to the identification of system deficiencies, the Non-Motorized Transportation Committee developed project evaluation criteria.

After agreeing on basic evaluation criteria for reviewing projects, each jurisdiction examined projects, screening each according to the evaluation system and refining their local lists of projects accordingly. This process uses a system of tiers to review projects based on their level of performance. The highest tier evaluation criteria were based on providing connections to major regional destinations or bringing continuity to the system by completing a gap. The second tier was based more on potential use, local support, the feasibility of construction, and overall cost effectiveness. The final tier focused on social equity for all user groups, possible use by commuters in lieu of the automobile, and aesthetics. The tier system developed by the Non-Motorized Transportation Committee is representative of the diverse nature and potential importance of these types of non-motorized projects.

The resultant Non-Motorized Transportation Improvement Project List far exceeds the historic levels of funding for non-motorized transportation projects within the MPO area. Indeed, the levels of funding provided for non-motorized modes of transportation are inconsistent over time and vary with competition between projects for grant funds. The total cost to implement all of the projects is estimated at nearly $90 million. Based on historical federal and state funding for non-motorized facilities in the MPO, approximately $1 million in Transportation Enhancement funds are spent yearly on non-motorized projects. As such, it will take decades for the non-motorized project list to be completed. Fortunately, many local communities are constructing non-motorized facilities entirely with local funds as their residents increasingly demand transportation options.

A list of illustrative Non-Motorized projects for the region can be found in Appendix G.

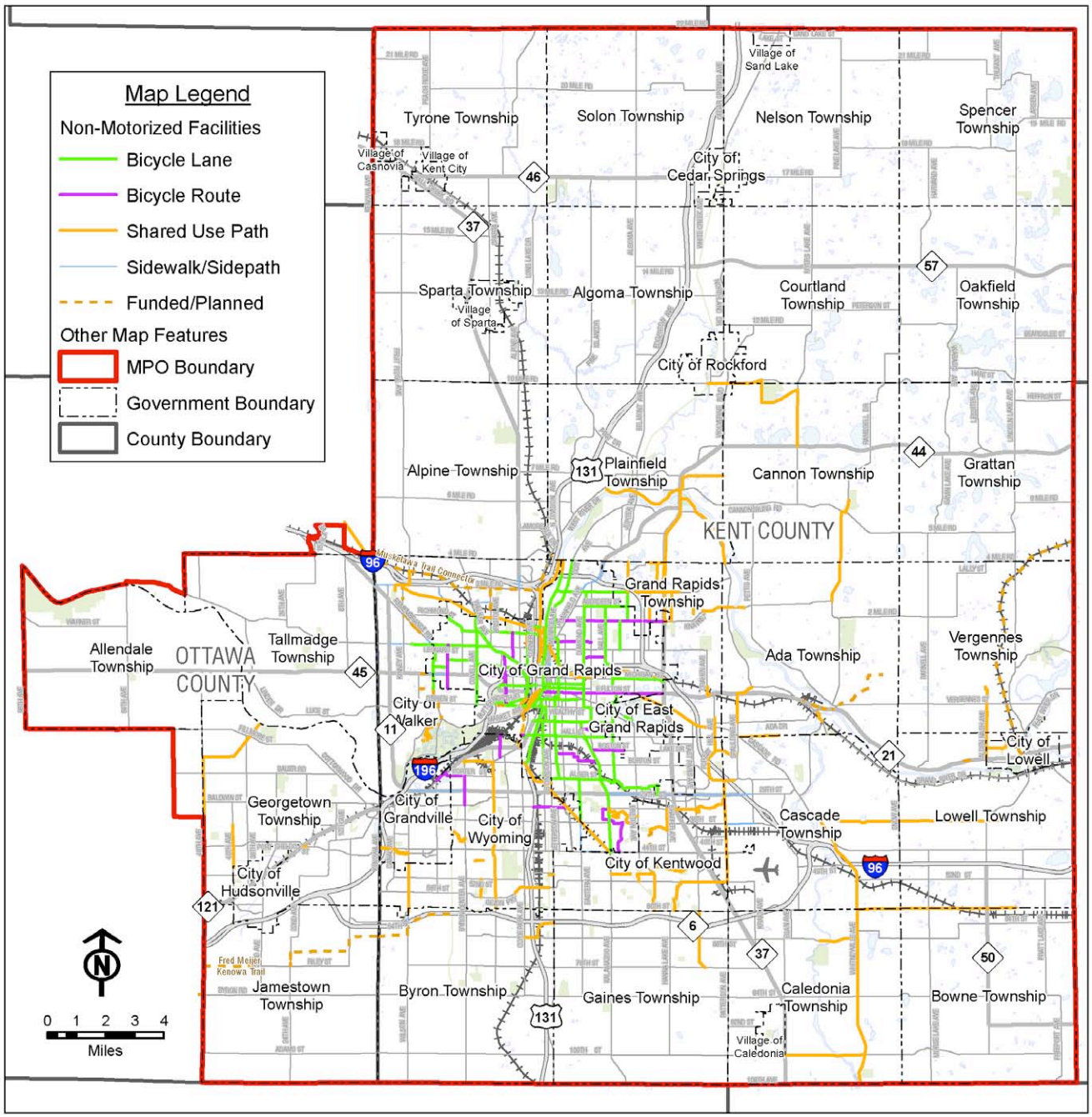
	PEDESTRIAN		BICYCLE		TOTAL
Jurisdiction	**Sidewalk**	**Shared-Use Path**	**Bicycle Lane**	**Bicycle Route**	**Total Miles Proposed Facilities**
Ada Township	0.00	5.34	0.00	0.00	5.34
Algoma Township	0.00	0.00	0.00	0.00	0.00
Allendale Township	0.00	0.00	0.00	0.00	0.00
Alpine Township	0.00	0.00	0.00	0.00	0.00
Browne Township	0.00	0.00	0.00	0.00	0.00
Byron Township	0.51	1.38	0.00	0.00	1.89
Caledonia Township	0.00	10.24	0.00	0.00	0.00
Cannon Township	0.00	8.29	0.00	0.00	8.29
Cascade Township	3.71	6.23	0.00	0.00	9.94
City of Cedar Springs	0.00	0.00	0.00	0.00	0.00
City of East Grand Rapids	0.00	0.00	0.00	0.00	0.00
City of Grand Rapids	8.49	17.67	78.86	21.89	126.91
City of Grandville	2.62	2.05	0.00	0.65	5.32
City of Hudsonville	0.00	0.00	0.00	0.00	0.00
City of Kentwood	2.96	18.36	0.00	0.00	21.32
City of Lowell	0.00	1.34	0.00	0.00	0.00
City of Rockford	0.00	0.00	0.00	0.00	0.00
City of Walker	8.43	15.80	1.00	0.00	25.23
City of Wyoming	0.85	15.52	0.00	14.23	30.60
Courtland Township	0.00	0.00	0.00	0.00	0.00
Gaines Township	0.00	2.01	0.00	0.00	2.01
Georgetown Township	0.00	7.14	0.00	0.00	0.00
Grand Rapids Township	0.36	13.55	0.00	0.00	13.91
Grattan Township	0.00	0.00	0.00	0.00	0.00
Jamestown Township	0.00	0.00	0.00	0.00	0.00
Kent City, Village of	0.00	0.00	0.00	0.00	0.00
Kent County	0.00	16.21	0.00	0.00	16.21
Lowell Township	0.00	4.57	0.00	0.00	0.00
Nelson Township	0.00	0.00	0.00	0.00	0.00
Oakfield Township	0.00	0.00	0.00	0.00	0.00
Plainfield Township	0.00	10.30	0.00	0.00	10.30
Solon Township	0.00	0.00	0.00	0.00	0.00
Sparta Township	0.00	0.00	0.00	0.00	0.00
Spencer Township	0.00	0.00	0.00	0.00	0.00
Tallmadge Township	0.00	0.00	0.00	0.00	0.00
Tyrone Township	0.00	0.00	0.00	0.00	0.00
Vergennes Township	0.00	0.00	0.00	0.00	0.00
Village of Caledonia	0.00	0.00	0.00	0.00	0.00
Village of Casnovia	0.00	0.00	0.00	0.00	0.00
Village of Sparta	0.00	0.00	0.00	0.00	0.00
Mich. Dept. of Natural Resources	0.00	0.00	0.00	0.00	0.00
Mich. Dept. of Transportation	0.00	0.00	0.00	0.00	0.00
TOTAL MILES	**27.93**	**156.00**	**79.86**	**36.77**	**300.56**

Figure 18 – Planned Non-Motorized Facilities

Proposed Non-Motorized Facilites

GVMC 2035 Long Range Transportation Plan

Facilities Include Sidewalks, Bike Lanes, Bike Routes, and Shared-Use Paths



Map 18 – Planned Non-Motorized Facility Map

Non-Motorized Transportation Funding Options

Cost is the primary deterrent to the development of non-motorized modes of transportation. Much of the funding comes from local jurisdictions, but several federal and state funding sources are available for facility development. Bicycle and pedestrian projects are eligible for funding from nearly all major Federal-aid highway, transit, safety, and other programs.

Transportation Enhancement (TE) funds are the most often used type of funding for non-motorized projects within the GVMC MPO area, beyond locally-raised money. TE funds in Michigan are competitively-awarded to municipalities and about 50% of TE grants are used for the construction of non-motorized type facilities. In addition, our MPO has recently been awarded High Priority Project funding for trails. The GVMC Non-Motorized Committee is exploring opening up CMAQ funding for these types of projects as is often done in other areas. For more information about transportation funding sources see Chapter 17; the leading sources of non-motorized project funding include:

Federal Funding Sources

- Highway Bridge Replacement and Rehabilitation Program
- Surface Transportation Program (STP)
- Transportation Enhancement Activities (TE)
- Highway Safety Improvement Program (HSIP)
- Safe Routes to School Program (SR2S)
- Congestion Mitigation and Air Quality Improvement Program (CMAQ)
- Recreational Trails Program
- Transportation and Community and System Preservation Pilot Program

State Funding Sources

- Department of Transportation: Michigan Transportation Fund Act 51 – Section 10K
- Department of Natural Resources & Environment: Michigan Natural Resources Trust Fund
- Department of Housing and Urban Development: Community Development Block Grants

Non-Profit Organization Funding Sources

- West Michigan Trails & Greenways Coalition
- Rails-to-Trails 2010 Campaign
- American Hiking Society National Trails Fund

Other Miscellaneous Funding Sources

- Millage
- Special Assessment
- General Funds
- Private Sources
- Foundations

Study Recommendations

The project list developed and included in the "Illustrative" LRTP list (see Appendix G) provides a framework for moving forward with improvements recommended and endorsed by the local municipalities. With this information and an understanding of available funding sources, the next task is finding a variety of strategies to implement the plan. While the focus is transportation planning, some land use planning tools can be useful for finding solutions to the ever-tightening rights-of-way and the spectrum of demands on our transportation system.

Land Use Planning Concepts that Encourage Non-Motorized Transportation

Subdivision Ordinances and Site Plan Review

Many governments have some implicit ordinance standards providing for pedestrian facilities. Specific language in ordinances on pedestrian access and circulation for new developments or redevelopments helps divert some of the financial burden of providing non-motorized facilities from governments to developers. The provision of sidewalks, shared-use paths, or even bike lane rights-of-way can be a condition of development. This way the physical placement of these facilities could be planned for and a municipality could ensure continuity to the system as it is developed.

Mixed Use and Transit Oriented Development

Many local planning agencies have incorporated mixed-use zoning ordinances and codes into their municipal ordinances. The concept of mixed-use zoning is to enable development that combines different land use types (such as residential and commercial) into a pre-defined area. This variety of uses can allow shorter trips to be made by individuals, thus decreasing automobile demand. These areas vary in size—from a single parcel to an entire neighborhood—and in how they accommodate pedestrian and bicycle travel.

Development Density

The density of residential and employment development greatly influences pedestrian and bicycle travel. Generally, the higher the density of development, the shorter the distance individuals must travel for certain types of trips. This in turn increases the attractiveness of making trips by walking or bicycling.

Complete Streets

In 2000, the Federal Highway Administration (FHWA) provided the following guidance: "Bicycling and walking facilities will be incorporated into all new transportation projects unless exceptional circumstances exist." To provide these "complete streets," communities have been evaluating their roads, often adopting a complete street policy to ensure the entire right-of-way is routinely designed and operated to enable safe access for all users. Then in July, 2010, the Michigan Governor Granholm signed legislation creating Public Acts 134 and 135, directing the Michigan Department of Transportation to develop a "Complete Streets" policy and revises Act 51 to require advance cooperation and coordination between transportation and local government agencies.

A complete street works for all travel modes, including motorists, transit, bicyclists, pedestrians and wheelchairs. A complete street policy produces safe roads convenient for all users. The process of creating complete streets is leading planners and engineers across the country to approach street design in fundamentally new ways—incorporating non-motorized elements during road improvements instead of retrofitting a roadway later. The Complete Streets movement represents a convergence of several existing trends such as multimodalism and walkability and may help to improve accessibility for all modes of transportation.

Education and Encouragement

Programs to encourage walking and bicycling can greatly change travel habits. Publicity campaigns, signs and maps, and changes in policies regarding parking and employee incentives are all resources. Local governments can offer incentives or recognition to employees that encourage the use of alternative modes of transportation, while private sector employers can offer employees incentives to take advantage of alternative modes for commuting. Police departments can offer training to motorists, bicyclists, and pedestrians as part of an awareness campaign.

Future Efforts

The Grand Valley Metropolitan Council will continue to encourage pedestrian and bicycle travel as an alternative mode of transportation. A variety of products and activities are possible to further these non-motorized-oriented goals. Future products could include:

- A region-wide non-motorized map highlighting bicycling and pedestrian routes and shared-use trails through the GVMC area. Such a map would be kept up-to-date by constantly revising the underlying bicycle and pedestrian facility data.
- An online application for the viewing and distribution of this information.
- A bicycle and pedestrian planning page within the GVMC website with news, maps, events, and information with regional significance.
- Informational brochures on particular pedestrian and bicycle topics published or distributed by the GVMC.

Similarly, future activities may include:

- GVMC facilitation of and participation in regional forums, ad hoc committees, or workgroups as issues pertaining to pedestrian and bicycle transportation arise.
- GVMC participation in regional efforts, as necessary, aiding in the implementation of the specific projects and policies of the Non-Motorized Transportation Plan element of the Long Range Transportation Plan.
- Continued refinement and evaluation of the Transportation Improvement Program (TIP) funding process as it pertains to pedestrian and bicycle projects.
- Participation in multi-community pedestrian, bicycle, and transit connectivity efforts and activities.
- Assisting jurisdictions in cooperative non-motorized transportation planning efforts, especially with regard to closing gaps in the current system.
- Supporting Transportation Enhancement grant applications by Act 51 agencies in the GVMC area.

Walking and bicycling are important elements of an integrated, intermodal transportation system. Constructing sidewalks, striping bike lanes, building shared-use paths, installing bicycle parking at transit stops, educating children to ride and walk safely, and installing curb cuts and ramps for wheelchairs, all contribute to our national transportation goals of safety, mobility, economic growth, enhancement of communities and the natural environment.

Chapter 14: Safety Management System

SAFETEA-LU, passed in 2005, raises the stature of the highway safety program by establishing highway safety improvement as a core program, tied to strategic safety planning and performance. SAFETEA-LU devotes additional resources and supports innovative approaches to reducing highway fatalities and injuries. It also requires MPOs to consider the State Strategic Highway Safety Plan (SHSP) when developing their transportation plans. In 2010, GVMC produced a Strategic Safety Planning Process technical document which can be found in full on the GVMC website. A summary of the major elements and conclusions is incorporated into the Long Range Transportation Plan.

There are currently several Traffic Safety Committees in the State of Michigan sponsored by the Office of Highway Safety Planning and AAA Michigan. In 2005, The Grand Valley Traffic Safety Committee (TSC) was formed through the involvement of the GVMC. The TSC consists of agencies in Kent, Ottawa and Allegan counties. The goal of this committee is to bring traffic safety professionals together on a regular basis to exchange information on best practices being utilized in their individual agencies and to maximize the resources available to them. GVMC also supports a local Safety Committee that was supportive in development of the Strategic Safety Planning Process technical document.

Definition of a Traffic Crash

A traffic collision can be defined as when a vehicle collides with another vehicle, pedestrian, animal, road debris, or other geographical or architectural obstacle. Traffic collisions can result in injury, property damage, and death. Studies suggest that there are four basic causes for traffic crashes. Equipment failure, roadway design, poor roadway maintenance, and driver behavior. Over 95% of crashes can be attributed to some degree of driver behavior combined with one of the other three factors.

Background

According to the National Highway Traffic Safety Administration, 33,963 people died in U.S. motor vehicle crashes in 2009. Nationwide, motor vehicle traffic crashes are the eighth leading cause of death among Americans of all ages and the number one cause of death for every age from three through 33.

In the GVMC study area, there are an average of more than 21,000 traffic accidents each year. Of these 21,000 accidents 4,200 include an injury and unfortunately an average of 76 fatal traffic accidents occur each year. Nearly one-third of all fatal crashes in the GVMC region since 2005 have involved an impaired driver. Over the past five years traffic crashes have cost the residents of the region an estimated average of $550 million each year. According to a AAA study completed in 2008, traffic crashes cost the residents of the GVMC region in excess of five times the cost of traffic congestion (5.44:1).

With these statistics in mind, GVMC has undertaken an effort to focus planning resources on traffic crashes in an effort to minimize the impact they have on the economy of the region as well as the loss of human life. This focused effort will ensure that safety planning is integrated into the GVMC overall transportation planning process.

The major difference between most safety plans and this process, is that GVMC will identify locations where countermeasures can be implemented to help reduce the number of accidents. This analysis will be the basis for the use of federal funding for safety related improvements.

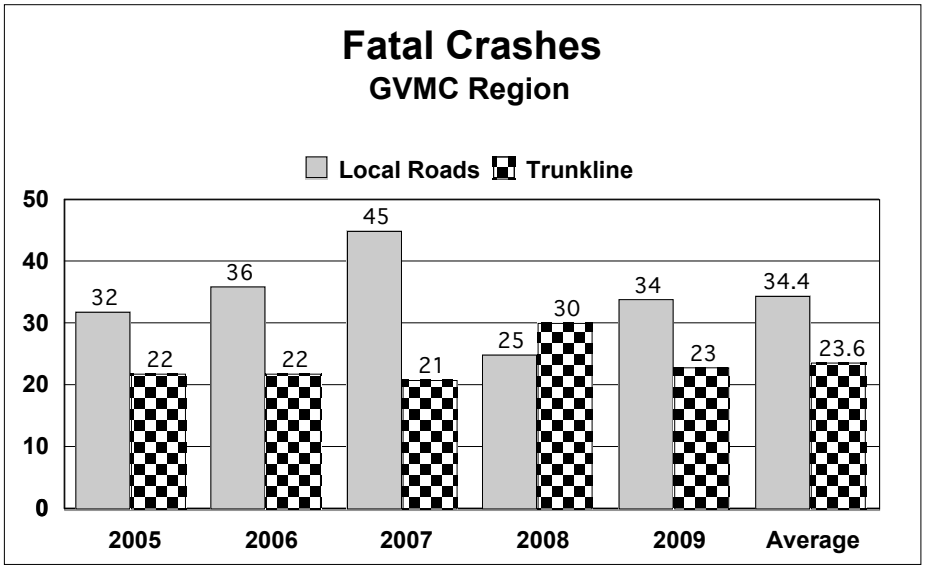


Figure 19 – Total Fatal Crashes 2005–2009

Includes alcohol, speeding and deer crash data

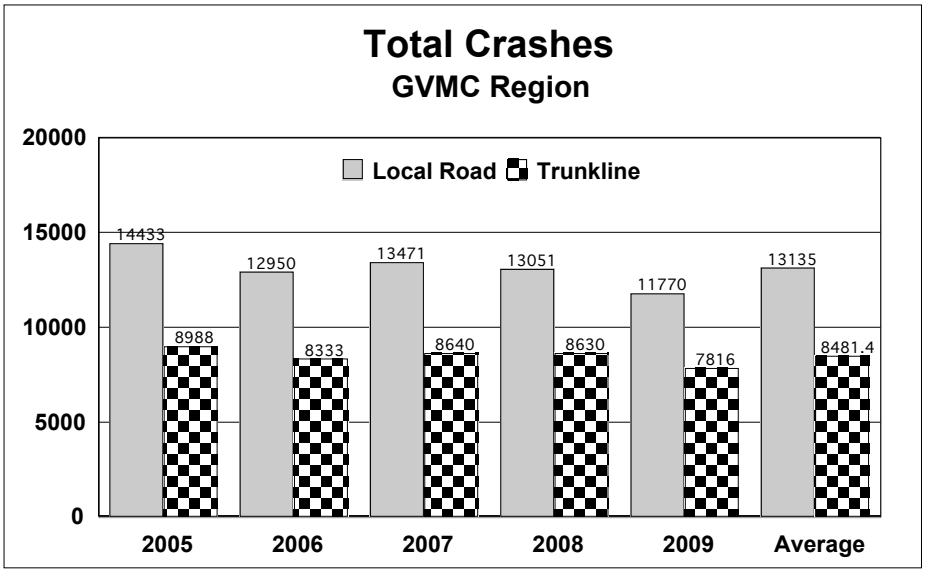


Figure 20 – Total Crashes 2005–2009

Includes alcohol, speeding and deer crash data

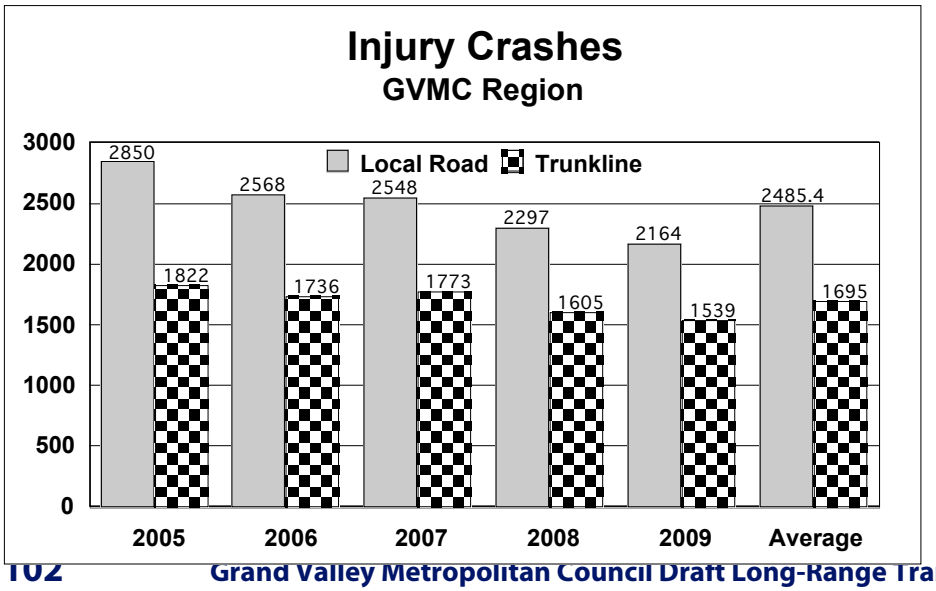


Figure 21 – Total Injury Crashes 2005–2009

Includes alcohol, speeding and deer crash data

Traffic Crashes by Jurisdiction

Local Governments	2004	2005	2006	2007	2008	2009
Ada Township	422	412	370	430	380	327
Algoma Township	398	372	380	376	403	350
Allendale Township	371	400	327	376	393	368
Alpine Township	442	454	386	380	368	333
Bowne Township	123	116	97	102	101	109
Byron Township	663	631	518	619	642	626
Caledonia Township	468	448	368	403	395	363
Cannon Township	321	291	282	286	280	263
Cascade Township	849	824	737	844	767	655
Casnovia, Village of	9	7	3	4	3	5
Cedar Springs, City of	95	79	86	90	64	64
Courtland Township	210	206	224	176	211	187
East Grand Rapids, City of	187	201	175	190	174	158
Gaines Township	483	478	469	514	504	434
Georgetown Township	972	981	822	949	850	828
Grand Rapids, City of	9103	7432	6927	7280	6840	6257
Grand Rapids Township	719	649	610	602	604	563
Grandville, City of	1027	815	784	717	891	726
Grattan Township	153	177	121	114	118	125
Hudsonville, City of	200	161	149	184	184	165
Jamestown Township	192	176	151	190	196	165
Kent City, Village of	19	18	19	13	18	10
Kentwood, City of	1652	1373	1214	1253	1262	1055
Lowell, City of	376	369	341	353	366	322
Nelson Township	144	149	159	137	137	129
Oakfield Township	170	174	143	154	166	154
Plainfield Township	1206	1076	887	1018	1004	824
Rockford, City of	156	152	135	141	150	121
Sand Lake, Village of	17	8	10	9	9	4
Solon Township	215	190	196	158	183	172
Sparta Township	284	273	229	237	221	209
Spencer Township	117	106	94	89	91	91
Tallmadge Township	314	256	297	281	278	245
Tyrone Township	142	142	136	114	111	115
Vergennes Township	167	149	154	158	145	130
Walker, City of	1580	1463	1332	1275	1166	1086
Wyoming, City of	2480	2213	1951	1895	2006	1848

Figure 22 – Total Number of Traffic Crashes by GVMC Jurisdiction (2004–2009)

Six Basic Elements

The GVMC Strategic Safety Planning Process is built upon six basic elements. For five emphasis areas, these elements are addressed in the Strategic Safety Planning Process technical document.

1. Local Policy/Objectives – The development of localized objectives that place focus on each element of the safety program.
2. Data Collection – Provides information to support decisions for identifying the safety inventory, needs, and countermeasures, and monitoring the results of safety decisions (system performance).

3. Data Analysis - Converts field data into usable information to assist decision makers in identifying safety needs and countermeasures, and monitoring the results of their decisions.
4. Project Prioritization/Program Development – Includes final prioritizing of transportation safety needs, selecting cost effective solutions.
5. Program Implementation – Carries out funded projects resulting in safety enhancements and educational, enforcement, and emergency programs
6. Performance Monitoring/Annual Report – Measures and analyzes results of transportation safety decisions, countermeasures, and programs; provides information from which "out year" efforts are forecast and evaluated, and future work programs are developed. GVMC will produce an annual safety report that outlines progress made from safety planning efforts, the results of safety system work efforts, expenditures, and system performance.

Emphasis Areas

Research in transportation safety has shown that nearly every crash is preventable. In most regions, the largest contributing factor in crashes is behavior. Every time a person gets into a car, there is an opportunity to make that trip as safe as possible by obeying traffic laws, focusing on the task of driving, not driving when distracted or too fatigued or impaired by alcohol and other drugs, and wearing a safety belt.

For the purposes of this effort, GVMC will focus on five emphasis areas not related to driver behavior. Areas that GVMC will place planning emphasis on will focus on infrastructure components. The areas of emphasis will include intersection safety, corridor safety, pedestrian and bikes, senior mobility and safety, and car/deer conflicts.

Intersection Safety

Intersections are the place in the transportation system where all roadway users – cars, trucks, buses, and vulnerable road users (pedestrians, bicyclists, motorcyclists) converge creating potential for conflict. Research indicates low-cost safety improvements such as improved sight distance, channelization, signage, and other infrastructure treatments can produce positive results. While these infrastructure improvements can improve safety, it is often the behavior of the road user that can cause a crash, e.g., speeding, red light and stop sign running, failure to use a pedestrian crosswalk, etc.

In the GVMC study region there were 6,981 intersection crashes in 2009 representing 35.6 percent of all the reported crashes. Nationally intersection crashes accounted for 21% of all fatalities. The GVMC region appears to exceed the ratio of accidents at intersections reported at the national, state and regional level (35.6% to 29% respectively). In 2009, these intersection crashes within the GVMC region resulted in 14 fatalities (28% of all roadway fatalities in the region) and 1,706 injuries (46% of all roadway injuries in the region). Again the GVMC region exceeds the statewide and regional ratios for injuries (42%).

The GVMC region contains in excess of 600 signalized intersections. Advanced computer and software systems allow for basic analysis of a broad set of data related to accidents at signalized intersections. The total number of fatal and injury crashes at an intersection was established for every intersection region-wide with at least two reported fatal or injury crashes. Locations were ranked, in descending order (the most severe ranked 1), by the total number of fatal and injury crashes at the location. The annual loss attributed to the 46 signalized intersections with worsening crash trends is in excess of $56 million. While some of this can be attributed to factors that cannot be designed for, these 46 intersections should receive priority for designated federal funding through the MPO process. In many cases low cost countermeasures can be applied to reduce the cost of crashes at these locations in the coming years.

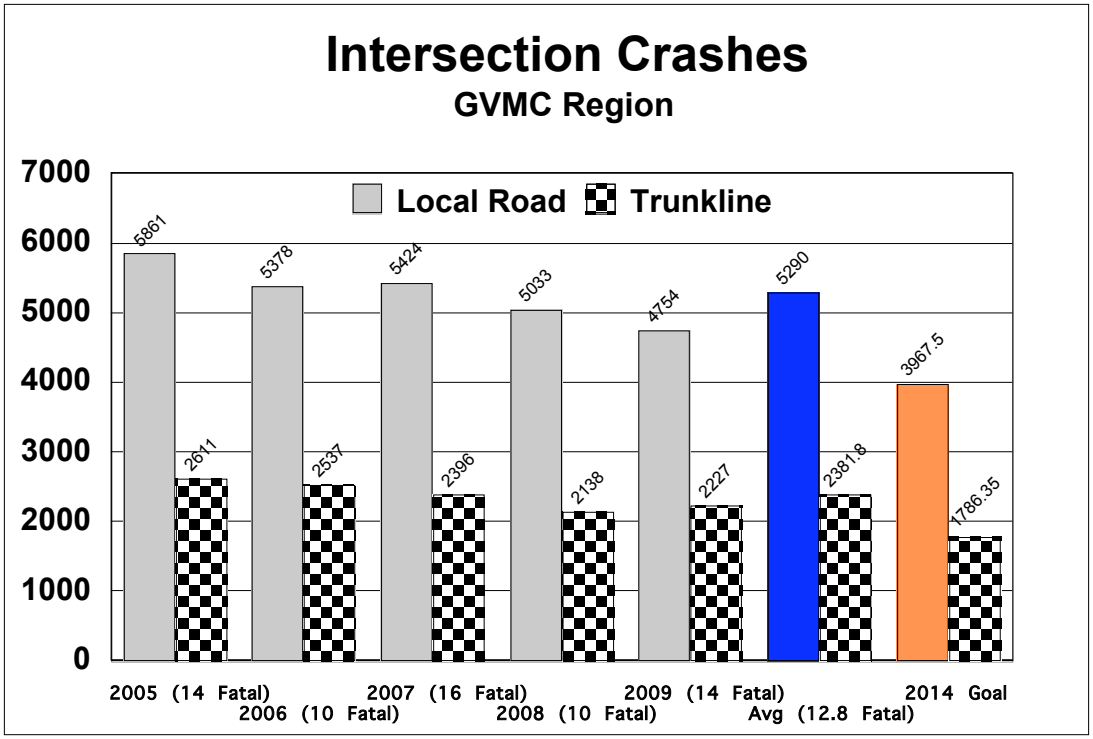


Figure 23 – Intersection Crashes

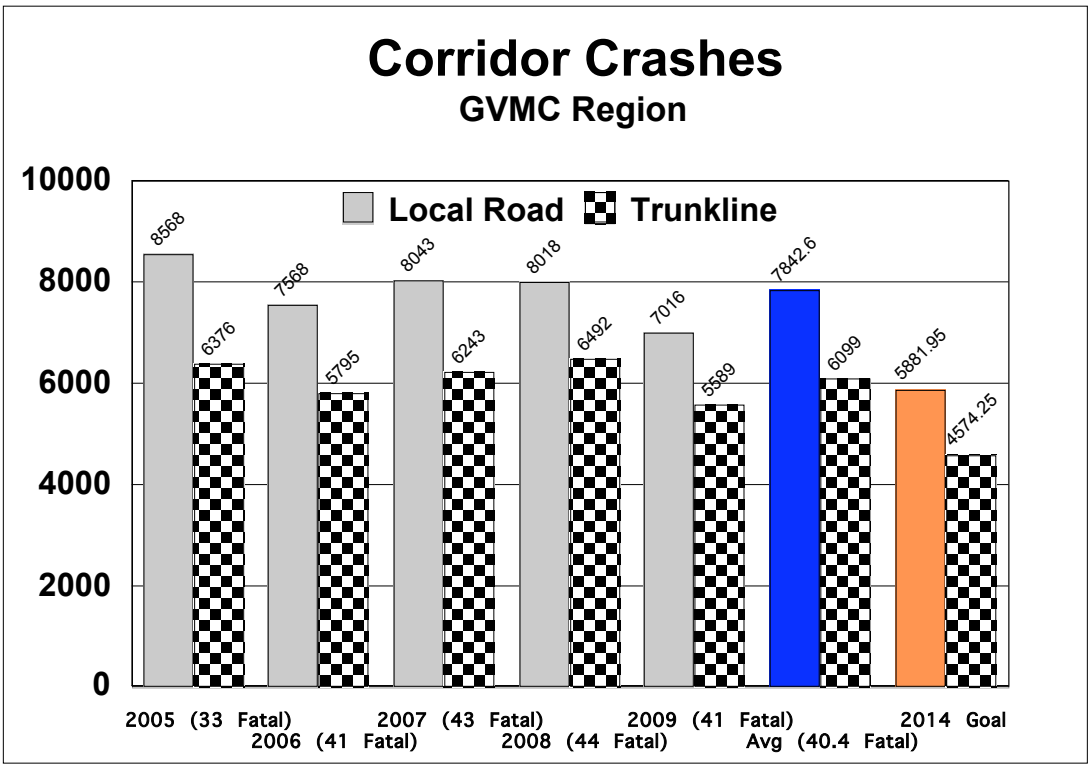


Figure 24 – Corridor Crashes

Corridor Safety

Away for the influence of intersections 65% (12,605) of all crashes occur in the GVMC region. Of this 65%, 13% (2,522) were car/deer crashes, 4% involved alcohol or drugs, and 1% involved fleeing law enforcement. For analysis purposes these type of accidents were removed, leaving 10,336 accidents in 2009 within travel corridors in the GVMC planning region.

These corridor crashes within the GVMC region resulted in 41 fatalities (72% of all roadway fatalities in the region) and 1,997 injuries (54% of all roadway injuries in the region). The GVMC region rate for corridor crashes is lower than the statewide (71%) and regional (70%) ratios for crashes within corridors.

The GVMC region contains in excess of 5,000 miles of public streets and highways. Within these 5,000 miles there are nearly 1,600 miles designated as "federal aid eligible". Between 2007 and 2009 there were 63,177 reported accidents in the GVMC study region. Of these, nearly 80% were on the federal aid road network. While the federal aid network represents approximately 32% of the total road mileage in the region it carries nearly 90% of the total miles traveled. It stands to reason that a high percentage of the accidents occur on the federal aid system. For this reason and the fact that the MPO is required to limit planning efforts to the federal aid network, corridor accident analysis will be limited to the federal aid system. The full safety report contains a complete list of each federal aid segment in the GVMC study area ordered by crash rate.

For the purposes of this planning effort, GVMC has identified five primary types of accidents that occur in greater numbers in the region as focal points for narrowing the list of 1,600 centerline miles down to a list that can be further analyzed. These accident types are: rear end (30.1%), angle (17.2%), fixed object (12.9%), sideswipe (11.4%), and bike/pedestrian (1.5%).

For corridors, GVMC employed a ranking process similar to the one used intersections. Region wide crash data for the years 2007-2009 were used. A database was be created containing crashes located outside the 158 foot (0.03 miles) buffer considered to be the area of influence at each signalized intersection. Individual corridor segments were created based on logical segmentation. This logical segmentation follows the same methodology used for the GVMC congestion management and condition analyses. Logical segmentation allows for programming and implementation by segmenting the network into segments that can be reasonably improved over time. It is also helpful to carryout this analysis to reveal any anomalies that may exist from unusual changes in traffic patterns that were the result of construction detours or other temporary conditions that changed the normal expected conditions for a designated corridor. GVMC tracks road closures and compares these closures/detours. Every effort is made to determine and note where possible when these anomalies occur.

The annual loss attributed to the road segments on the federal aid system is in excess of $500 million. In many cases low cost countermeasures can be applied to reduce the cost of crashes at these locations in the coming years. The Michigan Department of Transportation Safety Programs Unit has developed a widely used spreadsheet that depicts benefits that can be expected through the implementation of a variety of improvements. This list of countermeasures and expected benefits can be found in the Strategic Safety Planning Process technical document.

Based on current trends in the region, the predominant segment crash type is rear end crashes. According to the Michigan Department of Transportation Safety Programs Unit, rear end crashes can be reduced by up to 80% with the installation of a center turn lane. Most other accident types that occur in the region, fixed object, sideswipe and head on, typically have causes not based in roadway geometry. For this reason further analysis will focus on rear end crashes.

To identify segments where the introduction of a center turn has the potential for the reduction of rear end crashes GVMC selected crashes that occurred between 2007 and 2009 that were rear end

crashes. These crashes were further reduced by eliminating behavior related crashes that involved alcohol and excessive speed. The remaining accidents were located along their respective corridors.

The addition of a center turn lane to all facilities would be an approach that could lead to improved corridor safety, however this is not a luxury that is financially, environmentally, or socially viable. Adding a center turn lane can increase the cost of maintaining a facility between 20% and 33% annually, not to mention the cost (nearly $900,000 per mile) of the initial construction. With tightening budgets, stagnant funding levels and increasing construction costs being experienced by each of the GVMC member communities, a set of thresholds was created to guide the implementation of center turn lanes on federal aid facilities using federal funding. These thresholds can be used as a guide for programming road improvements.

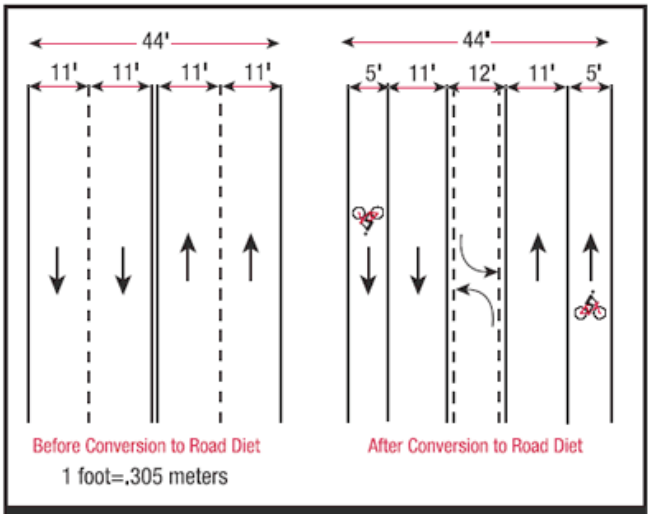
The recommended threshold for the addition of a center turn is based on the rate of return on investment. A new asphalt pavement can be expected to last between seven and 20 years provided that the facility is properly maintained. GVMC typically experiences a 12 year lifecycle for new reconstruction on asphalt roads. Twelve years will be the period used for this cost benefit analysis.

For this analysis the return on investment is based on an initial construction cost of $900,000. Additional maintenance costs of $42,000 (2 crack filling treatments and 1 light overlay) for the additional lane are added to the calculation. The theoretical cost of $942,000 is determined to be the base "cost" of the additional center turn lane. For the addition of the center turn lane to be justified, the expected benefits of that additional lane should exceed $942,000 ($78,500 annually) over a 12 year period.

Figure 25 – 32nd Street, Grand Rapids, before and after non-invasive center turn lane treatment.

The Strategic Safety Planning Process technical document contains the results of the analysis completed for rear end segment crashes and outlines segments that would be good candidates for center turn lane implementation. Many of the segments identified currently have sufficient pavement width to accommodate a center turn lane without the additional expense of widening. The MPO encourages consideration of these segments when road resurfacing projects are undertaken.

There is a growing trend in recent years to convert 4 lane facilities with less than 18,000 ADT down to a three-lane configuration. The term "road diet" has been coined for the process of this roadway conversion. In many cases four lanes have excess capacity and are not "community friendly." Road Diets are often conversions of four lane undivided roads into three lanes (two through lanes and a center turn lane), as shown below. The fourth lane may be converted to bicycle lanes, sidewalks, and/or on-street parking. In other words, existing space is reallocated; the overall area remains the same.



A recent study completed by the Federal Highway Administration revealed that crash rates can be reduced by as much as 6% when a road diet is implemented. It should be noted that in this study crash severity was not impacted. More information on this report can be found at: http://www.tfhrc.gov/safety/hsis/pubs/04082/index.htm

Figure 26 – Road Diet Diagram

Senior Mobility and Safety

Approximately 13% of the people in the GVMC area are over the age of 65. Based on currently available data 90% of elderly residents use a passenger vehicle as their primary source of transportation with 70% doing the driving themselves. According to the Michigan Secretary of State there are nearly 70,000 licensed drivers in the GVMC area over the age of 65. This represents nearly 15% of the total number of licensed drivers. By 2035, the elderly population in the GVMC area is expected to nearly double to 177,500 and make up more than 20% of the population.

While the data shows elderly drivers are quite responsible (e.g., have higher safety belt usage, lower alcohol related crash rates), national fatality rates per 100 million vehicle miles traveled (VMT) for the oldest drivers mirror the high rates for teen drivers. Plus, the inherent frailty of older drivers reduces their chances of surviving a crash once it occurs. Crash data between 2005 and 2009 shows that older drivers are involved in only 19 percent of total GVMC area crashes but 26 percent of fatal crashes.

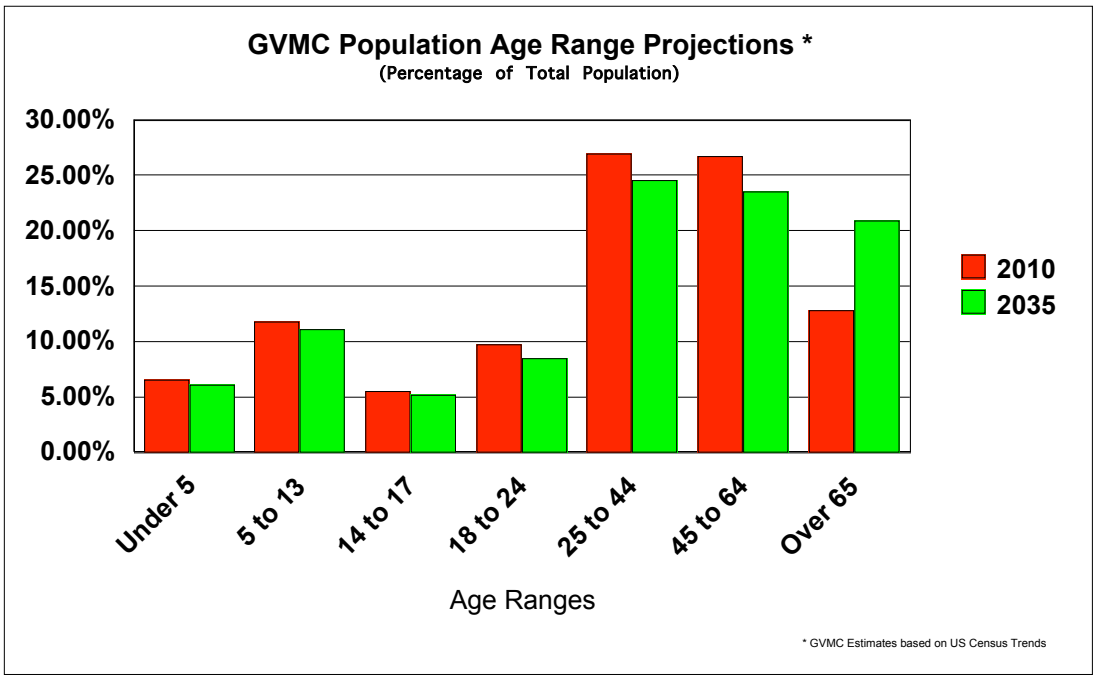


Figure 27 – GVMC Population Age Range Projections

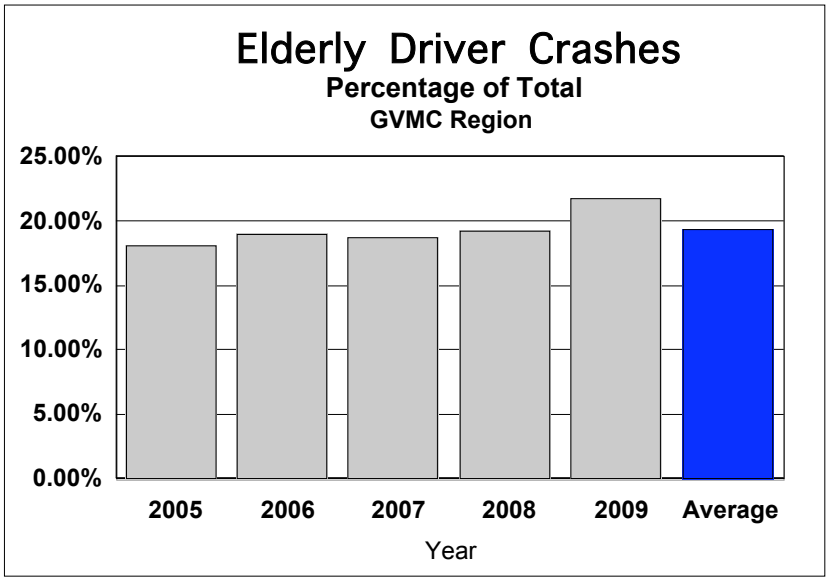


Figure 28 – Elderly Driver Crashes

Roadway design can play a key role in enhancing safe driving for the elderly. Much of the existing road system was designed and built with standards that did not take into account the needs of an aging population. While retrofitting the entire highway system to accommodate elderly drivers is ideal, financial realities dictate that other approaches are warranted.

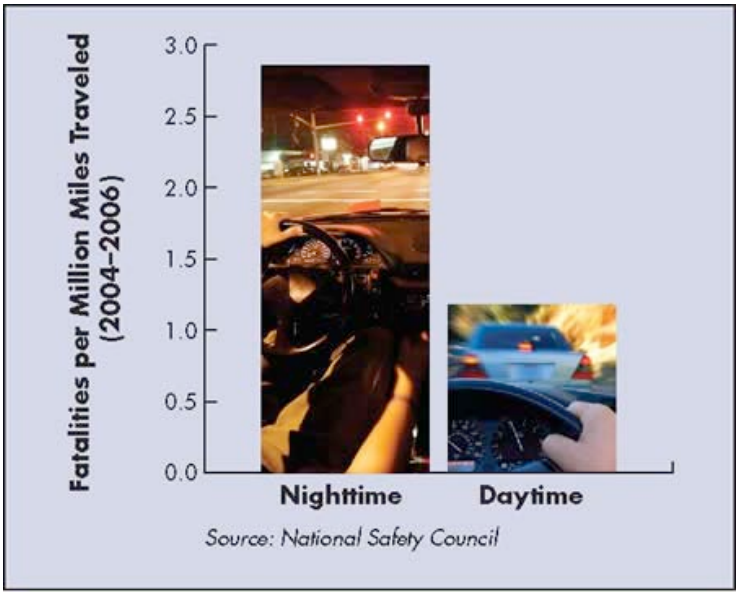
A recently released report entitled Guidance For Implementation of the AASHTO Strategic Highway Safety Plan compiled promising strategies to improve the roadway/driving environment to better accommodate the special needs of older drivers.

These include:

- Provide advance warning signs to inform drivers of existing or potentially hazardous conditions on or adjacent to the road.
- Provide advance guide signs and street name signs to give older drivers additional time to make necessary lane changes and route selection decisions, and reduce or avoid excessive or sudden braking behavior.
- Increase size and letter height of roadway signs to better accommodate reduced visual acuity of older drivers.
- Provide longer clearance intervals at signalized intersections to accommodate slower perception reaction times of older drivers.
- Provide more protected left turn signal phases at high-volume intersections to avoid difficulties older drivers have with determining acceptable gaps.
- Improve lighting at intersections, horizontal curves, and railroad grade crossings to help older drivers compensate for reduced visual acuity
- Improve roadway delineation so older drivers have better visual cues to recognize pavement markings.
- Improve traffic control at work zones to improve driver expectancy by providing adequate notice to drivers describing the condition ahead, the location, and the required response.

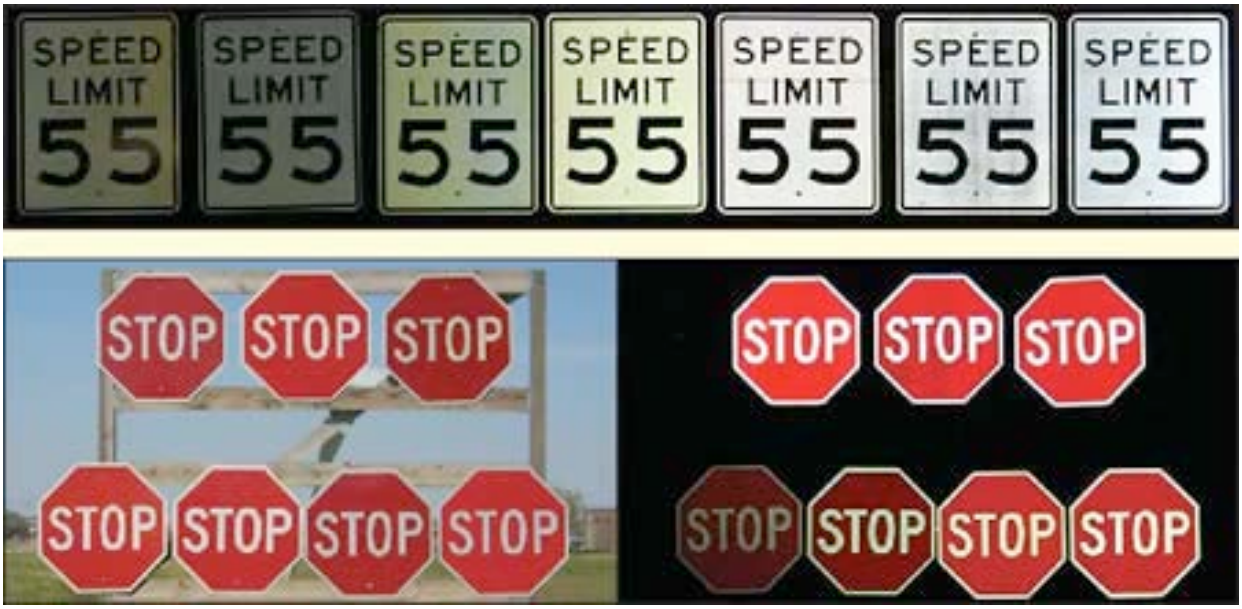
While only one-quarter of all travel occurs at night, about half of the traffic fatalities occur during nighttime hours. To address this disparity, the Federal Highway Administration has adopted new traffic sign retroreflectivity requirements. Published on December 21, 2007 and effective January 22, 2008, this final rule supplements the Manual on Uniform Traffic Control Devices (MUTCD) requirements for maintenance of sign retroreflectivity. The rule provides additional requirements, guidance, and clarification. The new rule encourages flexibility to allow agencies to choose a maintenance method that best fits their specific conditions.

Figure 29 – Crash Fatalities, Nighttime verses Daytime Driving



Agencies have until January 2012 to establish and implement a sign assessment or management method to maintain minimum levels of sign retroreflectivity. The compliance date for meeting the minimum retroreflectivity requirements for regulatory, warning, and ground mounted guide signs is January 2015. For overhead guide signs and street name signs, the compliance date is January 2018.

Federal STP funding can be used for sign replacement to meet the new standards. GVMC does not restrict the use of federal funding for sign replacement.



Pedestrian and Bicycle Safety

Nearly every trip begins and ends with walking. With this in mind GVMC is placing a renewed emphasis on providing support to local communities with a focus on non-motorized transportation safety.

On average there is nearly one crash per day that involves a motor vehicle and bike or pedestrian in the GVMC study area. Fortunately only a very few end in a tragic death.

Although it is often lumped into the same "non-motorized" category bicycle and pedestrian safety requires analysis by specific mode as the causes and often the fault for crashes vary greatly between bikes and pedestrians.

According to the National Center for Statistics and Analysis, the average age of cyclists killed in the United States in traffic crashes in 1998 was 32; in 2008 the average age of those killed was 41. In contrast, in 1998 the average age of those injured was 24 and the average age of those injured in 2008 was 31.

In the GVMC area in 2009, 60% of the 206 reported bicycle/motor vehicle crashes were cited as being the fault of the bicycle operator. The primary causes for crashes where bicycle operators were at fault were excessive speed and ignoring traffic control devices. The primary cause for crashes where vehicles were at fault was failing to yield when entering the roadway either at driveways or side streets. Many drivers cited not seeing the bicyclist.

Pedestrian/motor vehicle crashes reported (164 total) revealed a different story in terms of definable fault. More than 60% of the reported crashes were determined to be the fault of the motor vehicle operator, while less than 40% were crashes where the pedestrian was determined to be at fault. The primary area for the causes of these crashes seemed to be when a motor vehicle was making a legal right turn on red. Of the primary causes for crashes where the pedestrian was at fault the primary cause was not using a cross walk or cutting between cars.

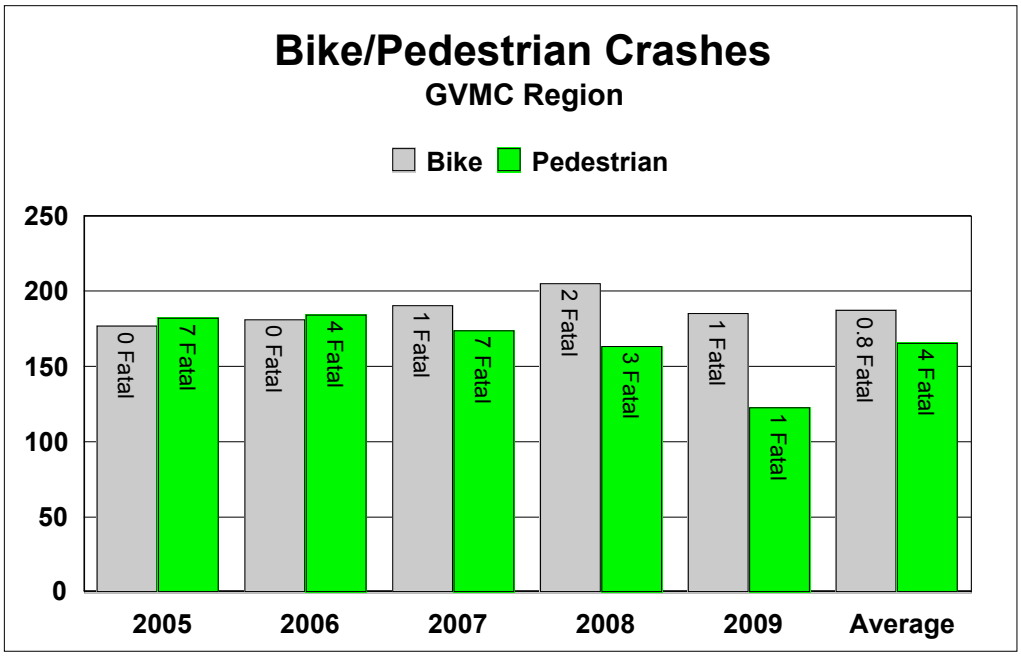


Figure 30 – Bike/Pedestrian Crashes in GVMC Region, 2005–2009

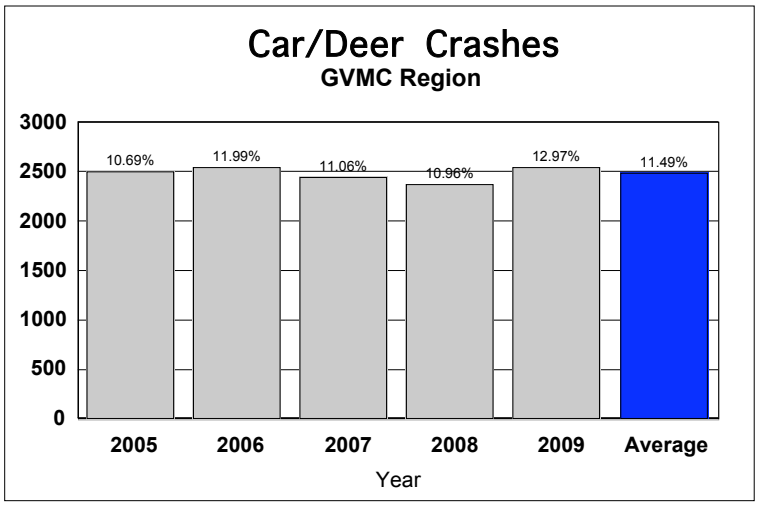
While this document focuses on improvements that can be made to the transportation system to improve safety, analysis in this area seems to lead to the need for more education in terms of the possible interactions between motor vehicles and the non-motorized traveler. Better awareness by the traveling public of the other modes may lead to reducing the crash rates. This is not to say that geometric upgrades in existing and future roadways that are designed to improve safety for non-motorized travelers will not be beneficial, but increased education would also appear to have an impact as well.

Car/Deer Crashes

In Michigan in 2009, there were 61,486 reported vehicle-deer crashes with 10 motorists killed. About 80 percent of all car-deer crashes take place on two-lane roads between dusk and dawn. Vehicle-deer crashes are costly. In Michigan, vehicle-deer crashes cost at least $130 million per year; the average insurance claim is about $2,100 in damage, usually to the front of the vehicle, which often leaves it undriveable. The total number of vehicle-deer crashes, by county, is provided below. The five coun-

ties with the most vehicle-deer crashes in 2009 were: Kent (2,164), Oakland (1,947), Jackson (1,877), Calhoun (1,659) and Montcalm (1,641).

Kent County because of its physical size, amount of travel and areas that are conducive to supporting large deer populations perennially leads the state in the number of car/deer crashes. In 2009, car/deer crashes represented nearly 13% of all traffic crashes in the GVMC study region.



Unfortunately, there are no proven methods to reduce the number of these kinds of accidents. Deer whistles, fences and reflective barriers have not proven as an effective means for reducing the conflicts between motor vehicles and deer. The best approach to minimizing the impact of these unfortunate occurrences is to minimize the severity. Often to avoid hitting a deer in the roadway a motorist will react by swerving. Often this action can have more severe consequences when the vehicle leaves the road or swerves into the path of another vehicle.

Figure 31 – Car/Deer Crash in the GVMC Region, 2005–2009

Education efforts are underway to bring light to this issue. The Michigan Deer Crash Coalition (MDCC) was established in 1996. The mission of the MDCC is to mitigate both the frequency and severity of vehicle-deer crashes through public information, education, and research.

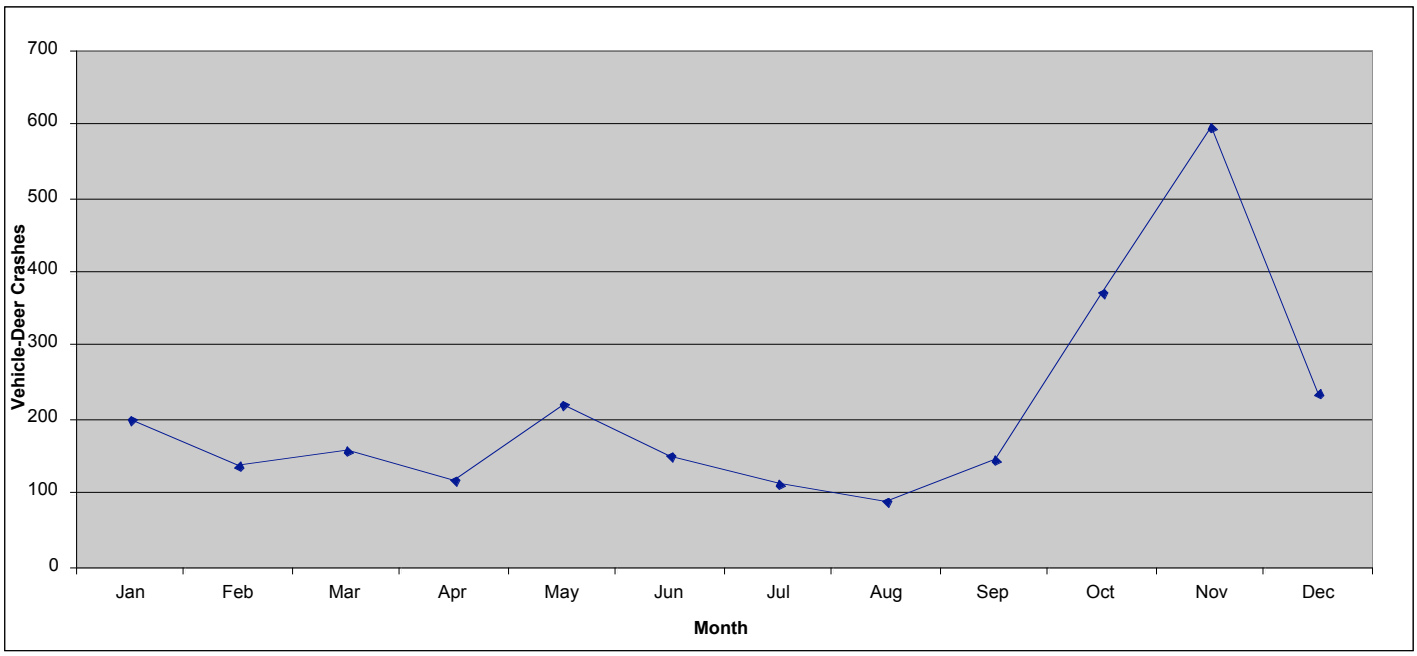


Figure 32 – 2009 Michigan Car/Deer Crashes by Month

Chapter 15: Intelligent Transportation System

Technically there is no widely accepted definition of ITS in part because it is ever-evolving. One definition adopted by the Intelligent Society of America reads: "People using technology in transportation to save lives, time and money." The US Department of Transportation's ITS Joint Program Office circulated a more formal definition. It reads: "Intelligent Transportation Systems (ITS) collect, store, process and distribute information relating to the movement of people and goods. Examples include systems for traffic management, public transportation management, emergency management, traveler information, advanced vehicle control and safety, commercial vehicle operations, electronic payment and railroad crossing safety.

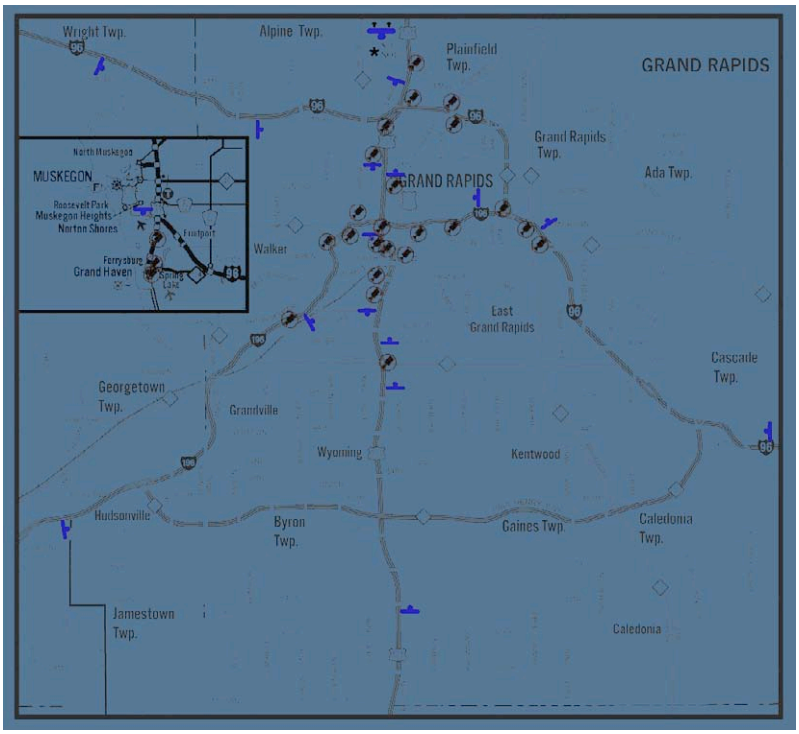
Regardless of how it is defined, each community with a robust ITS, can reap the benefits of technology without a major investment in physical infrastructure. In the GVMC area, ITS has been under development for nearly a decade. The results of this deployment can be seen on most of the major freeways and corridors in the region.

Elements of the GVMC ITS

The GVMC area has deployed ITS in many forms. Some of these ITS deployments can readily be seen on the freeway system in the region, others are not so obvious but all contribute to a system that has the potential to save lives and money. The best way to demonstrate how ITS has had an impact in the area is to outline a hypothetical situation. All of the elements in bold in the following are pieces of the overall ITS for the GVMC region. These elements when used in concert with one another provide an efficient ITS for the region.

At 7:13 a.m. on a Monday morning, a semi-truck jack knifes in the S-Curve along southbound US-131 in downtown Grand Rapids. This truck is carrying unknown materials that spill onto the freeway. Traffic immediately begins to back up as a result. **Speed Detection** installed along the corridor detects a sudden slowing of speed. Personnel at the **West Michigan Traffic Management Center (WMTMC)** operated by the Michigan Department of Transportation (MDOT) are notified automatically of the situation within moments of the incident. Using **Freeway HD Traffic Cameras** that communicate via **Fiber Optic Network** images of the scene are viewed by the staff at the WMTMC. Upon recognition that this is a major incident WMTMC staff immediately begin sending information on the incident to the emergency responder dispatchers and the travelling public via **Dynamic Message Signs, MiDrive website** http://www.michigan.gov/drive and **local media outlets** that the section of US-131 in the S-Curve is impassible and there is a spill of materials that may be hazardous. All of this can happen even before emergency response personnel are on the scene. Sharing this information with the traveling public before they begin their trip will allow them to plan an alternate route. Notifying those already in the corridor that there is an incident ahead and they should expect sudden backups can in many cases eliminate secondary collisions due to a sudden slowing of traffic. These secondary incidents are often more severe causing damage to property and loss of life.

Upon arrival at the primary incident, emergency responders determine that the S-Curve in both directions should be closed to protect the public from the unidentified spilled materials. Immediately, a pre-planned **Incident Management Process** is put into action that will detour traffic from the freeway onto the local street system and around the incident. The **Grand Rapids Traffic Control Center (GRTOC)** operated by the City of Grand Rapids is informed of the situation. Using a predetermined **Alternate Signal Timing Plan** to handle the diverted freeway traffic, the GRTOC changes signal timing on effected arterial corridors. In addition, GRTOC staff uses **Arterial HD Traffic Cameras** to manually and remotely manage "hot spots" for the duration of the incident, minimizing

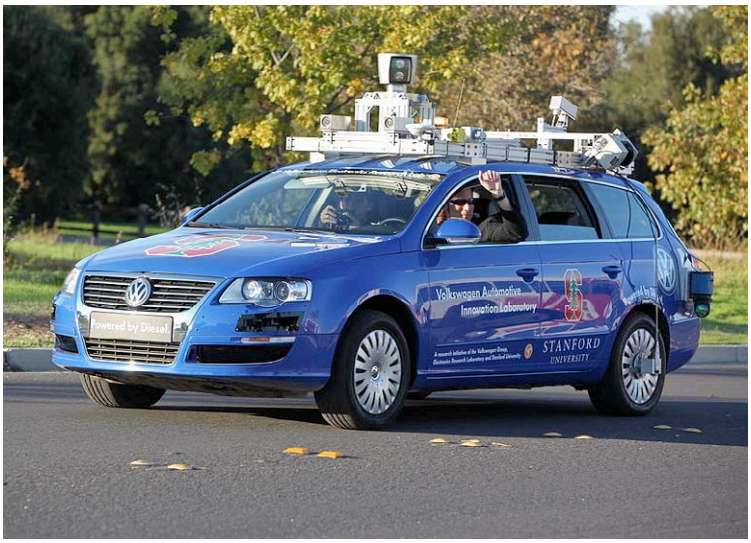


delays as much as possible. The use of this remote traffic control can in many cases eliminate the need for law enforcement personnel being present at each of the highly traveled intersections, saving money and making it a safer situation. During the incident, dispatchers can also view the cameras and determine the most efficient response to save lives, time and money. Having the right equipment and personnel dispatched to the scene initially, saves time during clearance and gets the freeway open sooner.

While the situation outlined above thankfully is a relatively rare occurrence, these conditions do from time to time present themselves. On average the WMTMC will identify and log 100 incidents per month. The associated map outlines the physical elements along the freeway system in the region.

The Future of ITS

While the area has come a long way in the past decade much still needs to be done. Communications along the freeways system in the region are quite comprehensive. Major arterials such as M-11/28th Street, 44th Street, and M-37/Alpine Ave, have been instrumented with cameras and signal communications. Many of the heavily traveled corridors in the region still have not be instrumented. In the coming years the collective partners in the region will be working toward complete coverage. As technologies continue to develop, and ITS evolves, many new technologies may be implemented.



Examples of this include: An in-car driver warning that a signal is about to turn red; An in-car advisory to the driver that a work zone is ahead; and Emergency vehicles given priority access to an intersection by sending a wireless signal to the area traffic-control mechanism. Other benefits may include warnings of potential collision (e.g., "no left turn") or vehicles that brake without human intervention when an obstacle is sensed; vehicles that can message each other about dangerous roadway conditions ahead; and buses that "drive themselves" along specially engineered routes.

Chapter 16: Transportation Project List

Once the socio-economic (SE) data was incorporated into the Transportation Model and congestion deficiencies were identified, GVMC staff worked with the Technical and Policy Transportation Committees to address the projected deficiencies for all modes of transportation. Projects that would help improve accessibility, decrease congestion, and preserve the current infrastructure through the year 2035 were considered. The list of proposed projects relates to those roadways on the federal-aid road network, as these are the only road projects eligible for federal funds. The LRTP Project List must also include "regionally significant" projects, regardless of the funding source.

Revenues were projected for each of funding categories available and project costs are listed in the year or range of years that they will be expended (YOE), per federal reporting requirements (See Chapter 17 for more information about Revenue projections and YOE calculations). The LRTP deals with fiscal years, not calendar years.

The first four years (2011–2014) of the LRTP Project List are equivalent to the Transportation Improvement Program project list, and demonstrate the short-term transportation projects identified for funding in this region. Other individual projects listed in the LRTP Project list reflect the projected transportation deficiencies and these are grouped in year ranges required by the Air Quality Conformity Analysis process.

The project list also contains line item expenses related to the different funding categories, particularly those funding categories where precise funding levels are not available in advance (CMAQ) or where the funding is competitive (e.g. TE, Safety, Small Urban) and thus projects cannot be programmed until the funds are awarded. As future projects in these programs are selected for funding, those projects will be amended into the GVMC Transportation Improvement Program (TIP). For more information about the types of transportation projects are eligible for each of these funding source, please see the following chapter's Financial Analysis.

An illustrative list of projects is located in Appendix G. The illustrative list includes several transit, non-motorized, and MDOT projects that can not be included in the Project List because funding for these projects is not assured (for example, transit funding may rely on future millages to pass). The LRTP Project List must show financial constraint, meaning that expenditures can not exceed revenues for any year of the LRTP. The Illustrative List is not required to be financially constrained and those projects with uncertain funding are thus recorded.

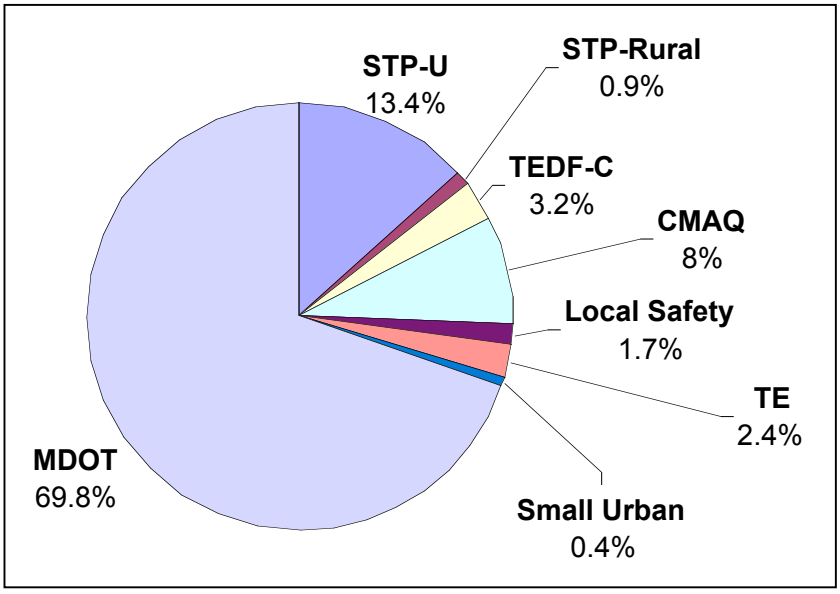
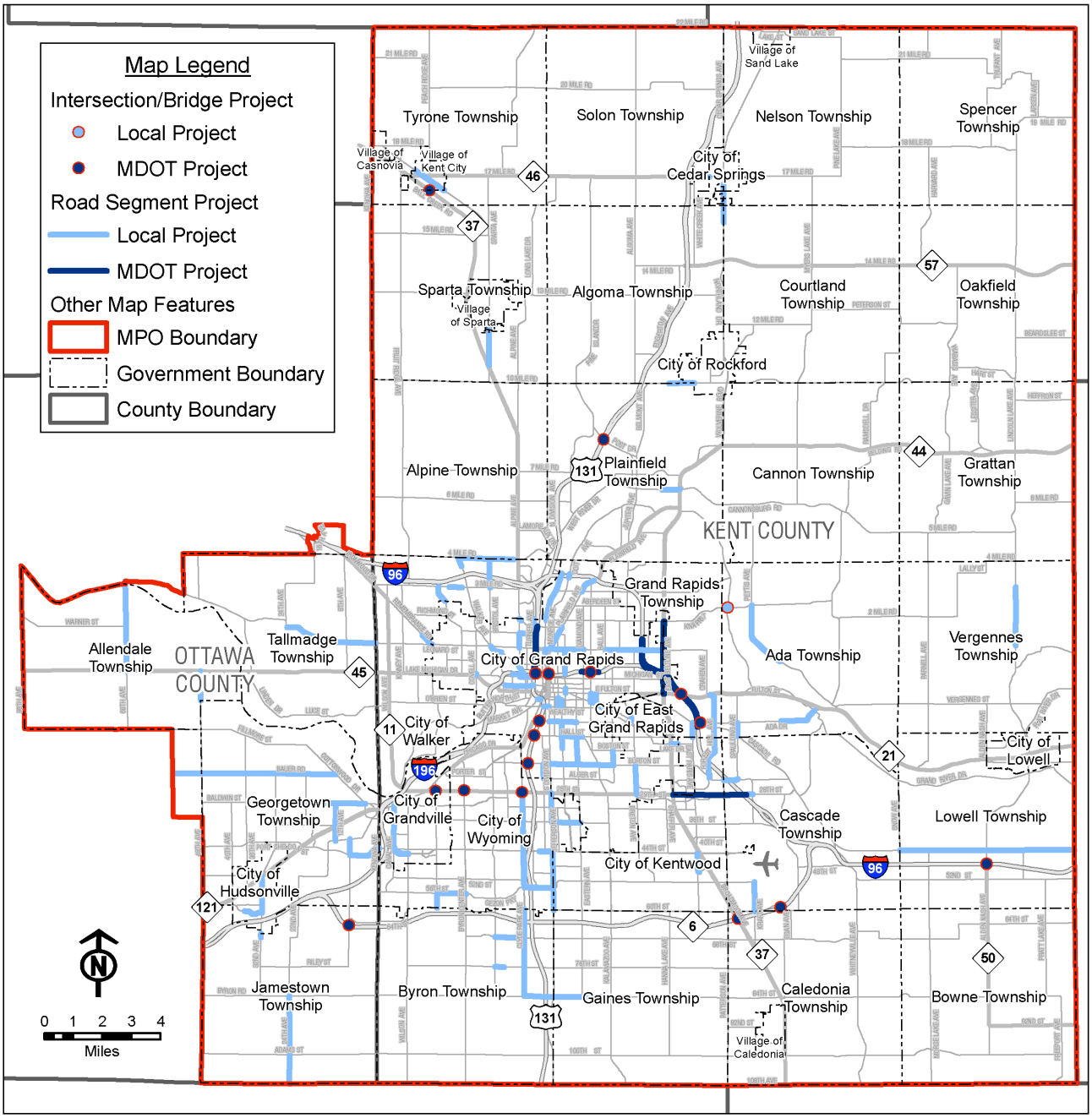


Figure 33 – 2035 LRTP Funding Categories

LRTP Project List Map

GVMC 2035 Long Range Transportation Plan

This Map Geographically Represents the Financially Constrained Project List of Defiencies Slated for Preservation or Widening in the Plan.



Map 19 – 2035 LRTP Project Map

2035 Long-Range Transportation Plan Project List

Figure 34 – 2035 Project List

FY 2011–2014 STP-U **$33,366,064 Federal Available**

					FUNDING SOURCES											
PROJECT	**FROM**	**TO**	**JURISDICTION**	**POSSIBLE ALTERNATIVE**	**ESTIMATED STP-U**	**ESTIMATED STP-R**	**ESTIMATED EDF-C**	**ESTIMATED CMAQ**	**ESTIMATED SAFETY**	**ESTIMATED TE**	**ESTIMATED SMALL URBAN**	**ESTIMATED LOCAL MATCH**	**ESTIMATED TOTAL COST**	**PROJECT TYPE**	**AQ ANALYSIS EXEMPT?**	**LENGTH**
Hall St	Kalamazoo Ave	Eastern Ave	City of Grand Rapids	Rotomill/resurface existing roadway by 2011	$133,722							$56,278	$190,000	Preservation	Yes	0.20
Plymouth Ave	Burton St	Boston St	City of Grand Rapids	Reconstruct existing roadway by 2011	$999,396							$420,604	$1,420,000	Preservation	Yes	0.50
Lafayette Ave	Wealthy St	State St	City of Grand Rapids	Reconstruct existing roadway by 2011	$654,534							$275,466	$930,000	Preservation	Yes	0.33
Breton Ave	M-11/28th St	Burton St	City of Grand Rapids	Resurface existing roadway by 2011	$622,863							$262,137	$885,000	Preservation	Yes	1.00
Cherry St	Market Ave	Grandville Ave	City of Grand Rapids	Resurface existing roadway by 2011	$70,380							$29,620	$100,000	Preservation	Yes	0.12
College Ave	Fountain St	Fulton St	City of Grand Rapids	Resurface existing roadway by 2011	$98,532							$41,468	$140,000	Preservation	Yes	0.16
Hall St	Madison Ave	Eastern Ave	City of Grand Rapids	Resurface existing roadway by 2011	$235,773							$99,227	$335,000	Preservation	Yes	0.50
Madison Ave	Wealthy St	Cherry St	City of Grand Rapids	Resurface existing roadway by 2011	$161,874							$68,126	$230,000	Preservation	Yes	0.20
Monroe Ave	Ottawa Ave	US-131BR/Leonard St	City of Grand Rapids	Resurface existing roadway by 2011	$102,051							$42,949	$145,000	Preservation	Yes	0.25
Coit Ave	Kendalwood Dr	North Park St	City of Grand Rapids	Rotomill/resurface existing roadway by 2011	$77,418							$32,582	$110,000	Preservation	Yes	0.17
1st/2nd St	Lane Ave	Stocking Ave	City of Grand Rapids	Rotomill/resurface existing roadway by 2011	$70,380							$29,620	$100,000	Preservation	Yes	0.23
Forest Hill Ave	I-96	Burton St	City of Kentwood	Reconstruct and add turn lanes and curb and gutter by 2011 (AC)	$884,519							$415,481	$1,300,000	Preservation	Yes	0.54
Forest Hill Ave	I-96	North city limit	City of Kentwood	Reconstruct and add turn lanes and curb and gutter by 2011 (AC)	$1,428,840							$671,160	$2,100,000	Preservation	Yes	0.92
Bristol Ave	4 Mile Rd	3 Mile Rd	City of Walker	Resurface existing roadway by 2011	$246,330							$103,670	$350,000	Preservation	Yes	0.98
Ada Dr	Fox Hollow Ave	Thornapple River Dr	KCRC–Grand Rapids Twp	Resurface existing roadway by 2011	$230,495							$97,006	$327,501	Preservation	Yes	1.31
Forest Hill Ave	Cascade Rd	Ada Dr	KCRC–Ada Twp	Resurface existing roadway by 2011	$211,140							$88,860	$300,000	Preservation	Yes	0.25
Clyde Park Ave	60th St	68th St	KCRC–Byron Twp	Resurface existing roadway by 2011	$422,280							$177,720	$600,000	Preservation	Yes	1.00
Sparta Ave	M-37	12 Mile Rd	KCRC–Sparta Twp	Resurface existing roadway by 2011	$703,800							$296,200	$1,000,000	Preservation	Yes	1.45
West River Dr	Rogue River bridge	M-44/Northland Dr	KCRC–Plainfield Twp	Reconstruct and Add Center Turn Lane (4-5) by 2011	$1,184,280							$498,414	$1,682,694	Widen	No	0.75
8th Ave	Port Sheldon St	44th St	OCRC–Georgetown Twp	Reconstruct and Add Center Turn Lane (2-3) by 2011	$404,685							$170,315	$575,000	Preservation	Yes	0.54
12th Ave	Port Sheldon St	Baldwin St	OCRC–Georgetown Twp	Resurface existing roadway by 2011	$253,368							$106,632	$360,000	Preservation	Yes	1.28
A-37/24th Ave	Byron Rd	Ottogan St	OCRC–Jamestown Twp	Resurface existing roadway by 2011	$362,457							$152,543	$515,000	Preservation	Yes	3.00
Burton St	Division Ave	Eastern Ave	City of Grand Rapids	Resurface existing roadway by 2012	$561,661							$268,339	$830,000	Preservation	Yes	0.95
Burton St	Eastern Ave	Plymouth Ave	City of Grand Rapids	Resurface existing roadway by 2012	$727,453							$347,548	$1,075,001	Preservation	Yes	1.22
Plainfield Ave	3 Mile Rd	I-96	City of Grand Rapids	Resurface existing roadway by 2012	$541,360							$258,640	$800,000	Preservation	Yes	0.60
Plainfield Ave	US-131BR/Leonard St	Ann St	City of Grand Rapids	Resurface existing roadway by 2012	$490,608							$234,393	$725,001	Preservation	Yes	0.85
Rivertown Pkwy	Wilson Ave	Canal Ave	City of Grandville	Resurface existing roadway by 2012	$406,020							$193,980	$600,000	Preservation	Yes	0.44
36th St	A-45/Division Ave	Eastern Ave	City of Wyoming	Resurface existing roadway by 2012	$480,457							$229,543	$710,000	Preservation	Yes	1.00
54th St	Clyde Park Ave	A-45/Division Ave	City of Wyoming	Resurface existing roadway by 2012	$527,826							$252,174	$780,000	Preservation	Yes	1.00
Clyde Park Ave	M-11/28th St	54th St	City of Wyoming	Resurface existing roadway by 2012	$1,285,730							$614,270	$1,900,000	Preservation	Yes	3.25
17 Mile Rd	US-131 Ramps	West St	KCRC–Solon Twp	Resurface existing roadway by 2012	$338,350							$161,650	$500,000	Preservation	Yes	0.60
84th St	Clyde Park Ave	A-45/Division Ave	KCRC–Byron Twp	Resurface existing roadway by 2012	$676,700							$323,300	$1,000,000	Preservation	Yes	1.00
Clyde Park Ave	76th St	84th St	KCRC–Byron Twp	Resurface existing roadway by 2012	$338,350							$162,000	$500,350	Preservation	Yes	1.00
Pettis Ave	Knapp St	Egypt Valley Ave	KCRC–Ada Twp	Resurface existing roadway by 2012	$351,884							$168,116	$520,000	Preservation	Yes	2.38
32nd Ave	M-121/Chicago Dr	Highland Dr	City of Hudsonville	Resurface existing roadway by 2012	$363,388							$173,612	$537,000	Preservation	Yes	1.23
Bauer Rd	56th Ave	24th Ave	OCRC–Georgetown Twp	Resurface existing roadway by 2012	$866,176							$413,824	$1,280,000	Preservation	Yes	4.00
Leonard St	Ball Ave	Plymouth Ave	City of Grand Rapids	Resurface existing roadway by 2013	$149,688							$70,312	$220,000	Preservation	Yes	0.25
Leonard St	I-96 EB Ramps	I-96 WB Ramps	City of Grand Rapids	Resurface existing roadway by 2013	$125,874							$59,126	$185,000	Preservation	Yes	0.20
Leonard St	I-96 WB Ramps	M-44/East Beltline Ave	City of Grand Rapids	Resurface existing roadway by 2013	$387,828							$182,172	$570,000	Preservation	Yes	0.63
Leonard St	Maryland Ave	I-96 EB Ramps	City of Grand Rapids	Resurface existing roadway by 2013	$122,472							$57,528	$180,000	Preservation	Yes	0.20
Leonard St	Plymouth Ave	Maryland Ave	City of Grand Rapids	Resurface existing roadway by 2013	$455,868							$214,132	$670,000	Preservation	Yes	0.74
Monroe Ave	Knapp St	North Park St	City of Grand Rapids	Resurface existing roadway by 2013	$918,540							$431,460	$1,350,000	Preservation	Yes	1.69
Elmridge Dr	3 Mile Rd	South city limit	City of Walker	Reconstruct existing roadway by 2012	$748,440							$351,560	$1,100,000	Preservation	Yes	0.59
Division Ave	M-11/28th St	36th St	City of Wyoming	Resurface existing roadway by 2013	$578,340							$271,660	$850,000	Preservation	Yes	1.00
Division Ave	44th St	54th St	City of Wyoming	Resurface existing roadway by 2013	$714,420							$335,580	$1,050,000	Preservation	Yes	1.25
Ivanrest Ave	North city limit	56th St	City of Wyoming	Resurface existing roadway by 2013	$289,170							$135,830	$425,000	Preservation	Yes	1.00
76th St	Sierrafield Dr	Burlingame Ave	KCRC–Byron Twp	Resurface existing roadway by 2013	$88,452							$41,548	$130,000	Preservation	Yes	0.31
Kraft Ave	52nd St	60th St	KCRC–Cascade Twp	Resurface and reconstruct existing roadway by 2013	$442,260							$207,740	$650,000	Preservation	Yes	1.00
Highland Dr	32nd Ave	Creek View Dr	City of Hudsonville	Resurface existing roadway by 2013	$92,534							$43,466	$136,000	Preservation	Yes	0.63
Baldwin St	20th Ave	Cottonwood Dr	OCRC–Georgetown Twp	Resurface existing roadway by 2013	$612,360							$287,640	$900,000	Preservation	Yes	2.00
Leonard St	24th Ave	Kenowa Ave	OCRC–Tallmadge Twp	Resurface existing roadway by 2013	$740,275							$347,725	$1,088,000	Preservation	Yes	3.40
Lakeside Dr	Greenwood Dr	Wealthy St	City of East Grand Rapids	Reconstruct existing roadway by 2014	$381,500							$163,500	$545,000	Preservation	Yes	0.36
Ann St	Alpine Ave	Voorheis Ave	City of Grand Rapids	Rotomill/resurface existing roadway by 2014	$52,500							$22,500	$75,000	Preservation	Yes	0.10
Buchanan Ave	Alger St	Burton St	City of Grand Rapids	Rotomill/resurface existing roadway by 2014	$218,750							$93,750	$312,500	Preservation	Yes	0.49
Carlton Ave	Lake Dr	Fulton St	City of Grand Rapids	Rotomill/resurface existing roadway by 2014	$151,200							$64,800	$216,000	Preservation	Yes	0.35
Lake Dr	M-37/East Beltline Ave	East city limit	City of Grand Rapids	Rotomill/resurface existing roadway by 2014	$109,200							$46,800	$156,000	Preservation	Yes	0.25
Lake Michigan Dr	Garfield Ave	US-131	City of Grand Rapids	Rotomill/resurface existing roadway by 2014	$437,500							$187,500	$625,000	Preservation	Yes	1.06
Richmond St	Alpine Ave	Scribner Ave	City of Grand Rapids	Rotomill/resurface existing roadway by 2014	$262,500							$112,500	$375,000	Preservation	Yes	0.58
Turner Ave	Ann St	US-131 SB Ramps	City of Grand Rapids	Rotomill/resurface existing roadway by 2014	$117,600							$50,400	$168,000	Preservation	Yes	0.27
Wealthy St	US-131	Division Ave	City of Grand Rapids	Reconstruct existing roadway by 2014	$787,500							$337,500	$1,125,000	Preservation	Yes	0.18
Canal Ave	Chicago Dr	44th St	City of Grandville	Resurface existing roadway by 2014	$525,000							$225,000	$750,000	Preservation	Yes	1.50
Division Ave	54th St	60th St	City of Kentwood	Reconstruct and partial blvd. by 2014 (AC)	$149,521							$1,530,479	$1,680,000	Widen	No	0.75
East Paris Ave	44th St	Barden Dr	City of Kentwood	Reconstruct existing roadway by 2014	$505,400							$216,600	$722,000	Preservation	Yes	0.66
Remembrance Rd	Leonard St	Walker Village Dr	City of Walker	Resurface and reconstruct existing roadway by 2014	$595,000							$255,000	$850,000	Preservation	Yes	0.48
44th St	Stafford Ave	Division Ave	City of Wyoming	Reconstruct existing roadway by 2014	$1,470,000							$630,000	$2,100,000	Preservation	Yes	0.60

28th St	Kraft Ave	I-96 Ramps	KCRC–Cascade Twp	Resurface existing roadway by 2014	$280,000							$120,000	$400,000	Preservation	Yes	0.30
68th St	Clyde Park Ave	Burlingame Ave	KCRC–Byron Twp	Resurface existing roadway by 2014	$350,000							$150,000	$500,000	Preservation	Yes	1.00
84th St	A-45/Division Ave	Kalamazoo Ave	KCRC–Gaines Twp	Resurface existing roadway by 2014	$560,000							$240,000	$800,000	Preservation	Yes	2.00
East Paris Ave	Cascade Rd	Kentwood city limit	KCRC–Grand Rapids Twp	Resurface existing roadway by 2014	$350,000							$150,000	$500,000	Preservation	Yes	0.50
44th St	8th Ave	Kenowa Ave	OCRC–Georgetown Twp	Rotomill/resurface existing roadway by 2014	$455,700							$195,300	$651,000	Preservation	Yes	1.00
Bauer Rd	24th Ave	Cottonwood Dr	OCRC–Georgetown Twp	Resurface existing roadway by 2014	$369,600							$158,400	$528,000	Preservation	Yes	1.50
Planning Studies	Area-wide		GVMC	Pavement Management System by 2011	$140,000							$35,000	$175,000	Study	Yes	N/A
Planning Studies	Area-wide		GVMC	Congestion Management System by 2011	$80,000							$20,000	$100,000	Study	Yes	N/A
Planning Studies	Area-wide		GVMC	GIS Maintenance by 2011	$30,000							$8,000	$38,000	Study	Yes	N/A
Planning Studies	Area-wide		GVMC	Studies by 2012	$250,000							$63,000	$313,000	Study	Yes	N/A
Planning Studies	Area-wide		GVMC	Studies by 2013	$150,000							$38,000	$188,000	Study	Yes	N/A
Planning Studies	Area-wide		GVMC	Studies by 2014	$150,000							$38,000	$188,000	Study	Yes	N/A
Preservation Projects (Reconstruction/ Resurfacing)	Area-wide		Various	Various	$455,992							$113,998	$569,990	Preservation	Yes	N/A
Total					**$33,366,064**							**$16,240,973**	**$49,607,037**			

FY 2011–2014 STP-R **$2,266,072 Federal Available**

					FUNDING SOURCES											
PROJECT	**FROM**	**TO**	**JURISDICTION**	**POSSIBLE ALTERNATIVE**	**ESTIMATED STP-U**	**ESTIMATED STP-R**	**ESTIMATED EDF-C**	**ESTIMATED CMAQ**	**ESTIMATED SAFETY**	**ESTIMATED TE**	**ESTIMATED SMALL URBAN**	**ESTIMATED LOCAL MATCH**	**ESTIMATED TOTAL COST**	**PROJECT TYPE**	**AQ ANALYSIS EXEMPT?**	**LENGTH**
Hope Network	Kent County	Hope Network	Hope Network, Inc.	Purchase high top van by 2011		$32,000						$8,000	$40,000	Transit	Yes	N/A
Lincoln Lake Ave	McPherson St	3 Mile Rd	KCRC–Vergennes Twp	Resurface existing roadway by 2011		$508,039						$127,010	$635,049	Preservation	Yes	2.00
Cutaway Small Bus	Rural Area	Hope Network	Hope Network, Inc.	Purchase small cutaway bus by 2012		$54,400						$13,600	$68,000	Transit	Yes	N/A
Paratransit Van	Rural Area	ITP	ITP/The Rapid	Purchase Paratransit van by 2012		$68,673						$17,168	$85,841	Transit	Yes	N/A
Cascade Rd	Snow Ave	Timpson Ave	KCRC–Lowell Twp	Resurface existing roadway by 2012		$434,247						$203,888	$638,135	Preservation	Yes	2.00
Cascade Rd	Timpson Ave	Segwun Ave	KCRC–Lowell Twp	Resurface existing roadway by 2013		$575,154						$143,788	$718,942	Preservation	Yes	2.25
Cascade Rd	Segwun Ave	County line	KCRC–Lowell Twp	Resurface existing roadway and remove bridge by 2014		$573,559						$143,390	$716,949	Preservation	Yes	1.75
Ball Creek Rd	NW village limit	Rusco St	Village of Kent City	Resurface existing roadway by 2014		$20,000						$20,000	$40,000	Preservation	Yes	1.22
Total						**$2,266,072**						**$676,844**	**$2,942,916**			

FY 2011–2014 EDF-C **$8,525,456 Federal Available**

					FUNDING SOURCES											
PROJECT	**FROM**	**TO**	**JURISDICTION**	**POSSIBLE ALTERNATIVE**	**ESTIMATED STP-U**	**ESTIMATED STP-R**	**ESTIMATED EDF-C**	**ESTIMATED CMAQ**	**ESTIMATED SAFETY**	**ESTIMATED TE**	**ESTIMATED SMALL URBAN**	**ESTIMATED LOCAL MATCH**	**ESTIMATED TOTAL COST**	**PROJECT TYPE**	**AQ ANALYSIS EXEMPT?**	**LENGTH**
10 Mile Rd	West of Wolven Ave	Chilsdale Ave	KCRC–Algoma Twp	Reconstruct and widen to 5 lanes (2-5) by 2011			$1,596,600					$403,400	$2,000,000	Widen	No	1.29
4 Mile Rd	Walker Ave	Old Orchard Ave	KCRC–Alpine Twp	Reconstruct and Add Center Turn Lane (2-3) by 2014			$2,188,288					$547,072	$2,735,360	Widen	No	1.90
Clyde Park Ave	.10 miles N of 76th St	.10 miles S of 68th St	KCRC–Byron Twp	Reconstruct and Add Center Turn Lane (2-3) by 2012			$832,000					$314,288	$1,146,288	Widen	No	0.80
Forest Hill Ave	Kentwood city limit	Cascade Rd	KCRC–Grand Rapids Twp	Reconstruct and Add Center Turn Lane (2-3) by 2011			$478,980					$121,020	$600,000	Widen	No	0.35
Forest Hill Ave	Ada Dr	M-21/E Fulton St	KCRC–Grand Rapids Twp	Reconstruct and Add Center Turn Lane (2-3) by 2012			$1,280,000					$338,240	$1,618,240	Widen	No	1.05
Northland Dr	Indian Lakes Rd	South St	KCRC–Algoma Twp	Reconstruct and Add Center Turn Lane (2-3) - Access Management by 2013			$1,600,000					$400,000	$2,000,000	Widen	No	1.20
Knapp St	at Grand River Dr		KCRC–Ada Twp	Add turn lanes at the intersection by 2013			$440,000					$110,000	$550,000	Widen	No	0.10
ITS Projects TBD	Area-wide		City of Grand Rapids	ITS Activities by 2013			$109,544					$27,386	$136,930	ITS	Yes	N/A
Eligible Projects Addressing Congestion TBD	Area-wide		Various	Various			$44					$11	$55		Yes	N/A
Total							$8,525,456					$2,261,417	$10,786,873			

FY 2011–2014 MDOT **$186,525,495**

					FUNDING SOURCES											
PROJECT	**FROM**	**TO**	**JURISDICTION**	**POSSIBLE ALTERNATIVE**						**MDOT PROJECTS**		**ESTIMATED LOCAL MATCH**	**ESTIMATED TOTAL COST**	**PROJECT TYPE**	**AQ ANALYSIS EXEMPT?**	**LENGTH**
M-37	at Peach Ridge Ave		MDOT	Crack sealing by 2011						$8,185		$1,815	$10,000	Preservation	Yes	0.10
M-6	at M-37/Broadmoor Ave and 60th St		MDOT	Crack sealing by 2011						$9,495		$2,105	$11,600	Preservation	Yes	0.20
US-131	at Post Dr		MDOT	Resurface by 2011						$22,263		$4,937	$27,200	Preservation	Yes	0.10
US-131	under Franklin, Burton, and Hall Sts		MDOT	Partial and full bridge deck replacement by 2011						$3,040,729		$589,988	$3,630,717	Preservation	Yes	0.30
I-96	under M-50/Alden Nash Ave		MDOT	Bridge replacement preliminary engineering by 2011						$187,200		$20,800	$208,000	Preservation	Yes	0.10
M-11/28th St	M-37/East Beltline Ave	I-96	MDOT	Mill, joints, resurface and concrete reconstruction by 2011						$40,925		$9,075	$50,000	Preservation	Yes	2.30
I-96 WB	Cascade Rd/I-96 WB On-ramp		MDOT	Ramp reconstruction by 2012						$270,000		$30,000	$300,000	Preservation	Yes	0.43
M-6	at 8th Ave NE Quadrant		MDOT	Crack sealing by 2011						$9,822		$2,178	$12,000	Preservation	Yes	0.10
M-11/28th St	at Clyde Park Ave		MDOT	Intersection reconstruction by 2013						$491,100		$108,900	$600,000	Preservation	Yes	0.10
M-11/28th St	at Ivanrest Ave and Byron Center Ave		MDOT	Intersection reconstruction by 2013						$942,094		$208,906	$1,151,000	Preservation	Yes	0.20
US-131	I-196	Ann St	MDOT	Replace Freeway Lighting by 2014						$818,500		$181,500	$1,000,000	Preservation	Yes	N/A
Countywide	Grand River Watershed		MDOT	Wetland Mitigation Bank Site by 2014						$400,000		$100,000	$500,000	Preservation	Yes	N/A
US-131	US-131BR/Leonard St	Ann St	MDOT	Add NB weave/merge lanes by 2014						$3,200,000		$800,000	$4,000,000	Widen	No	0.75
Trunkline Projects TBD	Area-wide		MDOT	Various						$177,085,182		$44,271,296	$221,356,478		Yes	N/A
TOTAL										**$186,525,495**		**$46,331,500**	**$232,856,995**			

FY 2011–2014 TRANSIT

PROJECT	FROM	TO	JURISDICTION	POSSIBLE ALTERNATIVE	FUNDING SOURCES					TRANSIT CAPITAL REVENUES*			ESTIMATED TOTAL COST	PROJECT TYPE	AQ ANALYSIS EXEMPT?	LENGTH
Misc. Capital Needs	Area-wide		ITP/The Rapid							$15,454,182			$15,454,182	Transit	Yes	N/A
Bus Rapid Transit (BRT) Capitol - Division Ave	60th St	Rapid Central Station	ITP/The Rapid	Bus Rapid Transit System						$36,941,000			$36,941,000	Transit	Yes	N/A
Facility Expansion/ Maintenance Needs	Area-wide		ITP/The Rapid							$19,537,813			$19,537,813	Transit	Yes	N/A
Replacement of Fixed Route Buses	Area-wide		ITP/The Rapid							$7,379,109			$7,379,109	Transit	Yes	N/A
Expansion of Fixed Route Buses	Area-wide		ITP/The Rapid							$3,813,769			$3,813,769	Transit	Yes	N/A
Replacement of Paratransit Vehicles	Area-wide		ITP/The Rapid							$1,734,503			$1,734,503	Transit	Yes	N/A
Capitalized Operating Expense	Area-wide		ITP/The Rapid							$2,712,813			$2,712,813	Transit	Yes	N/A
TOTAL										**$87,573,189**			**$87,573,189**			

*Refer to ITP/The Rapid Financial Constraint Table

FY 2011–2014 CMAQ **$19,727,773 Estimated Federal Award**

PROJECT	FROM	TO	JURISDICTION	POSSIBLE ALTERNATIVE	FUNDING SOURCES								ESTIMATED TOTAL COST	PROJECT TYPE	AQ ANALYSIS EXEMPT?	LENGTH
					ESTIMATED STP-U	ESTIMATED STP-R	ESTIMATED EDF-C	ESTIMATED CMAQ	ESTIMATED SAFETY	ESTIMATED TE	ESTIMATED SMALL URBAN	ESTIMATED LOCAL MATCH				
Eligible CMAQ Projects TBD	Area-wide		Various					$19,727,773				$4,931,949	$24,659,722	Air Quality	Yes	N/A
TOTAL								**$19,727,773**				**$4,931,949**	**$24,659,722**			

FY 2011–2014 TE **$5,889,707 Estimated Federal Award**

PROJECT	FROM	TO	JURISDICTION	POSSIBLE ALTERNATIVE	FUNDING SOURCES								ESTIMATED TOTAL COST	PROJECT TYPE	AQ ANALYSIS EXEMPT?	LENGTH
					ESTIMATED STP-U	ESTIMATED STP-R	ESTIMATED EDF-C	ESTIMATED CMAQ	ESTIMATED SAFETY	ESTIMATED TE	ESTIMATED SMALL URBAN	ESTIMATED LOCAL MATCH				
Non-Motorized Projects TBD	Area-wide		Various	Various						$2,800,000		$560,000	$3,360,000	Non-Motorized	Yes	N/A
Other TE Eligible Projects TBD	Area-wide		Various	Various						$3,089,707		$1,472,427	$4,562,134		Yes	N/A
TOTAL										**$5,889,707**		**$2,032,427**	**$7,922,134**			

FY 2011–2014 SAFETY **$4,179,993 Estimated Federal Award**

PROJECT	FROM	TO	JURISDICTION	POSSIBLE ALTERNATIVE	FUNDING SOURCES								ESTIMATED TOTAL COST	PROJECT TYPE	AQ ANALYSIS EXEMPT?	LENGTH
					ESTIMATED STP-U	ESTIMATED STP-R	ESTIMATED EDF-C	ESTIMATED CMAQ	ESTIMATED SAFETY	ESTIMATED TE	ESTIMATED SMALL URBAN	ESTIMATED LOCAL MATCH				
Market Ave	Alger St and Market Ave		City of Grand Rapids	Guardrail upgrades by 2011					$37,600			$9,400	$47,000	Safety	Yes	N/A
Lincoln Lake Ave	4 various locations		KCRC	Signal modernization by 2011					$272,000			$68,000	$340,000	Safety	Yes	N/A
Eligible Safety Projects TBD	Area-wide		Various	Various					$3,870,393			$967,598	$4,837,991	Safety	Yes	N/A
TOTAL									**$4,179,993**			**$1,044,998**	**$5,224,991**			

FY 2011–2014 SMALL URBAN **$1,141,048 Estimated Federal Award**

PROJECT	FROM	TO	JURISDICTION	POSSIBLE ALTERNATIVE	FUNDING SOURCES								ESTIMATED TOTAL COST	PROJECT TYPE	AQ ANALYSIS EXEMPT?	LENGTH
					ESTIMATED STP-U	ESTIMATED STP-R	ESTIMATED EDF-C	ESTIMATED CMAQ	ESTIMATED SAFETY	ESTIMATED TE	ESTIMATED SMALL URBAN	ESTIMATED LOCAL MATCH				
Eligible Small Urban Project TBD	Area-wide		Various	Various							$1,141,048	$285,262	$1,426,310		Yes	N/A
TOTAL											**$1,141,048**	**$285,262**	**$1,426,310**			

FY 2015–2018 STP-U **$39,446,545 Federal Available**

PROJECT	FROM	TO	JURISDICTION	POSSIBLE ALTERNATIVE	FUNDING SOURCES								ESTIMATED TOTAL COST	PROJECT TYPE	AQ ANALYSIS EXEMPT?	LENGTH
					ESTIMATED STP-U	ESTIMATED STP-R	ESTIMATED EDF-C	ESTIMATED CMAQ	ESTIMATED SAFETY	ESTIMATED TE	ESTIMATED SMALL URBAN	ESTIMATED LOCAL MATCH				
A-37/32nd Ave	Quincy St	City limit	OCRC–Jamestown Twp	Reconstruct and widen to 5 lanes (Comm. Dev) by 2018 (3-5) by 2018	$365,160							$91,290	$456,450	Widen	No	0.14
College Ave	I-196	Leonard St	City of Grand Rapids	Reconfigure within Existing ROW to 3 lanes - Enhance Transit Capacity (2-3) by 2018	$841,157							$210,289	$1,051,446	Widen	No	0.89
Lake Dr	Fuller Ave	Carleton Ave	City of Grand Rapids	Reconfigure within Existing ROW to 3 lanes - Enhance Transit Capacity (2-3) by 2018	$197,461							$49,365	$246,826	Widen	No	0.21
Lake Michigan Dr	US-131	Garfield Ave	City of Grand Rapids	Reconfigure within Existing ROW to 3 lanes - Enhance Transit	$997,629							$249,407	$1,247,036	Widen	No	1.06

				Capacity (2-3) by 2018												
Leonard St	Plainfield Ave	Diamond Ave	City of Grand Rapids	Reconfigure within Existing ROW to 3 lanes (2-3) by 2018	$1,081,289							$270,322	$1,351,611	Widen	No	1.14
Madison Ave	Cottage Grove St	Hall St	City of Grand Rapids	Reconfigure within Existing ROW to 3 lanes - Enhance Transit Capacity (2-3) by 2018	$373,033							$93,258	$466,291	Widen	No	0.39
Madison Ave	Hall St	Franklin St	City of Grand Rapids	Reconfigure within Existing ROW to 3 lanes - Enhance Transit Capacity (2-3) by 2018	$475,703							$118,926	$594,629	Widen	No	0.50
Stocking Ave	Bridge St	7th St	City of Grand Rapids	Reconfigure within Existing ROW to 3 lanes - Enhance Transit Capacity (2-3) by 2018	$566,711							$141,678	$708,389	Widen	No	0.60
Planning Studies TBD	Area-wide		GVMC	Transportation Planning Studies	$859,200							$214,800	$1,074,000	Study	Yes	N/A
Eligible Safety Projects TBD	Area-wide		Various	Various	$644,400							$161,100	$805,500	Safety	Yes	N/A
Preservation Projects (Reconstruction/Resurfacing) TBD	Area-wide		Various	Various	$33,044,802							$722,385	$33,767,187	Preservation	Yes	N/A
TOTAL					**$39,446,545**							**$2,322,820**	**$41,769,365**			

FY 2015–2018 STP-R **$2,679,030 Federal Available**

					FUNDING SOURCES											
PROJECT	**FROM**	**TO**	**JURISDICTION**	**POSSIBLE ALTERNATIVE**	**ESTIMATED STP-U**	**ESTIMATED STP-R**	**ESTIMATED EDF-C**	**ESTIMATED CMAQ**	**ESTIMATED SAFETY**	**ESTIMATED TE**	**ESTIMATED SMALL URBAN**	**ESTIMATED LOCAL MATCH**	**ESTIMATED TOTAL COST**	**PROJECT TYPE**	**AQ ANALYSIS EXEMPT?**	**LENGTH**
Eligible Rural Projects TBD	Eligible Areas		Various	Various		$2,679,030						$669,758	$3,348,788		Yes	N/A
TOTAL						**$2,679,030**						**$669,758**	**$3,348,788**			

FY 2015–2018 EDF-C **$9,789,684 Federal Available**

					FUNDING SOURCES											
PROJECT	**FROM**	**TO**	**JURISDICTION**	**POSSIBLE ALTERNATIVE**	**ESTIMATED STP-U**	**ESTIMATED STP-R**	**ESTIMATED EDF-C**	**ESTIMATED CMAQ**	**ESTIMATED SAFETY**	**ESTIMATED TE**	**ESTIMATED SMALL URBAN**	**ESTIMATED LOCAL MATCH**	**ESTIMATED TOTAL COST**	**PROJECT TYPE**	**AQ ANALYSIS EXEMPT?**	**LENGTH**
3 Mile Rd	West of Walker Ave	Indian Mill Creek	City of Walker	Widen to 4 lanes with RR bridge improvement by 2018			$3,264,960					$816,240	$4,081,200	Widen	No	0.35
Burton St	Spaulding Ave	Patterson Ave	KCRC–Cascade Twp	Reconstruct and Add Center Turn Lane (2-3) (Constrained by I-96 Overpass) by 2018			$1,023,258					$255,815	$1,279,073	Widen	No	0.50
Eligible Projects Addressing Congestion TBD	Area-wide		Various in Kent Co.	Various			$5,501,466					$1,375,367	$6,876,833		Yes	N/A
TOTAL							**$9,789,684**					**$2,447,422**	**$12,237,106**			

FY 2015–2018 MDOT **$200,695,837**

					FUNDING SOURCES											
PROJECT	**FROM**	**TO**	**JURISDICTION**	**POSSIBLE ALTERNATIVE**						**MDOT PROJECTS**		**ESTIMATED NON-FEDERAL**	**ESTIMATED TOTAL COST**	**PROJECT TYPE**	**AQ ANALYSIS EXEMPT?**	**LENGTH**
I-196	WB over the Grand River	US-131	MDOT	Extend WB to SB off ramp to complete US-131 to Fuller Ave segment by 2018						$16,000,000		$4,000,000	$20,000,000	Widen	No	0.25
US-131	US-131BR/Leonard St	Ann St	MDOT	Add SB weave/merge lanes by 2018						$3,200,000		$800,000	$4,000,000	Widen	No	0.75
I-196	Fuller Ave	I-96	MDOT	Rehabilitation of exiting road and bridges by 2018						$21,840,000		$5,460,000	$27,300,000	Preservation	No	2.00
Trunkline Projects TBD	Area-wide		MDOT	Various						$159,655,837		$39,913,959	$199,569,796		Yes	N/A
TOTAL										**$200,695,837**		**$50,173,959**	**$250,869,796**			

FY 2015–2018 TRANSIT

					FUNDING SOURCES											
PROJECT	**FROM**	**TO**	**JURISDICTION**	**POSSIBLE ALTERNATIVE**						**TRANSIT CAPITAL REVENUES***			**ESTIMATED TOTAL COST**	**PROJECT TYPE**	**AQ ANALYSIS EXEMPT?**	**LENGTH**
Misc. Capital Needs	Area-wide		ITP/The Rapid							$17,455,132			$17,455,132	Transit	Yes	N/A
Facility Expansion/Maintenance Needs	Area-wide		ITP/The Rapid							$2,235,903			$2,235,903	Transit	Yes	N/A
Replacement of Fixed Route Buses	Area-wide		ITP/The Rapid							$15,168,735			$15,168,735	Transit	Yes	N/A
Replacement of Paratransit Vehicles	Area-wide		ITP/The Rapid							$5,108,986			$5,108,986	Transit	Yes	N/A
Capitalized Operating Expenses	Area-wide		ITP/The Rapid							$2,235,903			$2,235,903	Transit	Yes	N/A
TOTAL										**$42,204,659**			**$42,204,659**			

*Refer to ITP/The Rapid Financial Constraint Table

FY 2015–2018 CMAQ **$23,603,561 Estimated Federal Award**

					FUNDING SOURCES											
PROJECT	**FROM**	**TO**	**JURISDICTION**	**POSSIBLE ALTERNATIVE**	**ESTIMATED STP-U**	**ESTIMATED STP-R**	**ESTIMATED EDF-C**	**ESTIMATED CMAQ**	**ESTIMATED SAFETY**	**ESTIMATED TE**	**ESTIMATED SMALL URBAN**	**ESTIMATED LOCAL MATCH**	**ESTIMATED TOTAL COST**	**PROJECT TYPE**	**AQ ANALYSIS EXEMPT?**	**LENGTH**
Clean Air Action Program & CAA			Various					23,603,561				5,900,890	$29,504,451	Air Quality	Yes	N/A

Free Fares & WESTRAIN																
TOTAL								**$23,603,561**				**$5,900,890**	**$29,504,451**			

FY 2015–2018 TE **$7,046,820 Estimated Federal Award**

					FUNDING SOURCES											
PROJECT	**FROM**	**TO**	**JURISDICTION**	**POSSIBLE ALTERNATIVE**	**ESTIMATED STP-U**	**ESTIMATED STP-R**	**ESTIMATED EDF-C**	**ESTIMATED CMAQ**	**ESTIMATED SAFETY**	**ESTIMATED TE**	**ESTIMATED SMALL URBAN**	**ESTIMATED LOCAL MATCH**	**ESTIMATED TOTAL COST**	**PROJECT TYPE**	**AQ ANALY-SIS EX-EMPT?**	**LENGTH**
Eligible Non-Motorized Projects TBD	Area-wide		Various	Various						$3,241,537		$810,384	$4,051,921	Non-Motorized	Yes	N/A
Other TE Eligible Projects TBD	Area-wide		Various	Various						$3,805,283		$951,321	$4,756,604		Yes	N/A
TOTAL										**$7,046,820**		**$1,761,705**	**$8,808,525**			

FY 2015–2018 SAFETY **$5,001,210 Estimated Federal Award**

					FUNDING SOURCES											
PROJECT	**FROM**	**TO**	**JURISDICTION**	**POSSIBLE ALTERNATIVE**	**ESTIMATED STP-U**	**ESTIMATED STP-R**	**ESTIMATED EDF-C**	**ESTIMATED CMAQ**	**ESTIMATED SAFETY**	**ESTIMATED TE**	**ESTIMATED SMALL URBAN**	**ESTIMATED LOCAL MATCH**	**ESTIMATED TOTAL COST**	**PROJECT TYPE**	**AQ ANALY-SIS EX-EMPT?**	**LENGTH**
Eligible Safety Projects TBD	Area-wide		Various	Various					$5,001,210			$1,250,303	$6,251,513	Safety	Yes	N/A
TOTAL									**$5,001,210**			**$1,250,303**	**$6,251,513**			

FY 2015–2018 SMALL URBAN **$1,317,934 Estimated Federal Award**

					FUNDING SOURCES											
PROJECT	**FROM**	**TO**	**JURISDICTION**	**POSSIBLE ALTERNATIVE**	**ESTIMATED STP-U**	**ESTIMATED STP-R**	**ESTIMATED EDF-C**	**ESTIMATED CMAQ**	**ESTIMATED SAFETY**	**ESTIMATED TE**	**ESTIMATED SMALL URBAN**	**ESTIMATED LOCAL MATCH**	**ESTIMATED TOTAL COST**	**PROJECT TYPE**	**AQ ANALY-SIS EX-EMPT?**	**LENGTH**
Eligible Small Urban Project TBD	Area-wide		Various	Various							$1,317,934	$329,484	$1,647,418		Yes	N/A
TOTAL											**$1,317,934**	**$329,484**	**$1,647,418**			

FY 2019–2025 STP-U **$90,041,745 Federal Available**

					FUNDING SOURCES											
PROJECT	**FROM**	**TO**	**JURISDICTION**	**POSSIBLE ALTERNATIVE**	**ESTIMATED STP-U**	**ESTIMATED STP-R**	**ESTIMATED EDF-C**	**ESTIMATED CMAQ**	**ESTIMATED SAFETY**	**ESTIMATED TE**	**ESTIMATED SMALL URBAN**	**ESTIMATED LOCAL MATCH**	**ESTIMATED TOTAL COST**	**PROJECT TYPE**	**AQ ANALY-SIS EX-EMPT?**	**LENGTH**
48th Ave	Pierce St	M-45/Lake Michigan Dr	OCRC–Allendale Twp	Reconstruct to continuous 3 lanes with Non-Motorized Lanes (2-3) by 2025	$1,536,399							$384,100	$1,920,499	Widen	No	1.01
68th Ave	M-45/Lake Michigan Dr	Warner St	OCRC–Allendale Twp	Reconstruct and Add Center Turn Lane (2-3) by 2025	$3,660,784							$915,196	$4,575,980	Widen	No	1.51
68th Ave	Warner Ave	Leonard St	OCRC–Allendale Twp	Reconstruct and Add Center Turn Lane (2-3) by 2025	$3,770,149							$942,537	$4,712,686	Widen	No	1.55
Alpine Ave	Leonard St	Richmond St	City of Grand Rapids	Reconfigure within Existing ROW to 4 lanes - Enhance Transit Capacity (2-4) by 2025	$493,243							$123,311	$616,554	Widen	No	0.50
Bridge St	Covell Ave	M-45/Lake Michigan Dr	City of Grand Rapids	Reconfigure within Existing ROW to 3 lanes (2-3) by 2025	$75,155							$18,789	$93,944	Widen	No	0.08
Bridge St	Mount Vernon Ave	Straight Ave	City of Grand Rapids	Reconfigure within Existing ROW to 3 lanes (2-3) by 2025	$434,813							$108,703	$543,516	Widen	No	0.44
Eastern Ave	Hall St	Burton St	City of Grand Rapids	Reconfigure within Existing ROW to 3 lanes - Enhance Transit Capacity (2-3) by 2025	$943,163							$235,791	$1,178,954	Widen	No	0.95
Franklin St	Eastern Ave	Madison Ave	City of Grand Rapids	Reconfigure within Existing ROW to 3 lanes - Enhance Transit Capacity (2-3) by 2025	$491,290							$122,823	$614,113	Widen	No	0.50
Franklin St	Madison Ave	Division Ave	City of Grand Rapids	Reconfigure within Existing ROW to 3 lanes - Enhance Transit Capacity (2-3) by 2025	$423,420							$105,855	$529,275	Widen	No	0.43
Fuller Ave	Lake Dr	Fulton St	City of Grand Rapids	Reconfigure within Existing ROW to 3 lanes (2-3) by 2025	$292,065							$73,016	$365,081	Widen	No	0.30
Lake Dr	Carleton Ave	City limit	City of Grand Rapids	Reconfigure within Existing ROW to 3 lanes - Enhance Transit Capacity (2-3) by 2025	$368,452							$92,113	$460,565	Widen	No	0.37
Walker Ave	Valley Ave	Leonard St	City of Grand Rapids	Reconfigure within Existing ROW to 3 lanes (2-3) by 2025	$437,802							$109,451	$547,253	Widen	No	0.44
Planning Studies TBD					$898,400							$224,600	$1,123,000	Study	Yes	N/A
Eligible Safety Projects TBD	Area-wide		Various	Various	$673,800							$168,450	$842,250	Safety	Yes	N/A
Preservation Projects (Reconstruction/Resurfacing) TBD	Area-wide		Various	Various	$75,542,810							$18,885,703	$94,428,513	Preservation	Yes	
TOTAL					**$90,041,745**							**$22,510,437**	**$112,552,182**			

FY 2019–2025 STP-R **$6,115,226 Federal Available**

					FUNDING SOURCES											
PROJECT	**FROM**	**TO**	**JURISDICTION**	**POSSIBLE ALTERNATIVE**	**ESTIMATED STP-U**	**ESTIMATED STP-R**	**ESTIMATED EDF-C**	**ESTIMATED CMAQ**	**ESTIMATED SAFETY**	**ESTIMATED TE**	**ESTIMATED SMALL URBAN**	**ESTIMATED LOCAL MATCH**	**ESTIMATED TOTAL COST**	**PROJECT TYPE**	**AQ ANALY-SIS EX-EMPT?**	**LENGTH**
Eligible Rural Projects TBD	Eligible Areas		Various	Various		$6,115,226						$1,528,807	$7,644,033		Yes	N/A
TOTAL						**$6,115,226**						**$1,528,807**	**$7,644,033**			

FY 2019–2025 EDF-C **$21,922,783 Federal Available**

PROJECT	FROM	TO	JURISDICTION	POSSIBLE ALTERNATIVE	FUNDING SOURCES ESTIMATED STP-U	ESTIMATED STP-R	ESTIMATED EDF-C	ESTIMATED CMAQ	ESTIMATED SAFETY	ESTIMATED TE	ESTIMATED SMALL URBAN	ESTIMATED LOCAL MATCH	ESTIMATED TOTAL COST	PROJECT TYPE	AQ ANALYSIS EXEMPT?	LENGTH
56th St	Ivanrest Ave	Byron Center Ave	City of Wyoming	Reconstruct and Add Center Turn Lane (2-3) by 2025			$1,530,057					$382,514	$1,912,571	Widen	No	1.00
Spaulding Ave	Ada Dr	Cascade Rd	KCRC–Ada Twp	Reconstruct and Add Center Turn Lane (2-3) by 2025			$718,720					$179,680	$898,400	Widen	No	0.45
Walker Ave	North Ridge Dr	4 Mile Rd	City of Walker	Reconstruct and Add Center Turn Lane (2-3) by 2025			$953,231					$238,308	$1,191,539	Widen	No	0.32
Eligible Projects Addressing Congestion TBD	Area-wide		Various in Kent Co.	Various			$18,720,775					$4,680,194	$23,400,969		Yes	N/A
TOTAL							**$21,922,783**					**$5,480,696**	**$27,403,479**			

FY 2019–2025 MDOT **$662,707,164**

PROJECT	FROM	TO	JURISDICTION	POSSIBLE ALTERNATIVE	FUNDING SOURCES					MDOT PROJECTS		ESTIMATED NON-FEDERAL	ESTIMATED TOTAL COST	PROJECT TYPE	AQ ANALYSIS EXEMPT?	LENGTH
M-44/M-37/East Beltline Ave	Knapp St	M-21/E Fulton St	MDOT	Preserve and widen from 2 to 3 lanes in each direction by 2025						$35,040,000		$8,760,000	$43,800,000	Widen/Preserve	No	2.50
I-96	at M-21/E Fulton St		MDOT	Add additional ramps by 2025						$11,680,000		$2,920,000	$14,600,000	Widen	No	0.25
I-196	Fuller Ave	I-96	MDOT	Preserve and widen from 2 to 3 lanes in each direction, add weave merge lanes by 2025						$32,400,000		$8,100,000	$40,500,000	Widen/Preserve	No	2.00
Trunkline Projects TBD	Area-wide		MDOT	Various						$583,587,164		$145,896,791	$729,483,955		Yes	N/A
TOTAL										**$662,707,164**		**$165,676,791**	**$828,383,955**			

FY 2019–2025 TRANSIT

PROJECT	FROM	TO	JURISDICTION	POSSIBLE ALTERNATIVE	FUNDING SOURCES					TRANSIT CAPITAL REVENUES*			ESTIMATED TOTAL COST	PROJECT TYPE	AQ ANALYSIS EXEMPT?	LENGTH
Misc. Capital Needs	Area-wide		ITP/The Rapid							$33,577,210			$33,577,210	Transit	Yes	N/A
Facility Expansion/Maintenance Needs	Area-wide		ITP/The Rapid							$4,485,761			$4,485,761	Transit	Yes	N/A
Replacement of Fixed Route Buses	Area-wide		ITP/The Rapid							$45,748,532			$45,748,532	Transit	Yes	N/A
Replacement of Paratransit Vehicles	Area-wide		ITP/The Rapid							$10,921,168			$10,921,168	Transit	Yes	N/A
Capitalized Operating Expenses	Area-wide		ITP/The Rapid							$4,485,761			$4,485,761	Transit	Yes	N/A
TOTAL										**$99,218,432**			**$99,218,432**			

*Refer to ITP/The Rapid Financial Constraint Table

FY 2019–2025 CMAQ **$53,878,125 Estimated Federal Award**

PROJECT	FROM	TO	JURISDICTION	POSSIBLE ALTERNATIVE	FUNDING SOURCES ESTIMATED STP-U	ESTIMATED STP-R	ESTIMATED EDF-C	ESTIMATED CMAQ	ESTIMATED SAFETY	ESTIMATED TE	ESTIMATED SMALL URBAN	ESTIMATED LOCAL MATCH	ESTIMATED TOTAL COST	PROJECT TYPE	AQ ANALYSIS EXEMPT?	LENGTH
Eligible CMAQ Projects TBD	Area-wide		Various	Various				$53,878,125				$13,469,533	$67,347,658	Air Quality	Yes	N/A
TOTAL								**$53,878,125**				**$13,469,533**	**$67,347,658**			

FY 2019–2025 TE **$16,085,261 Estimated Federal Award**

PROJECT	FROM	TO	JURISDICTION	POSSIBLE ALTERNATIVE	FUNDING SOURCES ESTIMATED STP-U	ESTIMATED STP-R	ESTIMATED EDF-C	ESTIMATED CMAQ	ESTIMATED SAFETY	ESTIMATED TE	ESTIMATED SMALL URBAN	ESTIMATED LOCAL MATCH	ESTIMATED TOTAL COST	PROJECT TYPE	AQ ANALYSIS EXEMPT?	LENGTH
Eligible Non-Motorized Projects TBD	Area-wide		Various	Various						$7,399,220		$1,849,805	$9,249,025	Non-Motorized	Yes	N/A
Other TE Eligible Projects TBD	Area-wide		Various	Various						$8,686,041		$2,171,510	$10,857,551		Yes	N/A
TOTAL										**$16,085,261**		**$4,021,315**	**$20,106,576**			

FY 2019–2025 SAFETY **$11,415,896 Estimated Federal Award**

PROJECT	FROM	TO	JURISDICTION	POSSIBLE ALTERNATIVE	FUNDING SOURCES ESTIMATED STP-U	ESTIMATED STP-R	ESTIMATED EDF-C	ESTIMATED CMAQ	ESTIMATED SAFETY	ESTIMATED TE	ESTIMATED SMALL URBAN	ESTIMATED LOCAL MATCH	ESTIMATED TOTAL COST	PROJECT TYPE	AQ ANALYSIS EXEMPT?	LENGTH
Eligible Safety Projects TBD	Area-wide		Various	Various					$11,415,896			$2,853,974	$14,269,870	Safety	Yes	N/A
TOTAL									**$11,415,896**			**$2,853,974**	**$14,269,870**			

FY 2019–2025 SMALL URBAN **$2,873,886 Estimated Federal Award**

PROJECT	FROM	TO	JURISDICTION	POSSIBLE ALTERNATIVE	FUNDING SOURCES ESTIMATED STP-U	ESTIMATED STP-R	ESTIMATED EDF-C	ESTIMATED CMAQ	ESTIMATED SAFETY	ESTIMATED TE	ESTIMATED SMALL URBAN	ESTIMATED LOCAL MATCH	ESTIMATED TOTAL COST	PROJECT TYPE	AQ ANALYSIS EXEMPT?	LENGTH
Eligible Small Urban Project TBD	Area-wide		Various	Various							$2,873,886	$718,472	$3,592,358		Yes	N/A
TOTAL											**$2,873,886**	**$718,472**	**$3,592,358**			

FY 2026–2035 STP-U **$193,947,046 Federal Available**

PROJECT	FROM	TO	JURISDICTION	POSSIBLE ALTERNATIVE	FUNDING SOURCES ESTIMATED STP-U	ESTIMATED STP-R	ESTIMATED EDF-C	ESTIMATED CMAQ	ESTIMATED SAFETY	ESTIMATED TE	ESTIMATED SMALL URBAN	ESTIMATED LOCAL MATCH	ESTIMATED TOTAL COST	PROJECT TYPE	AQ ANALYSIS EXEMPT?	LENGTH
Planning Studies TBD					$2,364,000							$591,000	$2,955,000	Study	Yes	N/A
Eligible Safety Projects TBD	Area-wide		Various	Various	$1,773,000							$443,250	$2,216,250	Safety	Yes	N/A
Preservation Projects (Reconstruction/Resurfacing) TBD	Area-wide		Various	Various	$189,810,046							$47,452,512	$237,262,558	Preservation	Yes	N/A
TOTAL					**$193,947,046**							**$48,486,762**	**$242,433,808**			

FY 2026–2035 STP-R **$13,172,002 Federal Available**

PROJECT	FROM	TO	JURISDICTION	POSSIBLE ALTERNATIVE	FUNDING SOURCES ESTIMATED STP-U	ESTIMATED STP-R	ESTIMATED EDF-C	ESTIMATED CMAQ	ESTIMATED SAFETY	ESTIMATED TE	ESTIMATED SMALL URBAN	ESTIMATED LOCAL MATCH	ESTIMATED TOTAL COST	PROJECT TYPE	AQ ANALYSIS EXEMPT?	LENGTH
Eligible Rural Projects TBD	Eligible Areas		Various	Various		$13,172,002						$3,293,001	$16,465,003		Yes	N/A
TOTAL						**$13,172,002**						**$3,293,001**	**$16,465,003**			

FY 2026–2035 EDF-C **$45,891,089 Federal Available**

PROJECT	FROM	TO	JURISDICTION	POSSIBLE ALTERNATIVE	FUNDING SOURCES ESTIMATED STP-U	ESTIMATED STP-R	ESTIMATED EDF-C	ESTIMATED CMAQ	ESTIMATED SAFETY	ESTIMATED TE	ESTIMATED SMALL URBAN	ESTIMATED LOCAL MATCH	ESTIMATED TOTAL COST	PROJECT TYPE	AQ ANALYSIS EXEMPT?	LENGTH
Eligible Projects Addressing Congestion TBD	Area-wide		Various in Kent Co.	Various			$45,891,089					$11,472,772	$57,363,861		Yes	N/A
TOTAL							$45,891,089					$11,472,772	$57,363,861			

FY 2026–2035 MDOT **$1,269,041,504**

PROJECT	FROM	TO	JURISDICTION	POSSIBLE ALTERNATIVE	FUNDING SOURCES					MDOT PROJECTS		ESTIMATED NON-FEDERAL	ESTIMATED TOTAL COST	PROJECT TYPE	AQ ANALYSIS EXEMPT?	LENGTH
I-96	Leonard St	Cascade Rd	MDOT	Operational improvements; add ramps, CD lanes with I-96/I-196 interchange and widen per EA by 2035						$320,000,000		$80,000,000	$400,000,000	Widen/Preserve	No	3.75
I-196	Ottawa Ave	US-131BR/Division Ave	MDOT	Add WB to NB ramp from I-196 to US-131BR/Division Ave from the Ottawa Ave WB off ramp by 2035						$32,400,000		$8,100,000	$40,500,000	Widen	No	0.10
Trunkline Projects TBD	Area-wide		MDOT	Various						$916,641,504		$229,160,376	$1,145,801,880			N/A
TOTAL										**$1,269,041,504**		**$317,260,376**	**$1,586,301,880**			

FY 2026–2035 TRANSIT

PROJECT	FROM	TO	JURISDICTION	POSSIBLE ALTERNATIVE	FUNDING SOURCES					Transit Capital Revenues*			ESTIMATED TOTAL COST	PROJECT TYPE	AQ ANALYSIS EXEMPT?	LENGTH
Misc. Capital Needs	Area-wide		ITP/The Rapid							$59,246,363			$59,246,363	Transit	Yes	N/A
Facility Expansion/Maintenance Needs	Area-wide		ITP/The Rapid							$7,915,043			$7,915,043	Transit	Yes	N/A
Replacement of Fixed Route Buses	Area-wide		ITP/The Rapid							$69,560,912			$69,560,912	Transit	Yes	N/A
Replacement of Paratransit Vehicles	Area-wide		ITP/The Rapid							$16,074,482			$16,074,482	Transit	Yes	N/A
Capitalized Operating Expenses	Area-wide		ITP/The Rapid							$7,915,043			$7,915,043	Transit	Yes	N/A
TOTAL										**$160,711,843**			**$160,711,843**			

*Refer to ITP/The Rapid Financial Constraint Table

FY 2026–2035 CMAQ **$116,051,761 Estimated Federal Award**

FUNDING SOURCES

PROJECT	FROM	TO	JURISDICTION	POSSIBLE ALTERNATIVE	ESTIMATED STP-U	ESTIMATED STP-R	ESTIMATED EDF-C	ESTIMATED CMAQ	ESTIMATED SAFETY	ESTIMATED TE	ESTIMATED SMALL URBAN	ESTIMATED LOCAL MATCH	ESTIMATED TOTAL COST	PROJECT TYPE	AQ ANALYSIS EXEMPT?	LENGTH
Eligible CMAQ Projects TBD	Area-wide		Various	Various				$116,051,761				$29,012,940	$145,064,701		Yes	N/A
TOTAL								**$116,051,761**				**$29,012,940**	**$145,064,701**			

FY 2026–2035 TE **$34,647,138 Estimated Federal Award**

PROJECT	FROM	TO	JURISDICTION	POSSIBLE ALTERNATIVE	FUNDING SOURCES ESTIMATED STP-U	ESTIMATED STP-R	ESTIMATED EDF-C	ESTIMATED CMAQ	ESTIMATED SAFETY	ESTIMATED TE	ESTIMATED SMALL URBAN	ESTIMATED LOCAL MATCH	ESTIMATED TOTAL COST	PROJECT TYPE	AQ ANALYSIS EXEMPT?	LENGTH
Eligible Non-Motorized Projects TBD	Area-wide		Various	Various						$15,937,683		$3,984,421	$19,922,104	Non-Motorized	Yes	N/A
Other TE Eligible Projects TBD	Area-wide		Various	Various						$18,709,455		$4,677,364	$23,386,819		Yes	N/A
TOTAL										**$34,647,138**		**$8,661,785**	**$43,308,923**			

FY 2026–2035 SAFETY **$24,589,475 Estimated Federal Award**

PROJECT	FROM	TO	JURISDICTION	POSSIBLE ALTERNATIVE	FUNDING SOURCES ESTIMATED STP-U	ESTIMATED STP-R	ESTIMATED EDF-C	ESTIMATED CMAQ	ESTIMATED SAFETY	ESTIMATED TE	ESTIMATED SMALL URBAN	ESTIMATED LOCAL MATCH	ESTIMATED TOTAL COST	PROJECT TYPE	AQ ANALYSIS EXEMPT?	LENGTH
Eligible Safety Projects TBD	Area-wide		Various	Various					$24,589,475			$6,147,369	$30,736,844		Yes	N/A
TOTAL									**$24,589,475**			**$6,147,369**	**$30,736,844**			

FY 2026–2035 SMALL URBAN **$5,767,920 Estimated Federal Award**

PROJECT	FROM	TO	JURISDICTION	POSSIBLE ALTERNATIVE	FUNDING SOURCES ESTIMATED STP-U	ESTIMATED STP-R	ESTIMATED EDF-C	ESTIMATED CMAQ	ESTIMATED SAFETY	ESTIMATED TE	ESTIMATED SMALL URBAN	ESTIMATED LOCAL MATCH	ESTIMATED TOTAL COST	PROJECT TYPE	AQ ANALYSIS EXEMPT?	LENGTH
Eligible Small Urban Project TBD	Area-wide		Various	Various							$5,767,920	$1,441,980	$7,209,900		Yes	N/A
TOTAL											**$5,767,920**	**$1,441,980**	**$7,209,900**			

* Project costs are estimates. Final costs will be determined upon final design. Funding is committed for these projects through construction.

Chapter 17: Plan Evaluation and Analyses

Effectiveness of the LRTP

It is important to evaluate whether implementation of the LRTP will bring our area closer to the area goals and objectives outlined in Chapter 3. To evaluate the LRTP, measures of effectiveness were used, both quantitative and qualitative. Listed below are the LRTP Goals and a discussion of how well the LRTP fulfills each of them.

LRTP Goals	Discussion of Effectiveness
Goal 1: Accessibility, Mobility, Intermodalism, and Efficiency Provide access to employment, housing, services, and recreation for people regardless of physical limitations or economic status. Design a transportation system that allows the efficient movement of motor vehicles, buses, pedestrians, bicyclists, buses, trains, and air and freight carriers through the area. Enhance the integration and connectivity of the transportation system, across and between modes. Make the best use of existing transportation facilities by integrating systems, improving traffic operations and safety and providing accurate real-time information, to increase system-wide efficiency.	GVMC strives to alleviate all identified current and future congestion in the region and works with local jurisdictions to find a balance between congested conditions and the implications (financial, social, and environmental costs) of addressing them. A total of 64.67 miles of the local federal aid system were identified as capacity deficient using the GVMC capacity analysis process. Of those 67.64 miles, only 2.93 miles have been selected for widening more than the addition of a center turn lane. This represents only a quarter-of-one-percent of the local federal aid roadways in the MPO. Widening projects are regionally coordinated to reduce duplication and increase efficiency. The implementation of the proposed projects increases continuous service and needed capacity. The non-motorized element and achievements as well as potential future transit expansions such as the BRT along Division Ave., together lay a foundation for improvements to the transportation system for those who cannot or chose not to use private automobiles.
Goal 2: System Preservation Assure the preservation and maintenance of existing facilities and work to educate decision-makers about the need for adequate transportation funding.	The LRTP identifies in the financial section $1,412,664,317 in local and MDOT funds over the life the plan that will be used to operate and maintain and the transportation system. Additionally $444,892,683 is identified in total dedicated preservation projects in the Project List.
Goal 3: Safety, Security, and Reliability Improve the safety and reliability of the transportation system for motorized and non-motorized users. Improve security measures to protect the region from natural and human threats.	The Strategic Safety Planning Process technical document incorporated into the LRTP contains the results of the analysis completed for intersections, corridors, senior safety, pedestrian/bicycle safety, and car/deer crashes. It outlines projects and programs that would improve the safety of the transportation system. GVMC improves system security by coordinating planning activities with local law enforcement/security agencies.
Goal 4: Land Use and Transportation Strengthen the link between transportation and land use policies to encourage people and businesses to live and work in a manner that reduces dependence on single occupancy vehicles.	Projects contained in the LRTP will have impacts on land use adjacent to them. Local jurisdictions were consulted during the development of SE data used in the Transportation Model that projected capacity deficiencies which were later selected as projects for the LRTP. Therefore local land use plans better informed the data used to develop transportation projects.
Goal 5: Public Participation, Intergovernmental Cooperation, Equity, and Fiscal Responsibility Provide information to the public to allow active participation in the transportation decision-making process. Equitably fund transportation based on need and benefit. Coordinate and design transportation improvements for all modes to assure the expenditure of resources in the most cost-effective manner. Implement transportation improvements	The LRTP was developed in cooperation with all the GVMC local jurisdictions, local road agencies, ITP/The Rapid, the Michigan Department of Transportation, private sector partners, and the general public. The LRTP followed the adopted Public Participation Plan to actively engage the general public in the decision-making process and worked through a series of modal subcommittees in addition to the regular transportation committees to identify transportation needs for the effective expenditure of resources. The LRTP was developed in consultation with other environmental and interested agencies to ensure consistency between planning documents.

that foster economic development and vitality, links centers of employment, education, medical facilities, and neighborhoods.	The LRTP also contains several projects that are adjacent to commercial areas and/or will facilitate traffic circulation and access to major employment centers.
Goal 6: Environmental Quality, Livability, and Sustainability Improve air quality, water quality, reduce vehicular emissions and minimize impacts to the natural environment, social well-being, and cultural heritage. Reduce the demand for single-occupant motor vehicle travel, and conserve energy.	The projects in the LRTP were subjected to an Air Quality Conformity Analysis to assure that the emissions generated from LRTP projects are within the emission budgets which mandates lower emissions for VOC and NOx as established by the U.S. EPA, MDNRE, and contained in the State Implementation Plan. The LRTP also contains an Environmental Mitigation analysis to suggest system level mitigation techniques for transportation projects.

Financial Analysis

The Long Range Transportation Plan is a visionary document, one that forecasts the transportation needs of the area and ways to meet that need. The LRTP Project List is also required to be financially constrained by the Safe, Accountable, Flexible, Efficient, Transportation Equity Act – A Legacy for Users (SAFETEA-LU). This means that expenditures must not exceed revenues for the area. Using methodology approved by the Michigan Department of Transportation and by the Michigan Transportation Planning Association (MTPA), revenues are forecasted for the duration of the plan from federal, state, and local sources.

Transportation Financing

The development and maintenance of the transportation system is primarily financed through user fees (gas/diesel tax and vehicle registration fees). Local funds are also increasingly important as user fee revenues have decreased over the years. Currently, the state road gas tax is $0.19 per gallon and the federal tax is $0.184 per gallon. This federal gas tax has not been increased since 1993 and it is not indexed for inflation, so over time the same tax collects less revenue.

Federal Funding

SAFETEA-LU provides funding programs for system improvements. On the road side, of the various federal programs, only a few are particularly relevant for our region including the Surface Transportation Program (STP) which provides funds for the urban and rural areas of the region and for communities of between 5,000 and 50,000 in population. STP also includes a Safety fund and a Transportation Enhancement Fund for streetscaping and other non-motorized projects. There is also the Transportation Economic Development Fund (TEDF) Category A and C which provides funds for the financing of roadways for area economic development purposes and for the alleviation of roadway congestion. Due to our "Maintenance" status for the National Ambient Air Quality Standards (NAAQS), our area is also eligible for Congestion Mitigation/Air Quality Program (CMAQ), which funds projects designed to improve air quality and reduce congestion.

For the most part, Federal transportation funds are flexible, giving state and local governments control over how to best invest in the transportation system. Indeed, Kent and Eastern Ottawa Counties (the GVMC MPO area) has special discretion because it is considered a Transportation Management Area (TMA). TMAs are areas of population greater than 200,000 and have a set aside of federal STP funds. Other TMAs in Michigan include the urbanized areas of Ann Arbor, Detroit, Flint, Grand Rapids, Lansing/East Lansing, and parts of South Bend (Niles) and Toledo (City of Monroe) that spill over into Michigan. In Michigan the entire set aside for TMAs is reserved for spending on local jurisdiction facilities.

Public transit systems are funded through a combination of federal, state, and local subsidies, combined with fare box and other operating revenue. At one time, federal, state, and local sources each contributed about one third of the annual operating budget for transit, but over the last decade, the

Federal government has reduced transit operating assistance, and it is anticipated that this funding will eventually be eliminated. The current funding strategy calls for passenger user fees to increase to cover 50% of the operating cost and state and local subsidies to cover the other 50%. The Federal government is expected to continue to support transit capital projects.

State Funding

Collection and distribution of gasoline and diesel fuel taxes in Michigan are regulated under State Act 51 of 1951. Michigan's fuel tax is collected at the refinery and deposited into the Michigan Transportation Fund (MTF). Federal taxes are placed in the Federal taxes are placed in the Federal Highway Trust Fund, with the exception of $0.025 that is used for deficit reduction and $0.01 which pays for clean-up of leaking underground storage tanks. Vehicle registration feeds collected by the state are also deposited in the MTF. Most states, as well as the federal government, earmark all or some portion of the taxes collected for support of highways and transit improvements. MTF dollars are distributed to MDOT, the county road commissions, cities and villages, and the Comprehensive Transportation Fund (CTF). The CTF was established to fund public transit. This fund also receives funding from the State of Michigan general fund.

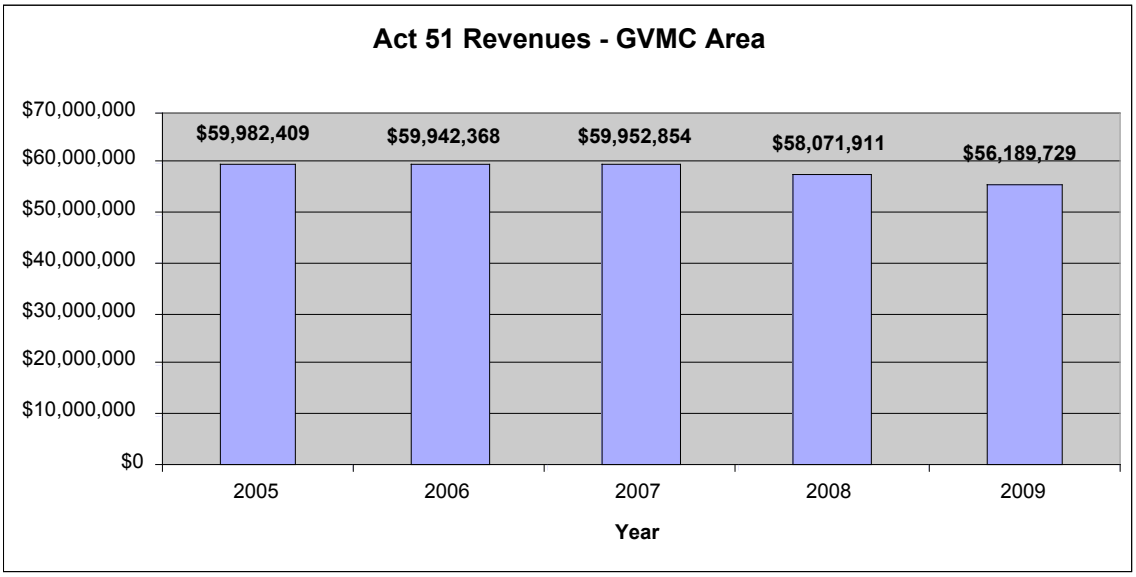


Figure 35 – Act 51 Revenues for the GVMC Area, 2005–2009

Local Funding

The cities and county road commissions use MTF allocations ("Act 51 funds") for transportation projects. Cities and villages often allocate additional funding for transportation improvements. Typical sources at the local level include the community's general fund, transportation millages, general obligation bonds, contributions from county governments and other communities, tax increment financing, and special assessment districts. Some communities also accumulate interest on MTF revenue after it has been distributed to them.

The county road commissions supplement their budges through contributions from townships. Some enter into maintenance agreements with MDOT for work on state trunklines within the county. Private funds are another source of funding, and usually involve developers paying for the construction of access drives or roadways leading to their developments.

Federal Transportation Funding Sources

Following is a brief description of the programs utilized by local road agencies.

Surface Transportation Program (ST/STP)

STP is used by state and local jurisdictions for road and transit projects. Local projects are eligible for funding from the annual allocation of STP Funds to the Metropolitan Planning Organization (MPO). Road projects must be located on roads functionally classified as a rural major collector or higher. Ten percent of the STP fund is set aside for the Transportation Enhancement fund program. The remaining funds are used statewide or distributed to the MPO for use in the urbanized areas (STPU), rural areas (STPR), and small cities in rural areas with a population of 5,000 to 50,000 people (STP-Small Urban).

STP-Urban (STU/STP-U)

Projects are selected by the Transportation Programming Study Group (a subcommittee of the Technical Committee) and recommended to the GVMC Technical and Policy Committees with the final stop at the GVMC Board for approval. These projects include resurfacing, capacity improvements, reconstruction, lane widening, new roads, intersection improvements and corridor studies. Transit projects are also eligible for STP funds.

STP-Small Urban Program

The Small Urban Program is funded with a state set aside of federal STP funds for urban areas between 5,000 and 50,000 population. Approximately 50 cities share this program and submit project requests to the MDOT for their possible selection. The Census defined Urbanized Area for Lowell (located in eastern Kent County) is the only area eligible for these funds in the Grand Rapids metropolitan area.

STP-Rural

Outside of metropolitan areas, the Rural Task Forces decide how to spend the Rural STP and Transportation Economic Development Fund Category D (TEDF-D) programs (TEDF programs are explained in the next section). In the Urbanized areas, STP-Rural projects are programmed through the MPO process. The Rural STP program is created with a state set aside of federal funds. Groups of nearby counties meet together in Rural Task Forces to prioritize their transportation investments.

Functionally classified roads outside the urbanized area boundary are eligible for STP-Rural program funds. Transit providers in the rural area are also eligible for STP-R funds for projects such as bus replacement or rehabilitation; communication and maintenance equipment; operational support equipment and items related to services under the American Disability Act.

In Kent County, the Village of Caledonia, the Village of Sand Lake, the Village of Kent City and the Village of Casnovia are eligible recipients of these road funds. The Interurban Transit Partnership (ITP/The Rapid) selects transit projects in the rural area from the established specialized services committee and the Kent County Road Commission represents townships in rural Kent County. Ottawa County projects are selected by the Ottawa County Rural Task Force. Selected projects that are located within the MPO area must be included in the Grand Valley Metropolitan Council's Transportation Improvement Program document.

Transportation Economic Development Fund

The Transportation Economic Development Fund (TEDF) was created through state enabling legislation in 1987 to alleviate transportation related barriers to economic development. The program mission continues to be to enhance the ability of the state to compete in an international economy, to serve as a catalyst for economic growth of the state, and to improve quality of life in the state. The program is divided into five categories. GVMC's metropolitan planning program is most impacted by Category C.

Category A (EDA)	Road Projects related to target industries and redevelopment.
Category C (EDFC/EDC/EDCF)	Traffic congestion relief in urban counties.
Category D (EDD/EDDF)	Improvements in rural counties to create an all season network.
Category E	Improvements related to the commercial forest industry.
Category F (EDF/EDFF)	Road improvements in cities and rural counties.

The EDCF program is established in state law with a set aside of state and federal funds for urban county congestion relief. The recipients include Kent, Genesee, Macomb, Oakland, and Wayne counties.

STP-Enhancement (STE/TE)

Ten percent of Michigan's STP funding is set aside for Transportation Enhancement Activities (STE). These monies are designated specifically for the enhancement of the intermodal transportation network on projects such as landscaping, installing bicycle paths, historic preservation and mitigation of storm water run-off. Once these projects are selected they will be amended into the Transportation Improvement Program.

Highway Safety Improvement Program (HSIP)

SAFETEA-LU represents a change in the way Safety funds are distributed as previous legislation (TEA-21) allocated ten percent of STP funds for local safety projects statewide. The Safety program (HSIP), which is now a stand alone core program, allows for items such as upgrading traffic signs and signals, replacement of guardrail or eliminating the need for guardrail, replacement of bridge railing and approach guardrail, removing roadside obstacles, and small intersection improvements.

Congestion Mitigation/Air Quality (CMAQ/CM/CMG/)

Congest Mitigation/Air Quality funds are federal funds which link transportation to the Clean Air Act Amendments. These funds are used to implement transportation control measures which demonstrate emission and/or congestion reductions for areas in non-attainment of NAAQS standards or those considered to be "Maintenance" areas for NAAQS standards. Previously, the State of Michigan had received an annual allocation for use in the Grand Rapids, Muskegon and Detroit areas. Changes in the way air quality is measured in Michigan has resulted in 25 counties now being eligible for CM funding.

The types of projects funded in the Grand Rapids area include, but are not limited to, bus replacements, intersection improvements, ridesharing programs and an Clean Air Action day awareness program, free bus rides on Clean Air Action days, and non-motorized facilities. As part of project selection, the projected volatile organic compounds (VOCs) and nitrogen oxide (NOx) reductions are analyzed. These emissions are the precursors of Ozone which impact the West Michigan region.

Federal Transit Funding Sources

Section 5303 - Metropolitan Planning: These programs provide funding to support cooperative, continuous, and comprehensive planning for making transportation investment decisions in metropolitan areas and state wide. Metropolitan Planning Organizations (MPO) and stated departments of transportation are eligible recipients.

Section 5307 - Urbanized Area Formula: Formula grant program for urbanized areas over 50,000 in population. Funds are apportioned to urbanized areas utilizing a formula based on population, population density, and other factors associated with transit service and ridership.

Section 5309 - Capital Programs (New Starts, Bus & Bus Facilities): Provides discretionary capital assistance for the establishment and improvement of busways systems and upgrading of bus systems (buses, bus related equipment, and facilities).

Section 5310 - Capital: This program provides capital funds for transportation purposes to private, nonprofit corporations and associations, and public agencies for the specific purpose of assisting them in providing transportation services meeting the special needs of elderly persons and persons with disabilities. Public agencies are eligible to receive funding under this program if they have been approved by the state to coordinate services for elderly persons and persons with disabilities, and if they certify to the state that no non-profit corporations or associations are readily available in the area to provide service. Capital expenses may include vehicles, maintenance equipment, computers and communication equipment.

Section 5311 – Non-urbanized Area Formula Program: This is a formula assistance program used to provide federal funding to all legal bodies that provide general public transportation non-urbanized areas of the state. Funds may be used of capital, operating, and administrative assistance

Section 5311 (f) - Intercity Bus Capital Program: MDOT is required to spend a portion of its Section 5311 apportionment "to carry out a program for the development and support of intercity bus transportation." The portion required for intercity bus transportation is not less than 15 percent. The requirement is in effect unless the Governor certifies that Michigan's intercity bus service needs are being adequately met. Assistance under Section 5311 (f) must support intercity bus service in non-urbanized areas.

Transportation Enhancement program: Enhancement to new or existing transit facilities such as landscaping or the improvement of pedestrian access would qualify for enhancement funds, as would any type of preservation, rehabilitation, and operation of legitimate historic transit facilities.

Congestion Mitigation and Air Quality Improvement Program (CM): Directs funds toward transportation projects in Clean Air Act non-attainment areas for ozone and carbon monoxide.

Urban Area Program: Transportation Management Areas with a population over 200,000 are eligible for transit capital funding through TMA-Surface Transportation Program (ST) and Transportation Economic Development Fund Category C (EDC) federal funds.

Other Transportation Funding Sources

Other funding sources available to agencies within the metropolitan planning process include the following:

Local Rail/Highway Crossing Program - The rail crossing program is funded with a set aside of state and federal funds for the purpose of improving safety at rail/highway crossings.

State Park Access Program (SPA) - The SPA program is a state set aside of federal STP funds for the purpose of improving local roads that serve state parks.

Recreational Trails Program (NRT) - The Recreational Trails program is a federal program for the purpose of providing improvements for motorized and non-motorized recreational trail users.

State Trunkline Programs - The state trunkline system is nearly 10,000 miles of the most heavily traveled roads in the state of Michigan. They are all funded from the pool of state and federal funds available to MDOT for the maintenance of the state trunkline system. State trunkline programs include:

- Rehabilitate and Reconstruct Program - The Rehabilitate and Reconstruct program's purpose is to improve the pavement condition and ride quality on the system.
- Trunkline Bridge Program - The bridge program provides for the inventory, inspection, analysis and emergency repair of trunkline bridges.

- Capital Preventive Maintenance (CPM) Program for Highways and Bridges - The CPM program's purpose is to extend the life of pavement and prevent costly repairs in the future.
- Capacity Improvements - Capacity improvements include the widening and resurfacing or reconstructing of roads with the purpose of relieving urban congestion and improving level of service along the most important commercial thoroughfares.
- New Roads - The new roads program includes construction of new roads on new alignments in order to improve system continuity, relieve congestion, and continue Michigan's economic vitality.
- Preliminary Engineering (PE) - PE includes funding for preliminary studies, surveys, drafting, and engineering work necessary to begin the development of road projects.

State Rail/Highway Crossing Program - the rail crossing program is funded with a statutory set aside of state and federal funds for the purpose of improving safety at rail/highway crossings. Projects were not selected in time to be included in the S/TIP and will need to be amended in once they are selected.

Revenue Forecast Methodology

To determine the amount of revenue for the GVMC MPO area through Fiscal Year 2035, the following methodology was developed and approved by the Michigan Transportation Planning Association (MTPA) and MDOT.

Figure 36 – Revenue Estimation Growth Rates

Federal Fund Growth Rates	
Baseline	2009
No Growth	2010–2011
3.2% Annual Growth Rate	2012–2013
4.89% Annual Growth Rate	2014–2035
Non-Federal Funds	
Baseline	2009
1% Annual Growth Rate	2010–2011
2% Annual Growth Rate	2012–2013
4.04% Annual Growth Rate	2014–2035

These growth rates were developed by the MDOT Statewide Planning Division. The interim growth rates developed reflect the current economic conditions, as demonstrated by no-growth and/or conservative growth rates between the base year of 2009 and 2011. Thereafter, MDOT used historical state highway revenue and federal obligations over a 20-year period (1985–2004) to calculate the annual revenue growth rates at 90 percent of the historical growth rate. These growth rates are consistent with the current Michigan Long Range Transportation Plan.

For the Federal Highway Programs, the revenue estimates were taken directly from the 2011–2014 Transportation Improvement Program. Beginning in 2015, the annual federal growth rates approved by MDOT and MTPA (Figure 36 above) were applied to the federal categories, with the exception of CMAQ funds, where the starting figure was 2011, or the last known distribution of CMAQ funds. For the competitive programs, awards for 2009 and 2010 were used as a starting point for Safety and Small Urban, and a three year average was used as a starting point for Transportation Enhancement, upon which the growth rates were applied.

For the State Programs, Capital Improvement & New Roads, and Preserve, revenue estimates were derived by MDOT and supplied to GVMC in five-year increments.

The Local Program funds, consists of a Local Act 51 revenue estimate of funds available to match federal funds and other local funds. The Act 51 road agencies (Kent and Ottawa County Road Commissions, Cities, and Villages) use about 33% of their MTF (Act 51 funds) for operation and maintenance of their systems. A percentage of the remaining Act 51 funds is then available to match federal transportation funds for road projects like adding a center turn lane or reconstructing a road. GVMC also collected from the Act 51 road agencies the average amount of Other Local funds used on transportation projects from sources such as general funds, transportation millages, municipal bonds, and special assessments. The Non-Federal growth rates were applied to the Act 51 funds available as federal match and Other Local Funds in order to grow these revenues into the future. The Act 51 Funds Available to Match Federal Dollars are used for the usual 20% match required for programs like STP-Urban and Transportation Enhancement.

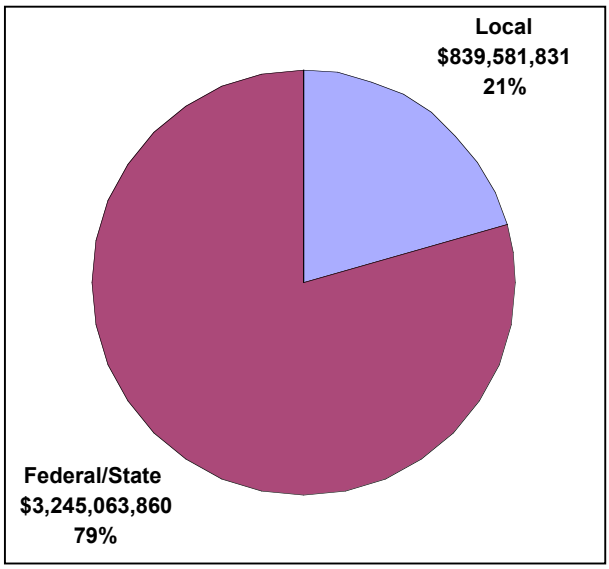


Figure 37 – 2035 LRTP Revenues ($3.9 Billion)

The Other Local Funds represent resources that the local jurisdictions use to supplement their Act 51 dollars for local projects. These funds were not used in the fiscal constraint breakdown as matching funds, these figures are purely informational. Local road agencies expend local funds on their own transportation projects, without the use of federal funds. These projects are generally not considered "regionally significant", for example, the repaving of a road torn up to repair water and sewer lines. Because these projects are not regionally significant they are not required to be listed as projects in the LRTP. In the event a project is found to be regionally significant, it would move through the MPO planning process and be included in subsequent Transportation Improvement Programs.

Operations & Maintenance

SAFETEA-LU legislation (23 CFR 450.324(h)) requires that the financial plan for the LRTP must include system-level estimates of costs and revenue sources that are reasonably expected to be available to adequately operate and maintain Federal-aid highways and public transportation. Indeed, preservation of the transportation system is a LRTP goal (see Chapter 3). For this reason, GVMC collected estimates from the Act 51 road implementing agencies in the Grand Rapids area as well as MDOT for annual Operations and Maintenance fund allocations. Operations and Maintenance funds are used for items such as snow plowing, mowing, pot hole patching, crack sealing, signage, and other expenses deemed necessary to operate and maintain the overall transportation network. These funds are not available to be used as a local match for federal transportation dollars.

2011-2035 Operations and Maintenance Costs/Expenditures	2011-2014	2015-2018	2019-2025	2026-2035	TOTAL
Operations & Maintenance - Local Jurisdictions (Act 51 funds)	$79,273,964	$91,563,090	$199,662,391	$400,724,539	$771,223,985
Operations & Maintenance - MDOT	$59,165,443	$68,337,328	$149,016,314	$299,077,324	$575,596,409
TOTAL	$138,439,407	$159,900,418	$348,678,706	$699,801,863	$1,346,820,394

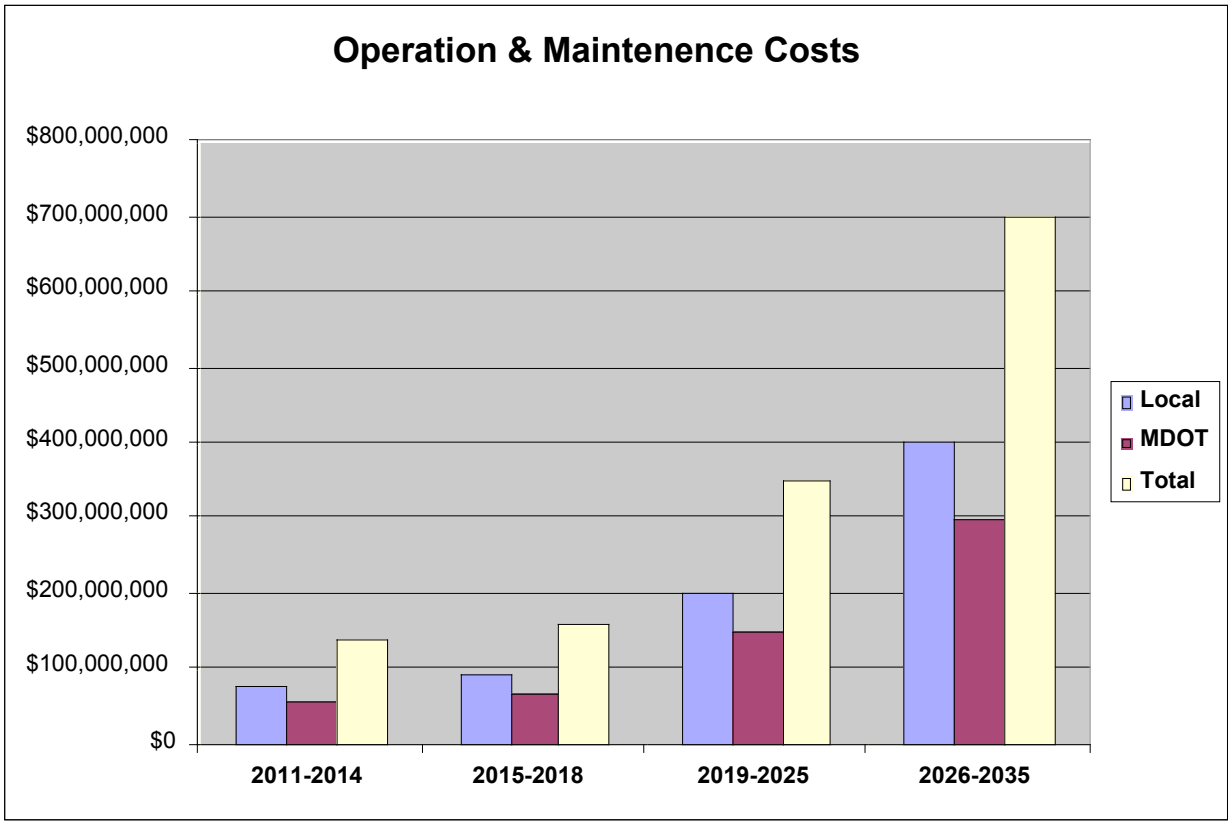


Figure 38 – Operation & Maintenance Costs, 2011–2035.

Expenditure Forecast Methodology

SAFTEA-LU legislation requires that the project costs listed in the LRTP are recorded in the year they will be expended (YOE). Revenue estimates from all sources are inflated per prescribed growth rates and similarly costs must be inflated so that comparisons may be drawn.

The expenditure information for projects in FY2011-2014 come from the Transportation Improvement Program (TIP) and are understood to be inflated by the jurisdictions that submitted them. For projects that were programmed as part of the LRTP, GVMC used inflation rates recommended by the Michigan Department of Transportation (MDOT).

An annual inflation rate of 4% was anticipated for the years 2014-2018 and an annual inflation rate of 3.3% was anticipated for the remainder of the Plan's duration, 2019-2035. The LRTP projects are listed in year groupings however, and the precise year of expenditure or construction is unknown. To overcome this, staff calculated average inflation rates for each grouping of years based on the annual inflation rates recommended. The average inflation rate applied to projects between 2014-2018 was calculated to be 7.4%. For 2019-2025 the average inflation rate applied was 12.3%, and for 2026-2035 the average inflation rate applied was 18.2%. For each range of project years the average inflation rate was applied including the compounding factor from the previous time period.

MDOT YOE project costs for projects that appear in the LRTP Project list are derived from the Annual Financial Plan, as required under section 1305 of TEA-21 as amended by SAFETEA-LU.

In addition to reflecting the inflated project cost estimates in the LRTP Project List, the inflated project cost estimates were incorporated into the expenditure table, and estimates of both revenues and expenditures are provided through the year 2035.

All known sources of revenue and estimated project costs have been included in the following financial tables. These tables demonstrate that the total expenditures in the LRTP Project List do not exceed estimated revenues.

Revenue & Expenditure Tables

Figure 39 – Revenue and Expenditure Table, 2011–2014

		2011 - 2014			
Funding Category	**Total 2009–2010**	**Estimated Federal Revenue**	**Estimated Non-Federal Revenue**	**Estimated Total Revenue**	**Total Proposed Commitments**
Federal Highway Programs–MPO Program					
Anticipated					
STP-Urban – Federal	$16,180,000	$33,366,064	$16,240,973	$49,607,037	$49,607,037
STP-Rural – Federal	$1,168,334	$2,266,072	$676,844	$2,942,916	$2,942,916
TEDF- C – State and Federal	$3,438,124	$8,525,456	$2,261,417	$10,786,873	$10,786,873
CMAQ – Federal	$9,358,832	$19,727,773	$4,931,949	$24,659,722	$24,659,722
MPO Program Anticipated Subtotal	*$30,145,290*	*$63,885,365*	*$24,111,183*	*$87,996,548*	*$87,996,548*
Competitive					
Local Safety – Federal	$2,200,400	$4,179,993	$1,044,998	$5,224,991	$5,224,991
Local Transportation Enhancement – Federal	$2,795,220	$5,889,707	$2,032,427	$7,922,134	$7,922,134
Small Urban – Federal	$542,700	$1,141,048	$285,262	$1,426,310	$1,426,310
MPO Program Competitive Subtotal	*$5,538,320*	*$11,210,748*	*$3,362,687*	*$14,573,435*	*$14,573,435*
TOTAL MPO Program Anticipated & Competitive	*$35,683,610*	*$75,096,113*	*$27,473,870*	*$102,569,983*	*$102,569,983*
Local Program					
Act 51 Funds Available to Match Federal Dollars – Local	$14,399,128		$30,274,727		
Other Funds – Local	$24,733,567		$52,003,285		
Local Program Subtotal	*$39,132,695*		*$82,278,011*		
Local Overmatch			$2,800,857		
State Program					
MDOT IC/New Roads & Preservation – State	$90,030,000	$186,525,495	$46,331,500	$232,856,995	$232,856,995
State Program Subtotal	*$90,030,000*	*$186,525,495*	*$46,331,500*	*$232,856,995*	*$232,856,995*

Figure 40 – Revenue and Expenditure Table, 2015–2018

	2015 - 2018			
Funding Category	**Estimated Federal Revenue**	**Estimated Non-Federal Revenue**	**Estimated Total Revenue**	**Total Proposed Commitments**
Federal Highway Programs–MPO Program				
Anticipated				
STP-Urban – Federal	$39,446,545	$2,322,820	$41,769,365	$41,769,365
STP-Rural – Federal	$2,679,030	$669,758	$3,348,788	$3,348,788
TEDF- C – State and Federal	$9,789,684	$2,447,422	$12,237,106	$12,237,106
CMAQ – Federal	$23,603,561	$5,900,890	$29,504,451	$29,504,451
MPO Program Anticipated Subtotal	*$75,518,820*	*$11,340,890*	*$86,859,710*	*$86,859,710*
Competitive				
Local Safety – Federal	$5,001,210	$1,250,303	$6,251,513	$6,251,513
Local Transportation Enhancement – Federal	$7,046,820	$1,761,705	$8,808,525	$8,808,525
Small Urban – Federal	$1,317,934	$329,484	$1,647,418	$1,647,418
MPO Program Competitive Subtotal	*$13,365,964*	*$3,341,492*	*$16,707,456*	*$16,707,456*
TOTAL MPO Program Anticipated & Competitive	*$88,884,784*	*$14,682,382*	*$103,567,166*	*$103,567,166*
Local Program				
Act 51 Funds Available to Match Federal Dollars – Local		$34,967,944		
Other Funds – Local		$60,064,884		
Local Program Subtotal		*$95,032,828*		
Local Overmatch		$20,285,562		
State Program				
MDOT IC/New Roads & Preservation – State	$200,695,837	$50,173,959	$250,869,796	$250,869,796
State Program Subtotal	*$200,695,837*	*$50,173,959*	*$250,869,796*	*$250,869,796*

Figure 41 – Revenue and Expenditure Table, 2019–2025

	2019 - 2025			
Funding Category	**Estimated Non-Federal Revenue**	**Estimated Total Revenue**	**Total Proposed Commitments**	**Estimated Non-Federal Revenue**
Federal Highway Programs–MPO Program				
Anticipated				
STP-Urban – Federal	$90,041,745	$22,510,437	$112,552,182	$112,552,182
STP-Rural – Federal	$6,115,226	$1,528,807	$7,644,033	$7,644,033
TEDF- C – State and Federal	$21,922,783	$5,480,696	$27,403,479	$27,403,479
CMAQ – Federal	$53,878,125	$13,469,533	$67,347,658	$67,347,658
MPO Program Anticipated Subtotal	*$171,957,879*	*$42,989,473*	*$214,947,352*	*$214,947,352*
Competitive				
Local Safety – Federal	$11,415,896	$2,853,974	$14,269,870	$14,269,870
Local Transportation Enhancement – Federal	$16,085,261	$4,021,315	$20,106,576	$20,106,576
Small Urban – Federal	$2,873,886	$718,472	$3,592,358	$3,592,358
MPO Program Competitive Subtotal	*$30,375,043*	*$7,593,761*	*$37,968,804*	*$37,968,804*
TOTAL MPO Program Anticipated & Competitive	*$202,332,922*	*$50,583,234*	*$252,916,156*	*$252,916,156*
Local Program				
Act 51 Funds Available to Match Federal Dollars – Local		$76,251,067		
Other Funds – Local		$130,977,432		
Local Program Subtotal		*$207,228,499*		
Local Overmatch		$25,667,834		
State Program				
MDOT IC/New Roads & Preservation – State	$662,707,164	$165,676,791	$828,383,955	$828,383,955
State Program Subtotal	*$662,707,164*	*$165,676,791*	*$828,383,955*	*$828,383,955*

Figure 42 – Revenue and Expenditure Table, 2026–2035

	2026 - 2035				
Funding Category	**Estimated Non-Federal Revenue**	**Estimated Total Revenue**	**Total Proposed Commitments**	**Estimated Non-Federal Revenue**	**Total**
Federal Highway Programs–MPO Program					
Anticipated					
STP-Urban – Federal	$193,947,046	$48,486,762	$242,433,808	$242,433,808	$372,981,400
STP-Rural – Federal	$13,172,002	$3,293,001	$16,465,003	$16,465,003	$25,400,664
TEDF- C – State and Federal	$45,891,089	$11,472,772	$57,363,861	$57,363,861	$89,567,136
CMAQ – Federal	$116,051,761	$29,012,940	$145,064,701	$145,064,701	$222,620,052
MPO Program Anticipated Subtotal	*$369,061,898*	*$92,265,475*	*$461,327,373*	*$461,327,373*	*$710,569,252*
Competitive					
Local Safety – Federal	$24,589,475	$6,147,369	$30,736,844	$30,736,844	$47,386,974
Local Transportation Enhancement – Federal	$34,647,138	$8,661,785	$43,308,923	$43,308,923	$66,464,146
Small Urban – Federal	$5,767,920	$1,441,980	$7,209,900	$7,209,900	$11,643,488
MPO Program Competitive Subtotal	*$65,004,533*	*$16,251,134*	*$81,255,667*	*$81,255,667*	*$125,494,608*
TOTAL MPO Program Anticipated & Competitive	*$434,066,431*	*$108,516,609*	*$542,583,040*	*$542,583,040*	***$836,063,860***
Local Program					
Act 51 Funds Avail. to Match Fed. Dollars – Local		$153,036,701			$308,929,568
Other Funds – Local		$262,873,096			$530,652,263
Local Program Subtotal		*$415,909,797*			***$839,581,831***
Local Overmatch		$44,520,092			$93,274,345
State Program					
MDOT IC/New Roads & Preservation – State	$1,269,041,504	$317,260,376	$1,586,301,880	$1,586,301,880	$2,409,000,000
State Program Subtotal	*$1,269,041,504*	*$317,260,376*	*$1,586,301,880*	*$1,586,301,880*	***$2,409,000,000***

Figure 43 – Transit Revenue and Expenditure Table

Transit Expenditures					**Total**
Operating	**2011–2014**	**2015–2018**	**2019–2025**	**2026–2035**	**2011–2035**
Labor and Fringes	$80,406,385	$88,753,604	$178,061,197	$314,185,674	$661,406,860
Bus Rapid Transit (BRT)	$3,369,392	$10,848,537	$21,764,790	$38,403,568	$74,386,287
Services, Casualty/Liability, & Transfers	$12,363,409	$13,646,891	$27,378,963	$48,309,672	$101,698,935
Materials, Supplies, Utilities	$19,335,217	$21,342,462	$42,818,141	$75,551,814	$159,047,635
Purchased Transportation	$27,982,989	$30,887,984	$61,968,766	$109,342,737	$230,182,476
Total Operating Expenses	**$143,457,392**	**$165,479,478**	**$331,991,857**	**$585,793,465**	**$1,226,722,193**
					Total
Capital	**2011–2014**	**2015–2018**	**2019–2025**	**2026–2035**	**2011–2035**
Miscellaneous Capital Needs	$15,454,182	$17,455,132	$33,577,210	$59,246,363	$125,732,888
Bus Rapid Transit (BRT)	$36,941,000	$0	$0	$0	$36,941,000
Facility Expansion/Maintenance Needs	$19,537,813	$2,235,903	$4,485,761	$7,915,043	$34,174,519
Replacement of fixed-route buses (Number)		$36	$97	$115	$248
Repl./addition of fixed-route buses (Cost)	$7,379,109	$15,168,735	$45,748,532	$69,560,912	$137,857,288
Expansion of fixed-route buses (Number)		$0	$0	$0	$0
Expansion of fixed-route buses (Cost)	$3,813,769	$0	$0	$0	$3,813,769
Replacement of Paratransit Vehicles (Number)		$68	$123	$144	$335
Replacement of Paratransit Vehicles (Cost)	$1,734,503	$5,108,986	$10,921,168	$16,074,482	$33,839,139
Capitalized Operating Expense	$2,712,813	$2,235,903	$4,485,761	$7,915,043	$17,349,519
Total Capital Needs	**$87,573,188**	**$42,204,658**	**$99,218,433**	**$160,711,843**	**$389,708,122**
					Total
	2011–2014	**2015–2018**	**2019–2025**	**2026–2035**	**2011–2035**
Total Operating Expenditures	$143,457,392	$165,479,478	$331,991,857	$585,793,465	$1,226,722,193
Total Capital Needs	$87,573,188	$42,204,658	$99,218,433	$160,711,843	$389,708,122
Grand Total	**$231,030,581**	**$207,684,136**	**$431,210,290**	**$746,505,308**	**$1,616,430,314**
Transit Revenues					**Total**
Operating	**2011–2014**	**2015–2018**	**2019–2025**	**2026–2035**	**2011–2035**
Passenger Fares	$22,804,050	$26,597,275	$53,360,566	$94,153,727	$196,915,618
Sale of Transportation Services	$22,439,995	$24,769,556	$49,693,720	$87,683,646	$184,586,917
Property Taxes	$50,734,302	$61,704,665	$123,794,483	$218,433,065	$454,666,515
State Operating Assistance	$40,210,474	$44,384,839	$89,046,723	$157,121,289	$330,763,325
Interest, Advertising, and Miscellaneous	$2,387,277	$2,635,107	$5,286,662	$9,328,218	$19,637,264
Capitalized Operating Expense	$4,881,295	$5,388,036	$10,809,703	$19,073,520	$40,152,554
Total Operating Revenues	**$143,457,392**	**$165,479,478**	**$331,991,857**	**$585,793,465**	**$1,226,722,194**
					Total
Capital	**2011–2014**	**2015–2018**	**2019–2025**	**2026–2035**	**2011–2035**
5307 Federal Apportionments	$27,119,925	$36,120,970	$87,015,112	$139,183,979	$289,439,986
5309 Federal Discretionary	$18,000,000	$0	$0	$0	$18,000,000
Very Small Starts	$36,941,000	$0	$0	$0	$36,941,000
Congestion, Mitigation & Air Quality	$3,427,956	$3,783,822	$7,591,261	$13,394,640	$28,197,678
Local Capital	$2,076,258	$2,291,800	$4,597,905	$8,112,919	$17,078,882
Total Capital Revenues	**$87,573,189**	**$42,204,658**	**$99,218,433**	**$160,711,843**	**$389,708,121**
					Total
	2011–2014	**2015–2018**	**2019–2025**	**2026–2035**	**2011–2035**
Total Operating Revenues	$143,457,392	$165,479,478	$331,991,857	$585,793,465	$1,226,722,194
Total Capital Revenues	$87,573,189	$42,204,658	$99,218,433	$160,711,843	$389,708,121
Grand Total	**$231,030,581**	**$207,684,136**	**$431,210,290**	**$746,505,308**	**$1,616,430,315**

Air Quality Conformity Analysis

Transportation planning must take into account the effects that automobiles, trucks, and buses have on air quality. Vehicle emissions account for 40% of ozone producing hydrocarbon emissions in metropolitan areas, thus GVMC strives to meet the needs of the transportation system while minimizing the effects the system has on air quality. The U.S. Environmental Protection Agency (EPA) and the Michigan Department of Natural Resources and Environment (MDNRE) as well as other state and federal transportation agencies have put in place regulations, guidelines and tools for transportation planning agencies to use in improving air quality.

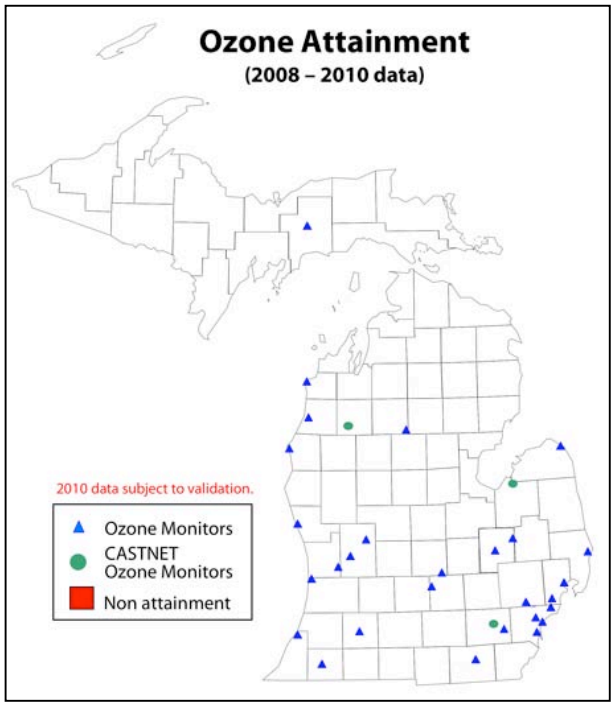
Ozone

Ozone (O3) is a colorless and odorless gas composed of three oxygen atoms. It is created through a chemical reaction when volatile organic compounds (VOCs) and nitrogen oxides (NOx) react with sunlight. In the stratosphere (10 miles above the earth's surface), ozone provides an important thin protective shield that blocks the sun's harmful rays (UV-A and UV-B), however at ground level, ozone is a health threatening air pollutant. Ground level ozone pollution damages crops, forests, and some materials like rubber and plastics. Exposure to elevated levels of ozone can cause adverse health effects include eye irritation, decreased vision, increased asthma and chronic lung disease incidence, coughing, dizziness, nausea, and reduced heart and lung capacity. Children, the elderly, those with respiratory aliments, and people who exercise vigorously are especially sensitive to ozone air pollution.

The primary sources of the component chemicals that combine to create ozone (VOCs and NOx) are from industrial emissions and electric utilities, motor vehicle exhaust, gasoline vapors, and chemical solvents. Ozone can be carried hundreds of miles away from its source by winds and therefore even rural areas can be affected by ozone.

Ozone Monitoring

The Clean Air Act (CAA) requires the Environmental Protection Agency (EPA) to set National Ambient Air Quality Standards (NAAQS) for six criteria pollutants, including ozone. Under the CAA, as amended in 1990, each state must develop a plan describing how it will attain and maintain the NAAQS. This plan is called the State Implementation Plan (SIP) and is required under Section 110 of the CAA (40 CFR Part 51, Subparts F & G). In general, the SIP is a collection of programs including:



- a monitoring program, which is a collection of monitoring devices which provide actual measurements of the concentrations of pollutants in the air, to identify whether an areas is meeting the air quality standards
- air quality calculations and computer modeling, which are used to predicted future trends and the effects of emission reduction strategies
- emissions inventories, which describe the sources and categories of emissions to the air for a given pollutant, and how much is

emitted by each source or source agency

One of the key effects of the Clean Air Act of 1990 (as amended) has been that no new roadway facilities can be built unless other congestion management programs have been established within the metropolitan planning area which offset the increased level of air pollution likely to result from the new facility. In addition, a plan must be established which results in improved air quality from the levels observed in 1990, not just stabilized levels.

A network of five air quality monitoring stations, located in Evans, Grand Rapids, Holland, Jenison, and Muskegon, continually monitor ozone levels in West Michigan. The MDNRE and the EPA average the data from these monitors over eight hours and compare it to the NAAQS. At each monitoring station, the fourth highest eight-hour value averaged over three years is not to exceed 75 parts per billion (ppb). If over three years, the average of the highest ozone values is over 75 ppb, the NAAQS is violated.

Ozone Standards

The EPA and MDNRE monitor air pollution levels and work with local community government and planning agencies to develop plans to bring areas in violation of air quality standards into compliance. Between 1978 and 1994, Kent, Ottawa, Muskegon, and Allegan Counties were designated as non-attainment areas because ozone levels exceeded the standard. But over 20 years of emission control efforts resulted in the West Michigan counties meeting the 1-hour ozone standard. The improvement in air quality qualified these areas to be redesignated as "attainment areas." The Kent and Ottawa County area, which comprise the GVMC MPO area, was redesignated as attainment in 1996 and as of June 15, 2005, all areas in Michigan are no longer subject to the 1-hour ozone standard.

In 1997, the EPA adopted a more stringent 8-hour ozone standard. The 8-hour standard was considered more protective of public health for population groups especially sensitive to air pollution. Designations for the 8-hour ozone standard were made by the EPA on June 15, 2004. In West Michigan, Kent, Ottawa, Muskegon, and Allegan were all designated as non-attainment. Since 1997, overall air quality has improved in West Michigan, and in response to requests by the state of Michigan, the EPA has redesignated Kent, Ottawa, and Muskegon Counties as attainment for the 1997 8-hour ozone standard.

While Kent and Ottawa Counties are considered to be in attainment for ozone, the area is still considered a "maintenance" area. The Clean Air Act Amendments of 1990 require that all transportation plans and investments in non-attainment and maintenance areas to be subject to an air quality conformity determination. The purpose of this determination is to demonstrate that the Long Range Transportation Plan (LRTP) conforms to the intent and purpose of the State Implementation Plan (SIP) to achieve and maintain clean air and meet National Ambient Air Quality Standards. Therefore, the LRTP must demonstrate that the implementation of these projects do not result in greater transportation-related mobile source emissions than the air quality budget in the SIP.

Furthermore, all LRTP projects must be reviewed for air quality conformity by the Interagency Work Group (IAWG). The IAWG meets to review projects for the LRTP, selects air quality analysis years, and shares information on air quality issues including new legislation and conformity regulations.

Primer on Air Quality Conformity Analyses

Projects that add capacity to the transportation system, such as widening a roadway from 2 to 5 lanes or building a new regionally significant road, are determined by the IAWG to undergo air quality analysis. Projects that must undergo air quality analysis are first analyzed with the travel demand model and then with the air quality emissions model. The 2035 LRTP travel demand model and air quality emissions model analysis years are 2009 (base year of the calibrated model), 2011

(last year of the current TIP), 2018 (conformity year, the last year of the 10 year maintenance plan – 10 years since the attainment area was redesignated), 2025 (interim year), and 2035 (out year of the LRTP). These years were selected by the IAWG for the Air Quality Analysis. Travel demand model runs with the new widening or expansion projects are completed for all the analysis years and the outputs of vehicle miles traveled, vehicle hours traveled, and average speed are summed by National Functional Classification. This data is merged with date from Ottawa and Muskegon Counties and Highway Performance Monitoring System (HMPS) data to be used in the MOBILE 6.2 air quality modeling program. MOBILE 6.2 produces a total VOC and NOx emissions for our area which is compared against the attainment budget. Air quality emissions must be below the attainment budget levels in order to be in conformity with air quality regulations.

The conformity determination for GVMC considered the following factors:

1. The adopted plan supports the intention of the SIP, in that the projects identified make progress toward achieving and maintaining the NAAQS. This is accomplished through congestion reduction projects, and encouraging alternatives to the single-occupant-vehicle, such as transit and ridesharing.
2. No Long Range Transportation Plan goal, directive, recommendation, or project identified will adversely affect SIP requirements or commitments.
3. The Long Range Transportation Plan provides for the expeditious implementation of plan elements.
4. A determination was made through the quantitative conformity analysis that the Long Range Transportation Plan will contribute to reductions in annual Volatile Organic Compounds (VOC) and Nitrous Oxides (NOx) emissions in the maintenance area.
5. A determination was made through the quantitative conformity analysis that the Long Range Transportation Plan does not increase the frequency or severity of the NAAQS for the Grand Rapids ozone maintenance area.

For more information on the Air Quality Analysis, see Appendix F. This appendix demonstrates the calculated emissions of the proposed transportation improvements along with the budgeted emissions set by the State and Federal environmental agencies.

LRTP Air Quality Analysis Project List

On November 3, 2010, the Interagency Work Group (IAWG) reviewed the projects recommended for inclusion in the 2035 LRTP Update. GVMC staff prepared the following list of projects that should undergo air quality conformity analysis which the IAWG committee concurred with:

No	Street Name	From—To	Lgth	Jurisdiction	LRTP Phase	Preferred Alternative	Lns	Functional Class
1	10 Mile Rd	West of Wolven—Chilsdale Ave	1.69	KCRC–Algoma Twp	2011–2014	Reconstruct and widen to 5 lanes (2-5)	2	Urb.Principal Arterial
2	Forest Hill Ave	Cascade Rd—Twp limit	0.35	KCRC–Grand Rapids Twp	2011–2014	Reconstruct and Add Center Turn lane (2-3)	2	Urb. Collector
3	West River Dr	Rogue R. bridge—M-44/Northland	0.75	KCRC–Plainfield Twp	2011–2014	Reconstruct and Add Center Turn lane (4-5)	4	Urb. Minor Arterial
4	8th Ave	Port Sheldon St—44th St	0.54	OCRC–Georgetown Twp	2011–2014	Reconstruct and Add Center Turn lane (2-3)	2	Urb. Collector
5	Clyde Park Ave	68th St—76th St	1.00	KCRC–Byron Twp	2011–2014	Reconstruct and Add Center Turn lane (2-3)	2	Urb. Minor Arterial
6	Forest Hill Ave	M-21/E Fulton St—Ada Dr	1.05	KCRC–Grand Rapids Twp	2011–2014	Reconstruct and Add Center Turn lane (2-3)	2	Urb. Collector
7	Northland Dr	Indian Lakes Rd—South St	1.20	KCRC–Nelson Twp	2011–2014	Reconstruct and Add Center Turn lane (2-3) - Access Management	2	Urb. Minor Arterial
8	Knapp St	at Grand River Dr	0.10	KCRC–Ada Twp	2011–2014	Add turn lanes at the intersection	2	Urb. Minor Arterial
9	4 Mile Rd	Walker Ave—Old Orchard Ave	0.57	KCRC–Alpine Twp	2011–2014	Reconstruct and Add Center Turn lane (2-3)	2	Urb. Minor Arterial
10	Division Ave	54th St—60th St	0.75	City of Wyoming	2011–2014	Reconstruct to 4 Lane Divided (4-4b)	4	Urb.Principal Arterial
11	3 Mile Rd	West of Walker Av—Indian Mill Cr	0.35	City of Walker	2015–2018	Widen to 4 lanes with RR bridge improvement	2	Urb. Minor Arterial
12	32nd Ave	Quincy St—City limit	0.14	OCRC–Jamestown Twp	2015–2018	Reconstruct and widen to 5 lanes (Comm. Dev) by 2018 (3-5)	3	Urb. Minor Arterial
13	Burton St	Spaulding Ave—Patterson Ave	0.50	KCRC–Cascade Twp	2015–2018	Reconstruct and Add Center Turn lane (2-3) (Constrained by I-96 Overpass)	2	Urb. Minor Arterial

14	College Ave	I-196—Leonard St	0.89	City of Grand Rapids	2015–2018	Reconfigure within Existing ROW to 3 lanes - Enhance Transit Capacity (2-3)	2	Urb. Minor Arterial
15	Lake Dr	Fuller Ave—Carleton Ave	0.21	City of Grand Rapids	2015–2018	Reconfigure within Existing ROW to 3 lanes - Enhance Transit Capacity (2-3)	2	Urb. Minor Arterial
16	Lake Michigan Dr	US-131—Garfield Ave	1.06	City of Grand Rapids	2015–2018	Reconfigure within Existing ROW to 3 lanes - Enhance Transit Capacity (2-3)	2	Urb. Minor Arterial
17	Leonard St	Plainfield Ave—Diamond Ave	1.14	City of Grand Rapids	2015–2018	Reconfigure within Existing ROW to 3 lanes (2-3)	2	Urb. Principal Arterial
18	Madison Ave	Cottage Grove St—Hall St	0.39	City of Grand Rapids	2015–2018	Reconfigure within Existing ROW to 3 lanes - Enhance Transit Capacity (2-3)	2	Urb. Minor Arterial
19	Madison Ave	Hall St—Franklin St	0.50	City of Grand Rapids	2015–2018	Reconfigure within Existing ROW to 3 lanes - Enhance Transit Capacity (2-3)	2	Urb. Minor Arterial
20	Stocking Ave	Bridge St—7th St	0.60	City of Grand Rapids	2015–2018	Reconfigure within Existing ROW to 3 lanes - Enhance Transit Capacity (2-3)	2	Urb. Minor Arterial
21	48th Ave	Pierce St—M-45/Lake Mich Dr	1.01	OCRC–Allendale Twp	2019–2025	Reconstruct to Continuous 3 lanes with Non-motorized lanes (2-3)	2	Urb. Minor Arterial
22	56th St	Ivanrest Ave—Byron Center Ave	1.00	City of Wyoming	2019–2025	Reconstruct and Add Center Turn lane (2-3)	2	Urb. Minor Arterial
23	68th Ave	M-45/Lake Mich Dr—Warner St	1.51	OCRC–Allendale Twp	2019–2025	Reconstruct and Add Center Turn lane (2-3)	2	Urb. Minor Arterial
24	68th Ave	Warner Ave—Leonard St	1.55	OCRC–Allendale Twp	2019–2025	Reconstruct and Add Center Turn lane (2-3)	2	Urb. Minor Arterial
25	Alpine Ave	Leonard St—Richmond St	0.50	City of Grand Rapids	2019–2025	Reconfigure within Existing ROW to 4 lanes - Enhance Transit Capacity (2-4)	2	Urb.Principal Arterial
26	Bridge St	Covell Ave—M-45/Lake Mich Dr	0.08	City of Grand Rapids	2019–2025	Reconfigure within Existing ROW to 3 lanes (2-3)	2	Urb. Minor Arterial
27	Bridge St	Mt Vernon Ave—Straight Ave	0.44	City of Grand Rapids	2019–2025	Reconfigure within Existing ROW to 3 lanes (2-3)	2	Urb. Minor Arterial
28	Eastern Ave	Hall St—Burton St	0.95	City of Grand Rapids	2019–2025	Reconfigure within Existing ROW to 3 lanes - Enhance Transit Capacity (2-3)	2	Urb. Minor Arterial
29	Franklin St	Eastern Ave—Madison Ave	0.50	City of Grand Rapids	2019–2025	Reconfigure within Existing ROW to 3 lanes - Enhance Transit Capacity (2-3)	2	Urb. Minor Arterial
30	Franklin St	Madison Ave—Division Ave	0.43	City of Grand Rapids	2019–2025	Reconfigure within Existing ROW to 3 lanes - Enhance Transit Capacity (2-3)	3	Urb. Minor Arterial
31	Fuller Ave	Lake Dr—Fulton St	0.30	City of Grand Rapids	2019–2025	Reconfigure within Existing ROW to 3 lanes (2-3)	2	Urb. Minor Arterial
32	Lake Dr	Carleton Ave—City limit	0.37	City of Grand Rapids	2019–2025	Reconfigure within Existing ROW to 3 lanes - Enhance Transit Capacity (2-3)	2	Urb. Minor Arterial
33	Spaulding Ave	Ada Dr—Cascade Rd	0.45	KCRC–Ada Twp	2019–2025	Reconstruct and Add Center Turn lane (2-3)	2	Urb. Minor Arterial
34	Walker Ave	Valley Ave—Leonard St	0.44	City of Grand Rapids	2019–2025	Reconfigure within Existing ROW to 3 lanes (2-3)	2	Urb. Minor Arterial
35	Walker Ave	North Ridge Dr—4 Mile Rd	0.32	City of Walker	2019–2025	Reconstruct and Add Center Turn lane (2-3)	2	Urb. Minor Arterial

Michigan Department of Transportation

No	Street Name	From—To	Lgth	Jurisdiction	LRTP Phase	Preferred Alternative	Functional Class
36	I-196	at Fuller	0.25	MDOT	2011–2014	Bridge replacement in 2011	Urban Freeway
37	US-131	US-131BR/Leonard St—Ann St	0.50	MDOT	2011–2014	Add NB weave/merge lanes	Urban Freeway
38	US-131	US-131BR/Leonard St—Ann St	0.50	MDOT	2011–2014	Add SB weave/merge lanes	Urban Freeway
39	I-196	WB over the Grand River—US-131	0.25	MDOT	2015–2018	Extend WB to SB off ramp to complete US-131 to Fuller Avenue segment	Urban Freeway
40	I-196	Fuller Ave—I-96	2.00	MDOT	2015–2018	Rehabilitation of existing road and bridges	Urban Freeway
41	M-44/M-37/ East Beltline	Knapp St—M-21/E Fulton St	2.50	MDOT	2019–2025	Preserve and widen from 2 to 3 lanes in each direction - 2019-2025	Urb. Principal Arterial
42	I-96	at M-21/E Fulton St	0.25	MDOT	2019–2025	Add additional ramps	Urban Freeway
43	I-196	Fuller Ave—I-96	2.00	MDOT	2019–2025	Preserve and widen to 2 to 3 lanes in each direction, add WM lanes-2019-2025	Urban Freeway
44	I-96	Leonard St—Cascade Rd	3.50	MDOT	2026–2035	Operational Improvements; add ramps and collector distributor lanes with I-96/I-196 interchange, and widen per the EA and LRTP projects.	Urban Freeway
45	I-196	Ottawa Ave—US-131BR/Division	0.10	MDOT	2026–2035	Add WB to NB ramp from I-196 to Division from the Ottawa WB offramp	Urban Freeway

A full list of all the 2035 LRTP projects may be found in Chapter 16.

Environmental Justice Analysis

GVMC serves as the primary forum where MDOT, ITP/The Rapid (the area's primary public transit provider), local jurisdictions, and the general public develop our area's transportation plans and programs. In this capacity, GVMC recognizes the diversity of Kent and Eastern Ottawa County citizens and communities and their transportation needs and works diligently to ensure that all people have access to the transportation planning process, especially those that have traditionally been under-represented. GVMC adheres to publicly approved guidelines of the Public Participation Plan through which all citizens, regardless of race, color, gender, age, physical ability, or national origin are guaranteed full opportunity to participate in programs, plans and processes, including the development of the 2035 LRTP.

What is Environmental Justice (EJ)?

In 1964, the Civil Rights Act under Title VI was enacted and stated that "No Person in the United States shall, on the grounds of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance." The Civil Rights Restoration Act of 1987 broadened the scope of Title VI, clarified the intent, and expanded the definition of the terms "programs and activities" to include all programs and activities of Federal aid recipients, sub-recipients and contractors, whether such programs are Federally assisted or not.

In 1994, an Executive Order (Number 12898) directed ever Federal agency including the U.S. Department of Transportation (DOT) to identify and address the effects of all programs, policies, and activities on "minority populations and/or low-income populations." This Order was consistent with Title VI in considering fundamental environmental justice principles affecting low income and minority populations. The three fundamental environmental justice principles are:

- To avoid, minimize or mitigate disproportionately high and adverse human health and 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.
- To prevent the denial of, reduction in, or significant delay in the receipt of benefits by minority and low-income populations.

In 1997, the U.S. DOT issued an Order that summarized and expanded on environmental justice requirements. The U.S. DOT Order applies to all transportation planning policy decisions, and activities undertaken, funded, or approved by the Federal Highway Administration (FHWA), Federal Transit Administration (FTA), and Metropolitan Planning Organizations (MPO) among other U.S. DOT components. Also, the U.S. DOT Order specifically identifies five population groups in its emphasis on environmental justice requirements.

Environmental Justice and Transportation Planning

GVMC conducted an environmental justice analysis for the proposed projects in the 2035 LRTP. The analysis undertaken by GVMC supports principles and requirements of Title VI of the Civil Rights Act of 1964 (Title VI), the Executive Order 12898 (E.O.), and the 1997 U.S. Department of Transportation's Order to Address environmental justice. In order to address the three environmental justice principles, the following summary approach was taken by staff according to guidelines developed by the U.S. DOT, FHWA, and FTA:

- Step 1: Delineation and mapping of Minority Areas
- Step 2: Delineation and mapping of Low Income Areas
- Step 3: Analysis of Impacts on Minority Areas
- Step 4: Analysis of Impacts on Low Income Areas
- Step 5: An extensive public outreach effort was conducted – both as part of the regular Public Participation Process and an individualized EJ outreach effort

Step 1 – Delineation and mapping of Minority Areas

The Federal Office of Management and Budget's (OMB) 1997 Policy Directive 15, Revisions to the Standards for the Classification of Federal Data on Race and Ethnicity, established five minimum categories for data on race. Therefore, to conduct the Minority EJ analysis, GVMC used the following categories for race:

- Black/African American

- Hispanic
- Asian
- American Indian and Alaskan Native
- Native Hawaiian or Other Pacific Islander

In order to determine the effects of any Federal aid transportation project, it was necessary to identify areas within the MPO in which the levels of identified population groups meet or surpass the average levels for the area.

Using the latest U.S. Census data available (2000) and utilizing Geographic Information Systems software, GVMC analyzed the makeup and concentrations of these minority classifications at the census block group level.

Environmental Justice Section in Process.

Step 2 – Delineation and mapping of Low Income Areas

The Federal Office of Management and Budget's (OMB) 1997 Policy Directive 15, defines low-income as "a person whose household income… is at or below the U.S. Department of Health Services poverty guidelines."

In order to determine the effects of any Federal aid transportation project, it was necessary to identify areas within the MPO in which the levels of identified population group meet or surpass the average levels for the area.

Using the latest U.S. Census data available (2000) and utilizing Geographic Information Systems software, GVMC analyzed the concentrations of persons at or below poverty level at the census block group level.

Environmental Justice Section in Process.

Map 20 – Minority Environmental Justice Development Map

Map 21 – Minority Environmental Justice Areas Map

Map 22 – Low-Income Environmental Justice Development Map

Map 23 – Low-Income Environmental Justice Areas Map

Map 24 – Minority Environmental Justice Areas Map overlaid with 2035 Projects

Step 3 – Analysis of Impacts on Minority Areas

With the minority areas delineated, an analysis of impacts could be completed. Analysis of potential impacts is focused on three criteria:

1. Disproportionately high and adverse human health and environmental impacts to minority areas
2. Minimizing/blocking access of minority areas to the transportation system
3. Neglect of the transportation system in minority areas or a reduction or delay in the receipt of benefits to those areas

Using the delineated Minority Environmental Justice Areas identified, GVMC was able to geographically overlay the 2035 LRTP projects to identify those projects in Minority EJ Areas. A project was considered to be within a Minority EJ Area if 50% or more of the project length or service

area was within the Minority EJ boundaries and if a project was on the boundary of the Minority EJ area. These projects were then assessed using the three criteria above.

Disproportionately high and adverse human health and environmental impacts to minority areas

Environmental Justice Section in Process.

Figure 44 – LRTP Projects Flagged in Minority Environmental Justice Areas

Minimizing/blocking access of minority areas to the transportation system

Environmental Justice Section in Process.

Neglect of the transportation system in minority areas or otherwise reduce or delay the receipt of benefits to those areas

Environmental Justice Section in Process.

Step 4 – Analysis of Impacts on Low Income Areas

The low income areas were also delineated and an analysis of the impacts was completed. Again, the analysis of potential impacts is focused on three criteria:

1. Disproportionately high and adverse human health and environmental impacts to low income areas
2. Minimizing/blocking access of low income areas to the transportation system
3. Neglect of the transportation system in low income areas or a reduction or delay in the receipt of benefits to those areas

Using the delineated Low Income Environmental Justice Areas identified, GVMC was able to geographically overlay the 2035 LRTP projects to identify those projects in Low Income EJ Areas. A project was considered to be within a Low Income EJ Area if 50% or more of the project length or service area was within the Low Income EJ boundaries and/or if a project was on the boundary of the Low Income EJ area. These projects were then assessed using the three criteria above.

Disproportionately high and adverse human health and environmental impacts to low income areas

Environmental Justice Section in Process.

Minimizing/blocking access of low income areas to the transportation system

Environmental Justice Section in Process.

Map 25 – Low-Income Environmental Justice Areas Map overlaid with 2035 Projects

Neglect of the transportation system in low income areas or otherwise reduce or delay the receipt of benefits to those areas

Environmental Justice Section in Process.

Step 5 – EJ Public Outreach

In addition to the regular Public Participation process, GVMC will also distribute an Environmental Justice based mailing. This mailing is considered a supplement to the regular Public Participation Process and demonstrates a concerted effort to reach out to traditionally disadvantaged populations. Once the projects in Minority EJ areas and in Low Income EJ areas are identified, staff will be able to extract address information for the surrounding parcels using the geographic information software and data from Kent and Ottawa Counties. A letter explaining the proposed improvement, information about the January, 2011 LRTP public meetings, and information about how and where to access more information (such as the Air Quality Conformity Analysis results) or submit comments, will be sent to every property owner adjacent to projects flagged in EJ Minority and EJ Low Income areas. (See Sample Environmental Justice Letter, figure ?.)

These letters will provide citizens in EJ Areas additional project-specific information. They may also serve as a catalyst for public participation in general.

Transportation Accessibility

Environmental Justice Section in Process.

(EJ Letter Sample to be included here.)

Figure 45 – Environmental Justice Letter Sample

Conclusion

The analyses of the impacts on residents in Minority and Low Income Environmental Justice areas as a result of implementing the projects contained in the LRTP resulted in the following findings:

Environmental Justice Section in Process.

Environmentally Sensitive Resource Mitigation Analysis

Transportation infrastructure and its users, by their very nature, impact the physical landscape, including the natural environment. With this in mind it is important to take this impact into consideration when planning, designing, constructing, and maintaining a transportation system. The goal being, to balance transportation needs with environmental projection, constructing and maintaining a system that minimizes negative impacts where impacts cannot be avoided.

Federal transportation legislation dictates a series of requirements for transportation plans. The current federal legislation, the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), lists a requirement for the "discussion of types of potential environmental mitigation activities and potential areas to carry out these activities, including activities that may have the greatest potential to restore and maintain the environmental functions affected by the plan. This discussion shall be developed in consultation with Federal, State, and tribal wildlife, land management, and regulatory agencies."

The GVMC has developed a three-step process for addressing the technical aspects of the SAFETEA-LU legislation:

- Defining and creating an inventory of environmentally sensitive resources
- Identifying and assessing likely impacts on these areas from transportation projects
- Addressing possible mitigation at the system-wide level

Essentially, the purpose of this process is to identify possible impacts on environmentally sensitive resources, list useful guidelines for mitigating these impacts, and provide all of this information to implementation agencies and officials for use in transportation decision-making. This analysis was performed at a regional level only and is not intended to provide detailed design alternatives or impacts at the project level. However, it is anticipated that the data collected will be useful in those project-level activities.

Environmentally Sensitive Resources

Seven environmentally sensitive resources were defined by the GVMC for the purpose of this study. It is important to note that not all resources have been included in this analysis. Only those resources that had data readily available in digital format for Geographic Information System mapping, and those resources where the data were reasonably up-to-date were included. Environmentally sensitive resources not included in this analysis may deserve attention at the project level; however for the purposes of this system-wide report, fewer environmentally sensitive resources were analyzed. The resources analyzed included:

- Water features – lakes, ponds, rivers and streams
- Wetlands
- Flood zones
- Woodlands
- Parks and recreation areas
- Cemeteries
- Historic sites

Methodology

Once the environmentally sensitive resources were defined and identified, the GVMC analyzed the likelihood of possible impacts from planned 2035 Projects. With the assistance of GVMC-REGIS (Regional Geographic Information System) staff, software, and data, the 2035 projects were mapped and buffered to display an area around each project that could possibly be affected. The size of the buffer used varied by project type and environmental resource, specifically:

- Water features – lakes, ponds, rivers and streams: 1/4 mile buffer (1,320 feet)
- Wetlands: 1/4 mile buffer (1,320 feet)
- Flood zones: 1/4 mile buffer (1,320 feet)
- Woodlands: 1/4 mile buffer (1,320 feet)
- Parks and recreation areas: 250 feet
- Cemeteries: 250 feet
- Historic sites: 250 feet

The next step taken was the intersection of the project buffers with each environmentally sensitive resource. Where a project buffer and environmentally sensitive resource were found to intersect, an impact was considered possible; however it is important to understand that no additional analysis of possible impacts was performed for the purposes of this report. It is possible that although an environmentally sensitive resource intersects with a buffer, no impact could be present; it is also possible that environmentally sensitive resources beyond the mapped buffer could be impacted by a project.

This assessment simply draws attention to possible areas of concern that should be further examined at the project level.

Maps for each of the seven environmentally sensitive resources were produced to display at a system-wide level those projects with potential impact. All seven maps may be found in Appendix H1-H7. Please note, however, this is a DRAFT document and Appendix H is incomplete at this time.

Guidelines for Mitigating 2035 Project Impacts

In general, the purpose of this report is to draw attention to those projects that could potentially impact environmentally sensitive resources, as well as to provide guidelines for consideration with respect to transportation projects. Overall guidelines are provided for consideration for all types of projects regardless of the resource impacted. These guidelines are introduced for reference purposes only. The GVMC has no authority to require implementation of the guidelines listed. However, they represent best management practices and should only serve to enhance the quality of the transportation planning process. The implementation of these guidelines may also assist in a jurisdiction's compliance with other regulatory mandates and for this reason should be implemented where appropriate.

Overall Guidelines

Regardless of the type of project or resource that may be impacted, these guidelines deserve consideration during the planning, design, construction, and maintenance of transportation projects. Implementation of these guidelines will help to ensure good planning practice that is in accord with overall environmental protection objectives.

Planning and Design Guidelines

- Utilize Context Sensitive Solution (CSS) principles as early as possible in project development and throughout the planning process. CSS is a process that considers the entire context within which a transportation project takes place including financial limitations and safety issues. This method involves all stakeholders in a collaborative and interdisciplinary approach to developing transportation projects.
- Identify the area of potential impact related to each transportation project including the immediate project area as well as other related project development areas.
- Perform an inventory to determine if any environmentally sensitive resources could be impacted by the project per the National Environmental Policy Act (NEPA) of 1969.
- Investigate as to whether a County Hazard Mitigation Plan exits, and if the plan speaks to the impacted resources in question. (A County Hazard Mitigation Plan is a required for a county to be eligible to receive federal Hazard Mitigation Grant funds in order to protect communities from a variety of hazards, including those to the natural environment.
- Coordinate design and construction with local plans, such as watershed management plans, community recreation plans, preservation plans, cemetery preservation plans, local community master plans and non-motorized plans.
- Organize and conduct a meeting with local community officials, contractors/subcontractors, and relevant stakeholders prior to construction to discuss environmental protection issues, form goals, and communicate any special requirements for the project.
- Avoid impacts, as possible, to environmental resources by limiting project magnitude or redesigning the project.
- Where impacts are unavoidable, mitigate them to the extent possible as required through local, state, and federal regulations and laws.

- Incorporate storm water management into the site design.
- Reduce the use of culverts where possible.

Construction and Maintenance Guidelines

- Include all special requirements that address environmentally sensitive resources into plans and estimates used by contractors and subcontractors. Bring attention to the types of activities prohibited in environmentally sensitive areas.
- Minimize construction and staging areas and clearly mark boundaries.
    - Install flagging or fencing around sensitive areas to prevent intrusion
- Utilize the least intrusive construction techniques and materials.
- Avoid disturbing the site as much as possible including:
    - Protecting established vegetation and habitat
        - If vegetation is damaged or removed during construction, replace with native species as soon as possible.
        - Protect the tree and drip zone during construction (where the majority of the tree's root system is located.)
    - Implementing sediment and erosion control techniques
        - Minimize extent and duration of exposed bare ground.
        - Establish vegetation immediately after grading is complete.
        - Prevent tracking of sediment onto paved surfaces.
        - Do not stockpile materials in sensitive areas.
    - Protecting water quality
        - Prevent direct runoff of water containing sediments.
        - Sweep streets to reduce sediment entering the storm drainage system.
        - Block/control storm drains to prevent construction debris from polluting waterways.
        - Implement salt management techniques.
    - Protecting cultural/historic resources
        - Prevent the disturbance of soil/material near cultural resources.
    - Minimizing noise and vibrations
    - Providing for solid waste disposal
        - Properly handle, store, and dispose of hazardous materials and use the least hazardous materials when possible.
        - Implement spill control and clean up and dry clean up methods as appropriate, never letting a spill enter the storm drainage system or waterways.
- Whenever possible keep construction activities away from wildlife crossings and corridors.
- Order and organize construction activities to reduce land disturbances.
- Conscientious consideration of the unearthing of archeological remains when using heavy equipment.

- Avoid equipment maintenance, fueling, and leaks, as well as the spraying down of equipment near sensitive areas.
- Incorporate Integrated Pest Management techniques if pesticides are used during maintenance.
- Conduct on-site monitoring during and immediately after construction to ensure environmental resources are protected as planned.

Environmental Mitigation Consultation

With the resources that could potentially be impacted identified and mapped, the next step was notification of those organizations considered to be concerned with the potential environmental impacts of LRTP projects.

Using the Interested Citizens/Agencies List as a starting point, staff refined this list to those organizations and agencies targeted for environmental mitigation outreach (ex. natural resource agencies, environmental protection agencies, and conservation agencies).

The Environmental Mitigation Organizations were sent the following materials:

- a letter explaining the environmental mitigation process, the LRTP planning process, and information about the role of the Grand Valley Metropolitan Council
- a listing of the DRAFT 2035 LRTP Project list
- a listing of the DRAFT 2035 LRTP Projects with possible impacts along with which resource they could impact
- directions on how to provide input on the planning process, how to submit comments on the LRTP Project List, and how to contact GVMC staff

The environmental mitigation maps produced for this analysis were also posted on the GVMC website for the organizations to view or download as necessary.

The Environmental Mitigation List along with a sample of the letter and materials sent to the Environmental Mitigation Organizations follows:

- Annis Water Resources Institute, Muskegon, Michigan
- Blandford Nature Center, Grand Rapids, Michigan
- Cherry Hill Historic District, Grand Rapids, Michigan
- Federal Highway Administration, Michigan Division – Sarah Van Buren, Lansing, Mich.
- Friends of the White Pine Trail – David Heyboer, Belmont, Michigan
- Grand Rapids Air Pollution Control, Grand Rapids, Michigan
- Grand Rapids Audubon Club, Grand Rapids, Michigan
- Historic Preservation, Grand Rapids, Michigan
- Izaak Walton League, Dwight Lydell Chapter – Ron Waybrant, Belmont, Michigan
- John Ball Park Community Association, Grand Rapids, Michigan
- John Ball Zoo, Grand Rapids, Michigan
- Kent Conservation District, Grand Rapids, Michigan
- Kent County Dept. of Parks, Grand Rapids, Michigan
- Kent County Drain Commission – Bill Byl, Grand Rapids, Michigan
- Kent County Farm Service Agency, Grand Rapids, Michigan
- Land Conservancy of West Michigan – Peter Homeyer, Grand Rapids, Michigan
- LGROW – Brian Donovan, E. Grand Rapids, Michigan
- Little River Band of Ottawa Indians – Dan Shepard, Manistee, Michigan
- Match-E-Be-Nash-She-Wish Band of Potawatomi Indians – Monte Davis, Dorr, Michigan

- Michigan Dept. of Agriculture, Lansing, Michigan
- Michigan Dept. of Community Health, Lansing, Michigan
- Michigan Dept. of Natural Resources & Environment, Grand Rapids, Michigan
- Michigan Dept. of Transportation – Sandra Cornell-Howe, Lansing, Michigan
- Michigan Dept. Transportation – Dennis Kent, Grand Rapids, Michigan
- Michigan Historical Center, Lansing, Michigan
- Michigan Land Use Institute, Traverse City, Michigan
- Michigan State Historic Preservation Office, Lansing, Michigan
- Michigan United Conservation Clubs, Grand Rapids, Michigan
- Native American Community Services – Betty Shelby, Grand Rapids, Michigan
- Nottawaseppi Huron Band of Potawatomi, Fulton, Michigan
- Ottawa County Dept. of Parks & Recreation – John Scholtz, West Olive, Michigan
- Ottawa County Drain Commission, West Olive, Michigan
- Ottawa County Farm Bureau, Allendale, Michigan
- Sierra Club-Mackinac Chapter, Lansing, Michigan
- U.S. Army Corps of Engineering, Detroit District, Detroit, Michigan
- U.S. Dept. of Agriculture - Michigan State Office, East Lansing, Michigan
- U.S. Dept. of Agriculture - Natural Resource of Conservation Service, East Lansing, Mich.
- U.S. Dept. of Commerce - National Oceanic & Atmospheric Administration, Washington, DC
- U.S. Dept. of Housing & Urban Development, Detroit Office, Detroit, Michigan
- U.S. Environmental Protection Agency - Region 5, Chicago, Illinois
- U.S. Environmental Protection Agency, Office of Federal Activities, NEPA, Washington, DC
- U.S. Fish & Wildlife Service, East Lansing, Michigan
- U.S. Geological Survey - Lansing District Office, Lansing, Michigan
- West Michigan Environmental Action Council, Grand Rapids, Michigan
- West Michigan Regional Planning Commission – Dave Bee, Grand Rapids, Michigan
- West Michigan Strategic Alliance, Grand Rapids, Michigan
- West Michigan Trails & Greenways Coalition, Comstock Park, Michigan

The following is a breakdown of the various types of organizations and entities contacted as part of the environmental mitigation process, including the numbers of each type:

- Businesses 2
- Chambers of Commerce 0
- Community Organizations (incl. non-profits, faith-based organizations, etc.) 6
- Concerned Citizens 0
- Downtown Development Authorities (DDAs) 0
- Educational Organizations 1
- Elected Officials 0
- Environmental Organizations 9
- Governmental Entities and Organizations 15
- Historical Organizations 3
- Media 0
- Neighborhood Organizations 1
- Non-Motorized Advocacy Groups 2
- Organizations Serving the Disabled 0

- Organizations Serving Senior Citizens.....0
- Transportation (including air, rail, transit, MDOT, etc.) 4
- Tribal Organizations 4
- Total.....47

Conclusion

As stated previously, the purpose of this process is to identify possible impacts on environmentally sensitive resources, list useful guidelines for mitigating these impacts, and provide all of this information to implementation agencies and officials for use in transportation decision-making. The comments received from the implementation agencies and officials have been included in fcn and forwarded to the implementing agencies. The Grand Valley Metropolitan Council will continue to use the environmental mitigation methodology to communicate with the appropriate local, state, and federal agencies to minimize the impact that transportation improvements have on the environment.

Please Note: This is a DRAFT document and Appendix A is incomplete at this time. It will not be complete until after the Public Comment period concludes and staff can appropriately incorporate all comments received.

Sources

Regional Geographic Information System (REGIS), Grand Valley Metropolitan Council.

SEMCOG. Integrating Environmental Issues in the Transportation Planning Process: Guidelines for Road and Transit Agencies. January 2007

AASHTO Center for Environmental Excellence. Environmental Stewardship Practices, Procedures, and Policies for Highway Construction and Maintenance. www.environment.transportation.org/environmental_issues/construc_maint_prac/compendium/manual/

Appendix A: Public Participation Process Resources & Comments

1. Interested Citizens/Organizations List
2. Grand Rapids Press Affidavit of Publication – Kick-off Stakeholder Meetings
3. Kick-off Media Coverage
4. Kick-off Stakeholder Meetings mailings and web posting snapshots
5. Kick-off Stakeholder Meetings Sign-In Sheets
6. Kick-off Stakeholder Meeting Comment Sheets
7. Grand Rapids Press Affidavit of Publication – Final Draft Review
8. Final Draft Review Media Coverage
9. Final Draft Review Meetings mailings and web posting snapshots
10. Final Draft Review Meetings Sign-In Sheets
11. Final Draft Review Meetings Comment Sheets
12. Written Public Comments and Staff Responses
13. Citizen Survey
14. Summary of Survey Information
15. Consultation Comments and Staff Responses
16. Consultation Meeting Notes
17. Environmental Mitigation Comments and Staff Responses

Please Note: This is a DRAFT document and Appendix A is incomplete at this time. It will not be complete until after the Public Comment period concludes and staff can appropriately incorporate all comments received.

Appendix B: Glossary of Terms

AASHTO: American Association of State and Highway Transportation Officials - a nonprofit, nonpartisan association representing highway and transportation departments in the 50 states, the District of Columbia, and Puerto Rico. It represents all five transportation modes: air, highways, public transportation, rail, and water. Its primary goal is to foster the development, operation, and maintenance of an integrated national transportation system.

ACCESS - The ability to enter or leave a residence, business, or parcel of land from a roadway by way of a connecting driveway. Alternatively it means the opportunity to reach a given point within a certain time frame, or without being impeded by physical, social, or economic barriers.

ACCESS MANAGEMENT - Limiting the ability of traffic to enter, leave, or cross thoroughfares; regulating the spacing and design of driveways, medians, intersections, and traffic signals to promote the efficient flow of through traffic.

ACCESSIBILITY - The ability to reach destinations, activities, and services.

ADA: Americans with Disabilities Act - A set of guidelines passed in 1990 to assure a minimum level of accessibility to buildings and facilities for individuals with disabilities; Title III of the legislation deals with public accommodations.

ADT: Average Daily Traffic - The average number of vehicles passing a specific point on a roadway during 24 hour period.

ALLOCATION - An administrative distribution of funds among States which do not have statutory distribution formulas

APPORTIONMENT – A division or assignment of funds based on prescribed formulas in the law and consisting of divided authorized obligation authority for a specific program among the States.

ARTERIAL - A controlled access highway designed for through traffic (longer trips, higher volume and speed); arterials are typically on a continuous route and are often divided; the right-of-way is usually 120 feet.

BASE YEAR - The year which serves as a starting point of data used in a study.

BICYCLE LANE - Portion of the street designated by striping, signing, or pavement markings for preferential or exclusive use by bicyclists. Bike lanes are established with appropriate pavement markings and signing to delineate the right of way assigned to bicyclists and motorists, and to provide more predictable movements by each. Bike lanes are usually paired one-way facilities located on both sides of streets with moderate to heavy traffic volumes. Steeply sloped streets can have bike lanes on one side for climbing, while it may not be necessary to stripe lanes on the downhill side because bicycle speeds approach motor vehicles on these sections. The minimum width of a bike lane is 4 feet in most areas, or 5 feet when adjacent to on-street parking or if measured from the curb face. Bicycle lane design at intersections must be treated carefully to minimize conflicts between bicycle and auto movements.

BOULEVARD - A wide street, usually with a median or promenade, lined with trees.

BRT: Bus Rapid Transit - A transportation system that, through improvements to infrastructure, vehicles and scheduling, uses buses to provide a service that is of similar quality to light-rail systems.

BUFFER - Portion of the roadway between the curb or edge of the pavement and the sidewalk; used to separate pedestrians and vehicles. Buffers often include landscaping, trees, or utility poles.

BULBOUT - An extension of the sidewalk or curb line into the parking lane to reduce the effective street width. Also known as curb bulb-outs or neckdowns, curb extensions significantly improve pedestrian crossings by reducing the pedestrian crossing distance, visually and physically narrowing the roadway, improving the ability of pedestrians and motorists to see each other, and reducing the time that pedestrians are in the street. Curb extensions are only appropriate where there is an on-street parking lane. Curb extensions should not extend more than 6 feet from the curb, and must not extend into travel lanes, bicycle lanes or shoulders. The turning needs of larger vehicles, such as school buses, need to be considered in curb extension design.

CAAA: Clean Air Act of 1990 and Amendments - Federal legislation that sets standards for air quality levels.

CL: City Limits or County Line – City Limits or alternatively County Line, depending on what is the most logical project limit.

CMAQ: Congestion Mitigation and Air Quality Improvement Program - Program which directs funding to projects that contribute to meeting national air quality standards.

CO: Carbon Monoxide - A colorless, odorless, tasteless, gas that impedes the oxygenation of blood. CO is formed, in large part, by incomplete combustion of fuel.

COLLECTOR - A two- to four-lane roadway providing mobility and access. Collector streets can be found in residential neighborhoods, commercial and industrial areas, and central business districts. Collectors usually have minimal access control, and the right-of-way is typically 80 feet. Collectors are designed to move traffic from local roads to secondary arterials.

CONFORMITY - Compliance of any transportation plan with air quality control plans.

CONGESTION MANAGEMENT SYSTEM - One of six management systems required by ISTEA and subsequent transportation legislation. Future highway projects that significantly increase capacity for single occupant vehicles (SOV) should be part of a CMS or those projects may be ineligible for federal funding.

CONTRACT AUTHORITY - Budget authority that permits obligations to be made in advance of appropriations.

CONTROLLED INTERSECTION - Intersection with a traffic light or other traffic control device.

CORRIDOR - Transportation pathway allowing movement between activity centers; a corridor may encompass single or multiple transportation routes and facilities, adjacent land uses, and the connecting street network.

CROSSWALK - Marked portion of the street designated for pedestrian crossing, either mid-block or at an intersection. The most common markings are double parallel lines, ladder, and zebra stripes.

CURB EXTENSION - An extension of the sidewalk or curb line into the parking lane to reduce the effective street width. Also known as curb bulb-outs or neckdowns, curb extensions significantly improve pedestrian crossings by reducing the pedestrian crossing distance, visually and physically narrowing the roadway, improving the ability of pedestrians and motorists to see each other, and reducing the time that pedestrians are in the street. Curb extensions are only appropriate where there is an on-street parking lane. Curb extensions should not extend more than 6 feet from the curb, and must not extend into travel lanes, bicycle lanes or shoulders. The turning needs of larger vehicles, such as school buses, need to be considered in curb extension design.

DEMAND RESPONSIVE - Transit services that can be variably routed and timed to meet the changing needs of the user on an as-needed basis.

DENSITY - The number of dwelling units, buildings, or persons per unit of land, usually per acre (expressed as du/ac).

EASEMENT - Contractual agreement allowing temporary or permanent access through and/or use of a property.

EMISSIONS BUDGET - The part of the State Implementation Plan that identifies allowable emissions levels, mandated by the National Ambient Air Quality Standards, for certain pollutants.

ENVIRONMENTAL IMPACT STATEMENT - Reports which details any adverse economic, social, environmental effects of a proposed transportation project that the federal government funds.

ENVIRONMENTAL JUSTICE - Refers to Executive Order 12898 which seeks to address disproportionately high and adverse human health or environmental effects in Federal programs or policies on minority and low income populations.

EPA: Environmental Protection Agency - Federal source agency of environmental and air quality regulations affecting transportation.

EXPENDITURES - Disbursement of funds for repayment of obligations occurred.

EXPRESSWAY - A divided highway, typically with a 150-200 foot right-of-way, with full or partial access control and interchanges at selected public roads. Expressways may also have at-grade intersections spaced at 1500-2000 foot intervals.

FHWA: Federal Highway Administration - Federal agency within the United States Department of Transportation that deals with roadway and highway issues.

FREEWAY - A divided highway for through traffic with full access control and interchanges at selected public roads.

FTA: Federal Transit Administration - Federal agency within the United States Department of Transportation that deals with transit issues.

FUNCTIONAL CLASSIFICATION - A system for classifying streets and highways based on the nature of service they are intended to provide.

FY: Fiscal Year - Year in which public and private agencies use for conducting business; it usually differs from the calendar year. Most State and Federal agencies use an October 1 through September 30 fiscal year.

GIS: Geographic Information System - Computer mapping capabilities used to provide information.

GRATA: Grand Rapids Area Transit Authority - Now known as the Interurban Transit Partnership, it is the agency responsible for providing public transit service in the Grand Rapids area.

GRETS: Grand Rapids and Environs Transportation Study - Previous designation of the Grand Rapids Metropolitan Planning Organization (MPO).

GREENWAY - A protected open-space area following a natural or man-made linear feature; greenways are often used for recreation, transportation, conservation, and to link amenities.

GVMC: Grand Valley Metropolitan Council - Agency that serves as the Metropolitan Planning Organization (MPO) for the Grand Rapids area. The Council is made up of members, all local units of government, that want to work cooperatively on issues that have a multi-jurisdictional or regional scope. Those issues include transportation, the environment, economics, and those with social impact.

HIGHWAY PERFORMANCE MONITORING SYSTEM - A federal database of roadway characteristics and traffic information for pre-selected roadway segments throughout the entire MPO Study Area.

IAWG: Inter-Agency Work Group - Group consisting of Federal, State, and MPO staffs that meet periodically to discuss transportation project development and its relationship to air quality on both a short and long-range basis.

INFRASTRUCTURE - The built facilities required to serve a community's development and operational needs, e.g. roads, water, and sewer systems.

INTERMODAL - Refers to connections between modes of transportation.

INTERSECTION - The area where two or more roadways join or cross including the roadway and roadside facilities.

INTERSTATE SYSTEM - The system of highways that connects the principal metropolitan areas, cities, and industrial centers of the United States. The Interstate System also connects the U.S. to internationally significant routes in the Mexico and Canada.

ISTEA: Intermodal Surface Transportation Efficiency Act Of 1991 - Federal legislation that reconstructed funding for the transportation program and opened up the transportation planning process to the public. ISTEA was replaced by newer federal transportation legislation, SAFETEA-LU, in August, 2005.

ITE: Institute of Transportation Engineers - An international association of transportation professionals that supports transportation-related education, research, professional development, public awareness programs, and facilitates the exchange of professional information.

ITP: Interurban Transit Partnership - Agency responsible for providing public transportation and transit service in the Grand Rapids area, also known as The Rapid.

ITS: Intelligent Transportation System - Technologies that focus on monitoring, guiding, or operating motorized vehicles.

KCRC: Kent County Road Commission - Agency responsible for road maintenance and construction in townships, villages, and other unincorporated parts of Kent County.

LAND USE - The way in which a parcel of land is used or occupied, i.e. the types of buildings or activities, and/or the purpose for which it is designed, arranged, intended, or maintained.

LOCAL STREET - Primary role is providing access to adjacent properties; local streets have low levels of mobility and serve residential, commercial, and industrial areas.

LOS: Level of Service - A qualitative rating system used to describe the adequacy of the road network at a specific intersection or street segment, based on factors including travel time, freedom to maneuver, driver comfort, and interruptions; LOS A is used to describe the best traffic conditions while LOS F denotes gridlock. LOS can also be used to describe transit and bicycle/pedestrian networks.

LRTP: Long-Range Transportation Plan - A document that provides a strategy and methodology for an area's long-range transportation needs. The Plan must have at least a twenty-year window and must be updated every four years.

MAJOR THOROUGHFARE - Major, multimodal streets in urban areas (arterials and collectors) which are designed to complement and support adjacent land uses.

MDNRE: Michigan Department of Natural Resources and Environment - State agency dedicated to environmental improvements and policies that impact public health and natural resources such as air quality, water quality, and waste management.

MDOT: Michigan Department of Transportation - State agency responsible for monitoring and improving the transportation system in Michigan.

MIRIS: Michigan Resource Information System - State level data base which contains information on a number of items including roads, land cover, and natural resources.

MIXED-USE ZONING - Zoning allowing several types of uses (e.g. residential, commercial, office, and/or retail) within a single building or development. The uses can be mixed vertically, with different uses stacked in a single building, or horizontally, with different uses adjacent to or near each other.

MOBILITY - Movement of people or goods within the transportation system.

MODE - Form of transportation, such as automobile, transit, bicycle, and walking.

MODEL - A mathematical and geometric projection of activity and interactions in the transportation system of an area.

MPO: Metropolitan Planning Organization - A federally required planning entity responsible for transportation planning and project selection in its region; every urbanized area with a population over 50,000 should have an MPO, designated by the governor. The Grand Valley Metropolitan Council (GVMC) is the MPO for the Grand Rapids area.

MSA: Metropolitan Statistical Area - U.S. Census determination which delineates the boundaries of the Metropolitan area.

MULTIMODAL - A system or corridor providing a range of transportation options including walking, bicycling, driving, and transit.

MUTCD: Manual on Uniform Traffic Control Devices - The MUTCD defines the standards used for the installation and maintenance of traffic control devices (signs, signals, and pavement markings) nationwide; the manual is published by the Federal Highway Administration.

NAAQS: National Ambient Air Quality Standards - Standards set forth through the Clean Air Act which monitor air quality.

NETWORK - A graphic and/or mathematical representation of multimodal paths in a transportation system.

OCRC: Ottawa County Road Commission - Agency responsible for road maintenance and construction in townships, villages, and other unincorporated parts of the county.

ON-STREET PARKING - Space for parking cars within the street right-of-way; on-street parking can improve access to nearby land uses, create a buffer between pedestrians and vehicles, and help reduce traffic speeds by narrowing the perceived right-of-way.

OXIDES OF NITROGEN (NOX) - A byproduct of processes employing a high temperature combustion. Power plants, industrial boilers, and motor vehicles are all principle sources of NoX.

PARATRANSIT - Services which serve the special needs of persons that standard mass transit services would serve with difficulty, or not at all.

PARTICULATE MATTER - Particulate Matter less than or equal to 10 microns. Consists of matter suspended in the atmosphere such as dust, chemicals, etc.

PEAK HOUR - The 60-minute period in the morning and evening in which the largest volume of travel is experienced.

PEDESTRIAN-ORIENTED - A built environment that emphasizes and is conducive to walking between destinations. A pedestrian-friendly environment may include sidewalks, buffers, street trees, benches, fountains, transit stops, pedestrian-oriented signs and lighting, public art, and buildings that are visually interesting with high levels of transparency and articulation.

PERSON-TRIP - A trip made by one person from one origin to one destination

PMS or PaMS: Pavement Management System - A system used to monitor and evaluate pavement conditions on the road network.

PPM: Parts Per Million - A measurement used in relating concentrations of matter, such as ozone in the atmosphere.

PPP: Public Participation Plan - Plan developed by GVMC that dictates how public involvement will be incorporated into the transportation planning process.

PROVIDER - An agency that causes clients to be transported, as opposed to an agency whose role is limited to funding programs.

PTMS: Public Transportation Management System - A system which allows for the monitoring and evaluation of the public transportation system for an area.

REGION - An entire metropolitan area including designated urban and rural subregions.

REGIS: Regional Geographic Information System - Geographic Information System being utilized in the Grand Rapids area through the Grand Valley Metropolitan Council. (See Geographic Information System for more information)

REGIONALLY SIGNIFICANT - A project that is on a facility which serves regional transportation needs and would normally be included in the modeling of a metropolitan area=s transportation network. Said project also offers an alternative to regional highway travel.

RESCISSION - Legislative action to cancel the obligation of unused budget authority previously provided by Congress before the time when the authority would have otherwise lapsed.

REVERSE COMMUTE - Commuting against the main direction of traffic or a commute from the central city to the suburbs.

ROAD DIET - Narrowing a roadway by reducing the number of lanes or lane width; a traffic calming strategy used to reduce vehicle speeds. Road diets are often conversions of four-lane undivided roads into three lanes (two through lanes and a center two-way left turn lane (TWLTL). The ROW of the fourth lane may be used for bicycle lanes, sidewalks, and/or on-street parking.

ROADWAY - A thoroughfare at least twenty feet in width that has been dedicated to the public for transportation use; a section of the right-of-way that has been designed, improved, surfaced, or is typically used for motor vehicle travel.

ROUNDABOUT - A traffic calming device in which vehicles follow a circular path around a central island; upon approaching the roundabout, vehicles are expected to yield to traffic already in the circle.

ROW: Rights-of-Way - Public strip of land on which streets, sidewalks, alleys, transit and railroad lines, and public utilities are built.

SAFE ROUTES TO SCHOOL - Programs designed to encourage and enable children to safely walk and bike to school. These programs often include education, encouragement and enforcement efforts in conjunction with a variety of site-specific engineering measures designed to improve safety for bicycling and walking. See www.saferoutesinfo.org and http://safety.fhwa.dot.gov/saferoutes/ for more information.

SAFETEA-LU: Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy For Users - $286.4 federal transportation legislation that governs the United States federal surface transportation spending. It was signed into law by President George W. Bush on August 10, 2005 and will expire September 30, 2009.

SHARED LANE - A wide outside/curb or shared lane (WCL) is the lane nearest the curb and is wider than a standard (12-foot) lane, providing additional space so that the lane may be shared more comfortably by motor vehicles and bicycles. These lanes should be about 14 feet wide, as lanes wider than 15 feet can encourage the operation of two motor vehicles side by side. If lanes become too

wide, some motorists may also assume parallel parking is allowed, constricting the travel lane for bikes.

SHARED ROADWAY - A roadway that is open to both bicycle and motor vehicle travel - may be an existing roadway, street with wide curb/outside lanes, or road with paved shoulders. Shared roadways typically have no bikeway designation, but should be designed and constructed under the assumption that they will be used by bicyclists.

SHARED USE PATH - A path physically separated from motorized vehicular traffic by an open space or barrier located either within the highway right-of-way or within an independent right-of-way. Shared use paths may be used by pedestrians, bicyclists, skaters, wheelchair users, runners, and other non-motorized users.

SHARROW - A chevron-style roadway lane marking that indicates that the lane is shared by bicyclists and other vehicles. Sharrows are used when the road lane is not wide enough to accommodate both a traffic lane and a dedicated bicycle lane.

SHOULDER - The portion of the roadway to the right of the rightmost travel lane, excluding curbs, buffers, and sidewalks; shoulders can be paved, gravel, dirt, or grass, and serve a number of different purposes, (bicycle and pedestrian travel, structural roadway support, space for emergency vehicles to pass, stopped/disabled vehicle pull-off, space for vehicles to slow and turn right) typically dictated by their width and composition.

SHUTTLE - Usually a service provided with a vehicle seating twenty or more passengers that connects major trip destinations and origins on a fixed-route or route-deviation basis.

SIDEPATH - A type of multi-use path running adjacent and parallel to a roadway, like an extra wide sidewalk. Sidepaths have special design challenges, as motor vehicles may not expect bikes to be entering an intersection from outside the travel lanes. AASHTO discourages two-way paths located immediately adjacent to roadways due to the operational and safety issues that can occur. Sidepaths should not be considered a substitute for street improvements even when the path is located adjacent to a highway, as many bicyclists find these paths less convenient than on-street facilities, particularly for utilitarian trips.

SIDEWALK - A paved pathway paralleling a highway, road, or street that is intended for pedestrians. Most sidewalks are separated from the curb by trees, grass, landscaping, lights, or other streetscape elements and are most common in areas of higher land use densities.

SIGNED SHARED ROADWAY - A shared roadway that has been designated with signing as a preferred route for bicycle use to provide continuity to other bicycle facilities, or to designate preferred routes through high-demand corridors.

SIP: State Implementation Plan - Required documents prepared by States and submitted to EPA for approval. SIPs identify state actions and programs to implement designated responsibilities under the Clean Air Act and subsequent amendments.

SOV: Single Occupancy Vehicle - The use of vehicle to get one person to a destination.

SMSA: Standard Metropolitan Statistical Area - A U.S. Census delineation for larger metropolitan areas in the U.S.

STIP: State Transportation Improvement Program - The compilation of Transportation Improvement Programs (TIPs) from around the State.

STPU: Surface Transportation Program-Urban - Federal funding category geared specifically to urbanized areas.

STREETSCAPE - The elements within and along the street right-of-way that define its appearance, identity, and functionality, including adjacent buildings and land uses, street furniture, landscaping, trees, sidewalks, and pavement treatments, among others.

STPR: Surface Transportation Program-Rural - Federal funding category geared specifically to rural areas.

TAZ: Traffic Analysis Zone - The smallest geographically designated area for analysis of transportation activity.

TCM: Transportation Control Measure - Local actions to adjust traffic patterns or reduce vehicle use to reduce air pollution.

TDM: Transportation Demand Management - Process used to monitor and evaluate the need of the transportation network relative to the number of users, and the total amount of usage the transportation network will receive.

TEDF: Transportation Economic Development Funds - This program has different lettered categories A through F that provide competitive statewide funding for roadways of different types that serve economic development purposes.

TIP: Transportation Improvement Program - A short-term, three-year program of transportation projects which are expected to be federally funded; these projects are drawn from and should be consistent with the Long Range Transportation Plan.

TMA: Transportation Management Area - An MPO with over 200,000 population. All transportation plans for these areas must be based on a continuing and comprehensive planning process carried out by the MPO in cooperation with the States and transit operators.

TOD: Transit Oriented Development - Development in which land uses are designed and sited to maximize transit ridership and the use of alternative forms of transportation; TOD's are typically also mixed-use developments.

TRAFFIC CALMING - Transportation techniques, facilities, or programs designed to slow the movement of motor vehicles. Traffic calming typically involves changes in street alignment, installation of barriers and other physical measures to reduce traffic speeds and/or cut-through volumes in the interest of safety, livability, and other public interests. Physical treatments may include speed tables, raised crosswalks, textured pavement, roundabouts, chicanes, curb extensions, partial roadway closures, diagonal diverters and median barriers.

TRANSIT - Passenger transportation service provided to the general public along established routes with fixed or variable schedules at published fares.

TRANSIT DEPENDENT - Persons who must rely on public transit or paratransit for most or all of their transportation needs.

TRAVEL TIME - Customarily calculated as the time it takes to travel from Adoor-to-door.

TSM: Transportation System Management - The element of a TIP that proposes non-capital-intensive steps toward the improvement of a transportation system.

URBANIZED AREA - An area which contains a city of 50,000 or more in population plus adjacent surrounding areas having a density of at least 1,000 people per square mile as determined by the U.S. Census.

USDOT: United States Department of Transportation - The principal direct federal funding and regulating agency for transportation facilities and programs.

UWP: Unified Work Program - Annual document prepared by the MPO that outlines transportation work tasks and products that will be completed and produced for the upcoming fiscal year.

VOC: Volatile Organic Compounds - Chemicals that are generated through the combustion of fossil fuels, industrial processes, and vegetation. VOCs are an ingredient in ground level ozone and smog.

VMT: Vehicle Miles Traveled - The number of vehicle miles traveled within a specified geographic area during a given period of time; one vehicle traveling one mile constitutes one vehicle mile, regardless of its size or the number of passengers.

WIDE OUTSIDE LANE - A wide outside/curb or shared lane (WCL) is the lane nearest the curb and is wider than a standard (12-foot) lane, providing additional space so that the lane may be shared more comfortably by motor vehicles and bicycles. These lanes should be about 14 feet wide, as lanes wider than 15 feet can encourage the operation of two motor vehicles side by side. If lanes become too wide, some motorists may also assume parallel parking is allowed, constricting the travel lane for bikes.

WMCAC: West Michigan Clean Air Coalition - A partnership of business, academia, government, industry, and the non-profit sector in Kent, Ottawa, and Muskegon counties working together to achieve cleaner air in the region.

WMEAC: West Michigan Environmental Action Council - A non-profit environmental advocacy and education organization founded in 1968.

YOE: Year of Expenditure - Project costs in the LRTP Project list must be inflated to the year or range of years that the project will be constructed.

ZONING - Classification system based on permitted and prohibited land uses, densities, and intensities used to promote land use compatibility.

Appendix C: Policies and Practices for Programming Projects

Policies and Practices for Programming Projects

Draft May 12, 2004

Adding/programming new projects/revised project limits to the TIP and LRTP Section

Updated February 7, 2008

Capacity deficient project eligibility

Previously Stated Goal:

The MPO shall make efforts to reduce system-wide congestion and travel times.

TIP Committee recommended Strategy/Practice:

In Kent County, the MPO shall use all available TEDF funding to improve capacity of facilities that are rated or are projected to be rated Level Of Service (LOS) E and F. In Ottawa County, the MPO shall use available federal funding to improve capacity of facilities that are rated or are projected to be rated Level Of Service (LOS) E and F. These projects must be listed in the MPO's Long Range Transportation Plan prior to implementation through the TIP process. The funding ratios for capacity deficient projects should be set at 80% federal/EDFC with a required 20% local match. The committees may alter this ratio to accommodate funding shortfalls. STP funding may be used for capacity improvement projects in Kent County if the necessity exists to do so due to financial constraint demonstrated in the Long Range Plan.

Explanation: If a facility has a 24 hour capacity of 24,000, and a 24 hour traffic volume of 18,000, then the V/C Ratio would be 0.75. Using the scale below, this facility would not be eligible for federal funding for the purpose of widening or adding capacity.

LOS Scale

V/C 0.00 - 0.25 = LOS A
V/C 0.26 - 0.50 = LOS B
V/C 0.51 - 0.75 = LOS C
V/C 0.76 - 1.00 = LOS D

V/C 1.01 - 1.25 = LOS E
V/C 1.26 - 9.99 = LOS F

Capacity Deficient

A comprehensive Roadway Infrastructure Management System (RIMS) will be developed and used as an inventory for all federal aid roadways within the MPO boundary. The information contained in RIMS will be developed by MPO staff, reviewed by each jurisdiction, and approved through the MPO process. RIMS will be updated as information becomes available. All Long Range Plan projects (state and local) will come from RIMS. Data for RIMS will be acquired through various sources, including but not limited to local data submittal, the GVMC traffic count program, MDOT's traffic count program, etc.

All capacity and bridge improvement projects programmed in the TIP will be designed to reduce the congested or projected congested situation through the time period of the Long Range Plan. No improve/expand or bridge projects will be programmed that do not address current and future congestion through the life of the Long Range Plan.

Only projects that increase capacity by adding lanes (thru lanes, center turn lanes, and/or boulevard) should be funded using EDFC funding. Projects that widen existing lanes should not be funded EDFC funds.

GVMC staff will work to develop an improved scope and description of project including specific termini, proposed typical cross section and if required, work on existing structures.

New transit routes to be included in the TIP that receive federal funding, must be first justified by current and accurate facts and figures identifying the need, the demand, and funding for such services. A commitment to continue the proposed service beyond the scope of the federal funding must also in place if rider ship meets projections.

Projects located in the high priority corridors will be noted on the deficient project pool listing.

Capacity improvement projects shall include in the project as a participating cost any/all elements of planned ITS deployment.

All projects require consideration of Social and Environmental (S/E) impacts through the federal NEPA process. Minor projects, generally within the existing right-of-way, are usually classified as Categorical Exclusions. Projects which add capacity to an existing road or transit facility, and/or involve construction of a new transportation facility often require an Environmental Assessment (EA). The purpose of the EA is to identify the S/E effects of the proposed project and any mitigation required. If, through the EA process, significant S/E impacts are identified, an Environmental Impact Statement (EIS) is required. The EIS quantifies all S/E impacts associated with major projects, and identifies the required mitigation measures to address the impacts identified. Extensive public involvement, including a public hearing, and federal/state regulatory agency review, are included in both the EA and EIS processes. Proposed projects involving new or modified access to the Interstate system also require the completion of an Interchange Justification Report (IJR), to assess traffic impacts on the Interstate highway system.

The EA, EIS, and IJR processes may occur prior to inclusion of a project in the MPO LRP, or may occurs as part of the TIP project implementation process, depending on the scope of the proposed project.

This item was passed by the TIP and Technical committees to accept the Capacity Deficient Project Eligibility proposed strategy/practice as submitted.

Condition deficient project eligibility

Previously Stated Goal:

To maintain and improve the system-wide pavement condition.

Proposed Strategy/Practice:

The MPO will maintain a Pavement Management System (PaMS). This system will include all necessary data to reasonably manage and improve the pavement condition of the federal-aid network. MPO staff will update 1/3 of the entire system condition data annually. This data will be reviewed by local agency staff. Any discrepancies noted by local agency staff will be reviewed by MPO staff. MPO staff will make the final Pavement Condition Index (PCI) determination. Once complete the condition data will be incorporated into the Roadway Infrastructure Management System (RIMS).

The MPO shall program federal funds according to the following criteria:

PCI Investment Scale

PCI 0 - 45 eligible for Reconstruction
PCI 0 - 70 eligible for Major Overlay

The MPO shall divide equally all available STP (or similar) funding between major reconstruction and major overlay projects. Major reconstruction projects are defined as complete removal of the existing roadway and replacement. Major overlay is defined as removal, if necessary, of the top layer of pavement and replacement.

Match ratios for reconstruction projects will be set at 50% federal with a required 50% match. Alternative match ratios may be applied for facilities on the high priority network.

Suggested Match Ratio for Overlay Projects

ADT Range	Match Ratio (fed/local)
25,000 & Over	80/20
10,000 – 24,999	70/30
5,000 – 9,999	60/40
Under 5,000	50/50

Projects should not be programmed on facilities that are scheduled for major water, sewer, or utility work, as these facilities will be reconstructed as part of the utility project. Federal transportation funding should not be used to subsidize water, sewer, and other major utility projects.

Projects that receive funding through the MPO process should be designed and constructed to assure a long lasting improved condition.

MPO staff will work with MDOT staff to develop a system-wide inventory that includes state trunk lines.

Condition improvement projects shall include in the project description (as a participating cost) any/all elements of planned ITS deployment.

Staff recommended tabling the discussion until the consultant (SME) completes a Non Destructive Testing Study which will determine the condition of the base of the roadway. The consultant will also be able to give the committee recommendations as to how monies could be spent on projects to get "the most bang for the buck" (total reconstruction vs. overlays).

Functional Classification

Current Policy/Practice

Currently there is no policy to determine how roads are classified.

TIP Committee recommended Policy/Practice:

1.) Grandfather in the existing system.

2.) Classify facilities as County Primary or City Major roads according to Act 51 designation.

3.) Use the following table prepared as proposed recommended thresholds for consideration:

NFC #	Facility Type	Current Low Volume	Current High Volume	Current Average Volume	Proposed Minimum Threshold*
1	Rural Interstate	31,000	38,000	35,000	
2	Rural Freeway	26,000	51,000	41,000	
6	Rural Minor Arterial	2,100	23,000	8,700	5,000
7	Rural Major Collector	500	13,000	4,400	2,500
8	Rural Minor Collector	500	12,000	2,000	1,500
11	Urban Interstate	31,000	90,000	56,500	
12	Urban Freeway	44,000	129,000	95,500	
14	Urban Principal Arterial	4,000	55,000	23,300	25,000
16	Urban Minor Arterial	1,500	47,000	11,800	10,000
17	Urban Collector	750	17,000	5,000	5,000
	All Classes	500	129,000	13,000	

* Facilities not yet constructed would have to be modeled to determine out year volume (nearest modeled year).

Note: The above represent only volume thresholds. Other criteria must also be evaluated to determine regional significance of a roadway facility.

This item was passed by the TIP and Technical committees to accept the Functional Classification proposed strategy/practice as submitted.

High Priority Corridors

Current Policy/Practice

The current policy/practice is reviewed on a case by case basis.

TIP Committee recommended Policy/Practice:

Facilities Must:

- Be continuous
- Provide connectivity
- Provide alternative routing during emergency situations
- Serve a regionally significant purpose
- Serve major activity centers
- Serve intermodal facilities
- Serve regional medical facilities
- Be a Minor Arterial or above

The TIP and Technical committees recommend using the criteria developed for High Priority Corridors on a case by case basis to determine if a High Priority Corridor is eligible for special funding.

Obligation Authority issues

Current Policies/Practices

Carry over projects (where possible) have priority to be funded in the next year of the TIP.

TIP Committee recommended Policy/Practice:

- Encourage the use of Advance Construction (in the second and third year of the TIP) (STP-Urban funds only).
- Goal to have projects obligated by April 1st
- If a project cannot be obligated in the first year that projects drops to the second or third year and the advance construction project(s) are converted (paid for) in the first year.
- Preferably the third year of the TIP contains easily built projects (several overlay projects).
- Monthly project tracking.

The TIP and Technical Committees recommend establishing a practice to increase the use of Advance Construct projects, and establish the goal that all projects are obligated by April 1st. Staff will also distribute to the committee a project tracking sheet on a monthly basis.

Adding/programming new projects/revised project limits to the TIP and LRTP

Current Policies/Practices

Below, more specific information is provided /recommended to augment the existing policies/practices for TIP and LRTP revisions.

TIP Committee recommended Policy/Practice:

There are two actions that are covered by this policy/practice, administrative adjustments/modifications and TIP/LRTP Amendments.

Administrative Adjustments/Modifications

Administrative adjustments/modifications will be considered when any of the following is proposed to an existing project:

- Minor changes in cost (20% or less, plus financial constraint must be maintained)
- Minor changes in scope
- Changes in funding source within the same funding source type (i.e. federal to federal, state to state, local to local)
- Corrections to minor listing errors that don't change cost or scope
- Revisions that cause projects to switch years while maintaining financial constraint

Administrative adjustments/modifications do not require Federal approval. GVMC practice is that administrative adjustments require Technical and Policy Committee approval only. GVMC Board approval is not required.

In the event that an administrative adjustment/modification must be considered immediately, staff will have the authority to implement that adjustment with permission from the Chairpersons of the Technical and Policy Committees and the requesting agency impacted by the adjustment. If the Chairperson from either committee is not available, permission for the Vice-Chairperson will be sought.

Administrative adjustments/modifications will be communicated to MDOT and FHWA in a timely fashion.

Amendments

Amendments require federal approval and are characterized by one of the following proposed changes:

- Adding a new project
- Deleting a project

- Major cost change to a project
- Changing non-Federally funded project to Federally funded project
- Major changes in project design concept or design scope
- Changing an existing project to an advance construction project
- Moving an illustrative project into the body of the TIP/LRTP document

Existing MPO, State and Federal processes will be followed for proposed TIP Amendments in the areas of air quality conformity, financial constraint, public participation, and environmental justice.

TIP Amendments require the approval of the Technical Committee, Policy Committee, and the GVMC Board. Committee approved amendments will be forwarded to MDOT via electronic format and hard copy with updated project sheets, financial constraint documentation, and proof of MPO action. MDOT will then forward the changes to FHWA.

In the event that an amendment item must be taken directly to the GVMC Board because of timing purposes, permission must be obtained from the Chairpersons of both the Technical and Policy Committee to move the action forward. If the Chairperson from either committee is not available, permission for the Vice-Chairperson will be sought.

Adding/Amending New Projects to an Existing TIP

Resurfacing Project -	Should be listed in the Pavement Management System deficiency list with a PCI of 70 and below.
Reconstruction Project -	Should be listed in the Pavement Management System deficiency list with a PCI of 45 and below.
Expand & Widen Proj. -	Should be listed in the Congestion Management System capacity deficiency list and be listed in the Long Range Transportation Plan.
ITS Project -	Should be recommended by the ITS committee.
Transit Project -	Should be listed in the 5 years Short Range Public Transportation Plan or in the Long Range Public Transportation Plan.
Buses -	All buses should come from the Fleet Replacement Plan.

Procedure for Adding New Project(s) -

A call for projects will be sent to all transportation providers, project(s) will be selected through the project selection process exercised by the Technical and Policy Committees.

Adding/Amending New Projects to an Existing Long Range Transportation Plan

Reconstruction Project -	Should be listed in the Pavement Management System deficiency list with a PCI of 45 and below.
Expand & Widen Proj. -	Should be listed in the Congestion Management System capacity deficiency list. Project should be regionally significant.
ITS Project -	Should be recommended by the ITS committee.

Transit Project - Should be listed in the 5 years Short Range Public Transportation Plan or in the Long Range Public Transportation Plan.

Procedure for Adding New Project(s) -

A call for projects will be sent to all transportation providers, project(s) will be selected through the project selection process exercised by the Programming, Technical and Policy Committees.

Advance Construction

Current Policies/Practices

When the TIP program is developed it needs to be financially constrained.

The conversion of advance construction projects is the 1st priority.

TIP Committee recommended Policy/Practice:

When the TIP program is developed it needs to be financially constrained.

The conversion of advance construction projects is the 1st priority.

Allow advance construction within the three year TIP and the Illustrative program

The TIP and Technical Committees recommend that the use of Advance Construction be restricted to the first 3 years of the TIP and the 2 Illustrative years; that there are no limits on the dollar amount and the number of Advance Construct projects allowed, and that once the TIP is developed it will be financially constrained.

CMAQ Program issues

Current Policies/Practices

Traditionally busses, intersections and the Ozone Action Program are funded with this program.

MDOT/Local split of the funds (MDOT gets 50% of the CMAQ funds off the top).

TIP Committee recommended Policy/Practice:

Eliminate the 50/50 split of CMAQ funds allocated to this MPO between MDOT and the local jurisdictions.

With the CMAQ funds allocated to the MPO, the TIP Committee will rank all CMAQ eligible projects based on emission reduction/cost benefit basis. (Competitive based on emissions).

Develop and have in place a consistent and improved statewide evaluation process of CMAQ projects.

All new transit route projects need to show a demonstration of need and that service will continue beyond a 3 year commitment if rider-ship meets projections.

Agreement for CMAQ funding in West Michigan

1. MDOT will do the East/West estimating of funding split.
2. MDOT will provide estimates of funding available for each MPO (GVMC, MACC, WMSRDC) and rural Ottawa County based on population using the 2000 Census data.
3. Working through the TIP development process the MPO and MDOT representatives will cooperatively distribute the funds to local and state eligible projects.
4. MDOT will provide a time line with the estimates for completion of task #3.
5. All parties will meet to discuss all projects and compile the CMAQ program.
6. MDOT makes the final decisions to reach financial constraint of the final program.
7. This entire agreement will be re-evaluated when the USEPA takes action on the 8 hour standard.

This item was passed by the TIP and Technical committees to accept the proposed policy/practice as submitted.

Funding Sidewalks

Current Policy/Practice

Use of Federal Funds under the current policy/practice is not allowed to build sidewalks.

TIP Committee recommended Policy/Practice:

The TIP Committee recommended a change in the policy/practice to allow the use of Federal funds to build sidewalks. The Technical Committee recommended further discussion on this item.

Regional Non Motorized Facilities

Current Policies/Practices

Encourage the use of the Enhancement program and local funds to build non motorized facilities.

TIP Committee recommended Policy/Practice:

Enhancement and local funds will be used to build non motorized facilities.

The TIP Committee recommends continuing the practice of using Enhancement Funds to build non motorized facilities.

Funding Right of Way (ROW) with federal funding

Current Policy/Practice

Use of Federal funds is not allowed unless the committee deems a corridor with a high priority a special case as identified by the MPO.

TIP Committee recommended Policy/Practice:

Eliminate Federal/State funding of ROW. An exception may be approved by the TIP Committee if a jurisdiction requests to use ROW funds for a large or expensive project.

The TIP Committee recommends continuing the practice of not allowing the funding of right-of-way except on a case by case basis.

Funding Engineering costs

Current Policy/Practice

There is no current policy or practice in the use of Federal Funds for engineering costs.

TIP Committee recommended Policy/Practice:

No Federal/State funds for Engineering.

Encourage local jurisdictions staff to work on future year projects, get programming into MDOT early in the fiscal year and obligate projects in a timely basis.

The TIP committee recommends continuing the current practice of not funding Engineering Costs – that restricts Federal Funds from being used for Engineering Costs by local jurisdictions.

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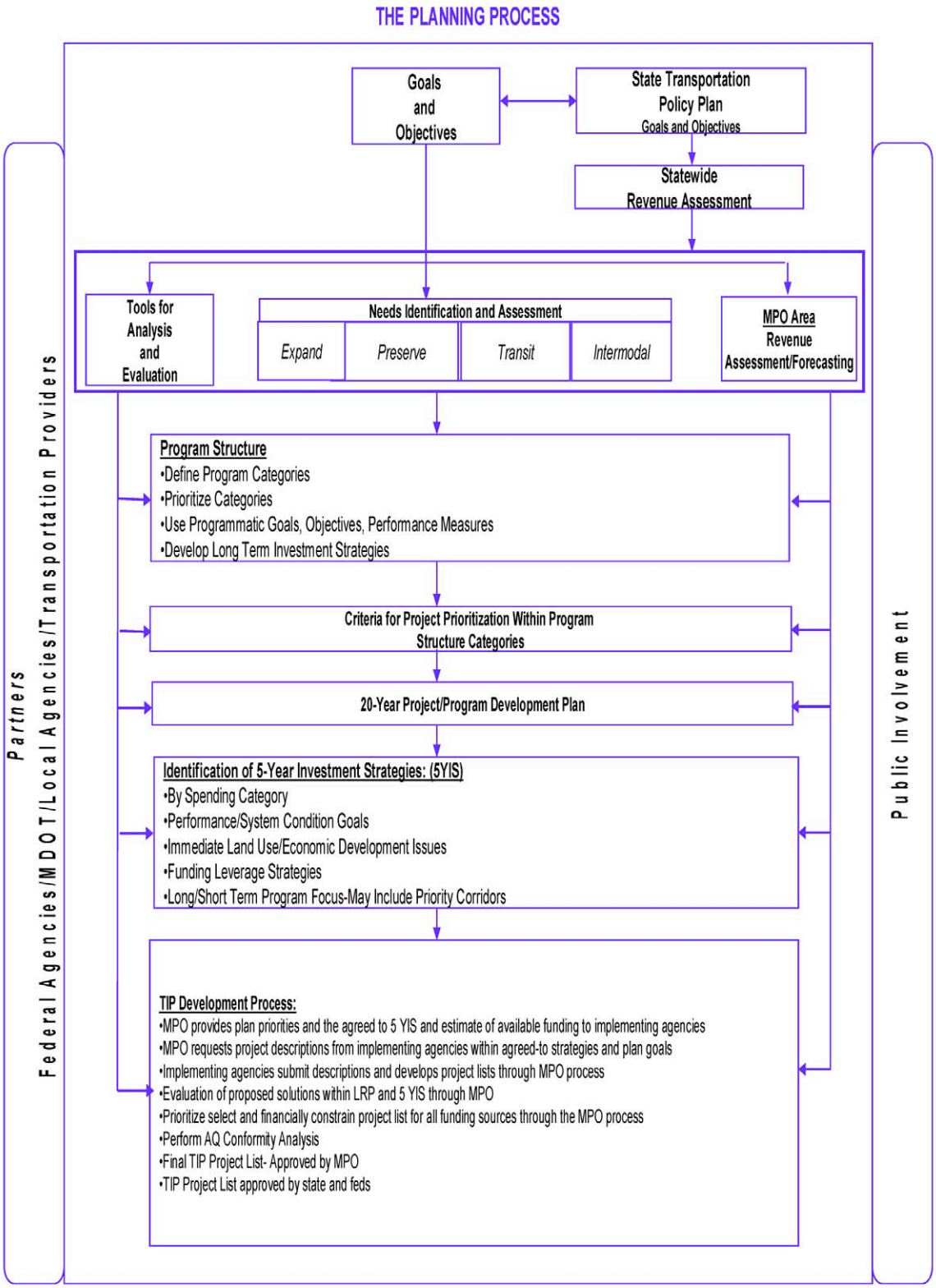
Appendix E: Planning Process Chart



Appendix F: Air Quality Conformity Analysis Results

Please Note: The completion of Appendix F is pending.

Appendix G: Illustrative Project List

An identifiable component of this plan is the list of major projects that will be undertaken over the next twenty five plus years (LRTP Project List in Chapter 16). The selection of transportation projects is based on technical analyses performed by GVMC Transportation staff, the agency staff owning the facility, and careful deliberation of the members of the GVMC Transportation Committees. The level of funding for each program and range of years is determined by comprehensive financial analysis from data submitted by local, county, and regional transportation agencies and the Michigan Department of Transportation (MDOT). Infrastructure projects, while designed to improve areas where improvements are made, have a regional impact as well. The objective is for the cumulative effect of the projects identified in this Plan to result in a more efficient and effective regional transportation system for the people of the Grand Rapids area.`

Chapter 16 in the LRTP includes major projects that have identified transportation deficiencies, are financially constrained and expected to be constructed within the funding available over the life of the plan. Many have been through the National Environmental Policy Act (NEPA) environmental clearance process and have a federally approved Environmental Impact Statement (EIS) or environmental Assessment (EA).

Those projects which are identified as deficiencies, but do not have funding, are contained in the Illustrative Projects list below. MDOT projects that have not gone through the NEPA process, ITP/The Rapid projects that are considered "financially unconstrained" because funding is not yet secured, as well as Non-Motorized projects which do not have identified funding, are all examples of the types of projects that comprise the Illustrative Project List.

The following Illustrative Projects have "conceptual improvements" indicated and estimated costs identified, when available, for each segment. These conceptual improvements will not become committed projects until further study is completed, including moving through the MPO transportation planning process, funding is committed, and, as required, progressing through federal NEPA process. In many cases, the Illustrative projects will require further study of feasible alternatives.

Please Note: The Illustrative List is forthcoming.

Appendix H: Environmental Mitigation Maps

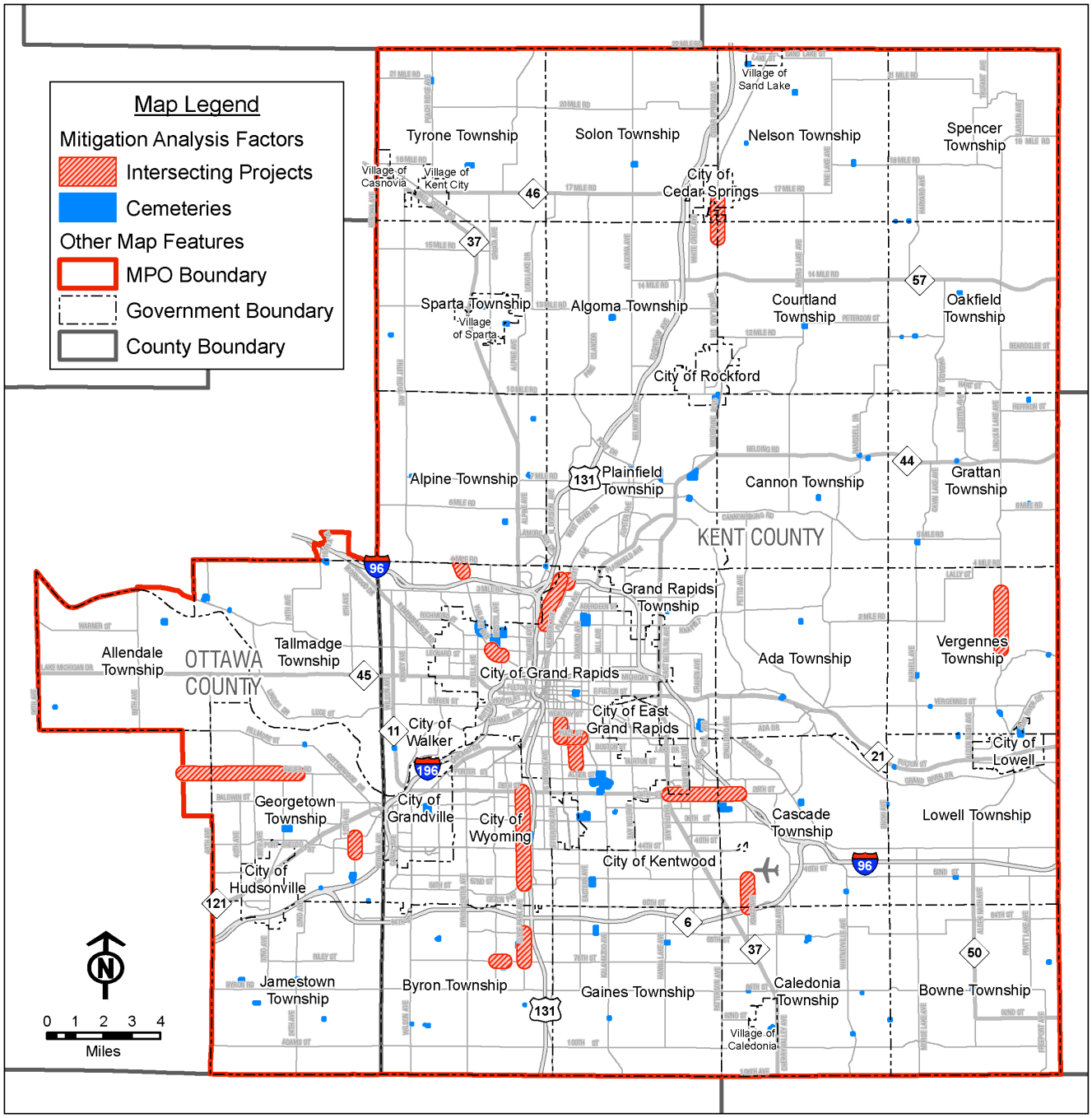
This appendix contains the following seven Environmental Mitigation maps and accompanying tables of related information:

1. Cemeteries
2. Flood Zones
3. Parks
4. Water Features
5. Wetlands
6. Woodlands
7. Historic Sites and Structures

Environmental Mitigation Map - Cemeteries

GVMC 2035 Long Range Transportation Plan

Projects were Overlaid on Cemetaries to Determine Possible Known Impacts



Map 26 – Environmental Mitigation Map: Cemeteries

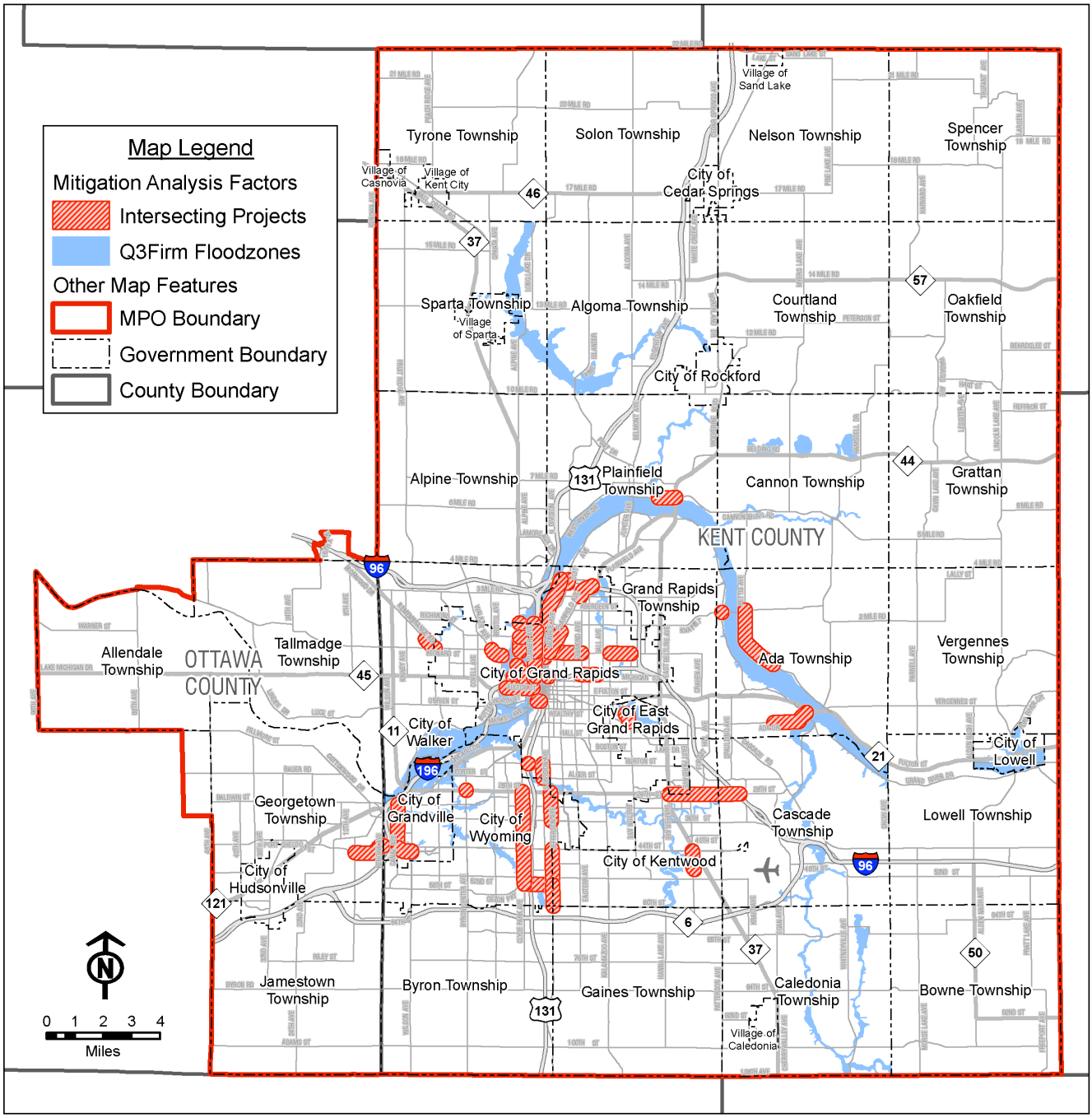
Environmental Mitigation Flagged Projects: Cemeteries

Project	From—To	Jurisdiction	Possible Alternative	Project Type	Length	County	Cemetery Name
2011-2014							
76th St	Sierrafield Dr—Burlingame Ave	KCRC–Byron Twp	Resurface existing roadway by 2013	Preservation	0.31	Kent	Winchester Cem.
8th Ave	Port Sheldon St—44th St	OCRC–Georgetown Twp	Reconstruct and Add Center Turn Lane (2-3) by 2011	Preservation	0.54	Ottawa	Jenison Cem.
Bauer Rd	56th Ave—24th Ave	OCRC–Georgetown Twp	Resurface existing roadway by 2012	Preservation	4.00	Ottawa	Lowing Cem.
Clyde Park Ave	28th St—54th St	City of Wyoming	Resurface existing roadway by 2012	Preservation	3.25	Kent	Resurrection Cem.
Clyde Park Ave	0.1 mi N of 76th St—0.1 mi S of 68th St	KCRC–Byron Twp	Reconstruct and Add Center Turn Lane (2-3) by 2012	Widen	0.80	Kent	Kent Memorial Gardens
Coit Ave	Kendalwood Dr—North Park St	City of Grand Rapids	Rotomill/resurface existing roadway by 2011	Preservation	0.17	Kent	Veteran's Cem.
Hall St	Kalamazoo Ave—Eastern Ave	City of Grand Rapids	Rotomill/resurface existing roadway by 2011	Preservation	0.20	Kent	Oakhill Cem.
Hall St	Madison—Eastern Ave	City of Grand Rapids	Resurface existing roadway by 2011	Preservation	0.50	Kent	Oakhill Cem.
Kraft Ave	52nd St—60th St	KCRC–Cascade Twp	Resurface and reconstruct existing roadway by 2013	Preservation	1.00	Kent	St. Mary's Cem.
Lincoln Lake Ave	McPherson St—3 Mile Rd	KCRC–Vergennes Twp	Resurface existing roadway by 2011	Preservation	2.00	Kent	Alton Cem.
M-11/28th St	M-37/East Beltline—I-96	MDOT	Mill, joints, resurface and concrete reconstruction by 2011	Preservation	0.00	Kent	Chapel Hill Mem. Garden
Monroe Ave	Knapp St—North Park St	City of Grand Rapids	Resurface existing roadway by 2013	Preservation	1.69	Kent	Veteran's Cem.
Northland Dr	Indian Lakes Rd—South St	KCRC–Algoma Twp	Reconstruct and Add Center Turn Lane (2-3) - Access Management by 2013	Widen	1.20	Kent	Elmwood Cem.
2015-2018							
Madison Ave	Hall St—Franklin St	City of Grand Rapids	Reconfigure within Existing ROW to 3 lanes - Enhance Transit Capacity (2-3)	Widen	0.50	Kent	St. Andrew's Cem.
2019-2025							
Eastern Ave	Hall St—Burton St	City of Grand Rapids	Reconfigure within Existing ROW to 3 lanes - Enhance Transit Capacity (2-3)	Widen	0.95	Kent	Oakhill Cem.
Walker Ave	Valley Ave—Leonard St	City of Grand Rapids	Reconfigure within Existing ROW to 3 lanes (2-3)	Widen	0.44	Kent	Greenwood & Mt. Calvary Cem.
Walker Ave	North Ridge Dr—4 Mile Rd	City of Walker	Reconstruct and Add Center Turn Lane (2-3)	Widen	0.32	Kent	Brooklawn Cem.

Environmental Mitigation Map - Floodzones

GVMC 2035 Long Range Transportation Plan

Projects were Overlaid on Floodzones to Determine Possible Known Impacts



Map 27 – Environmental Mitigation Map: Flood Zones

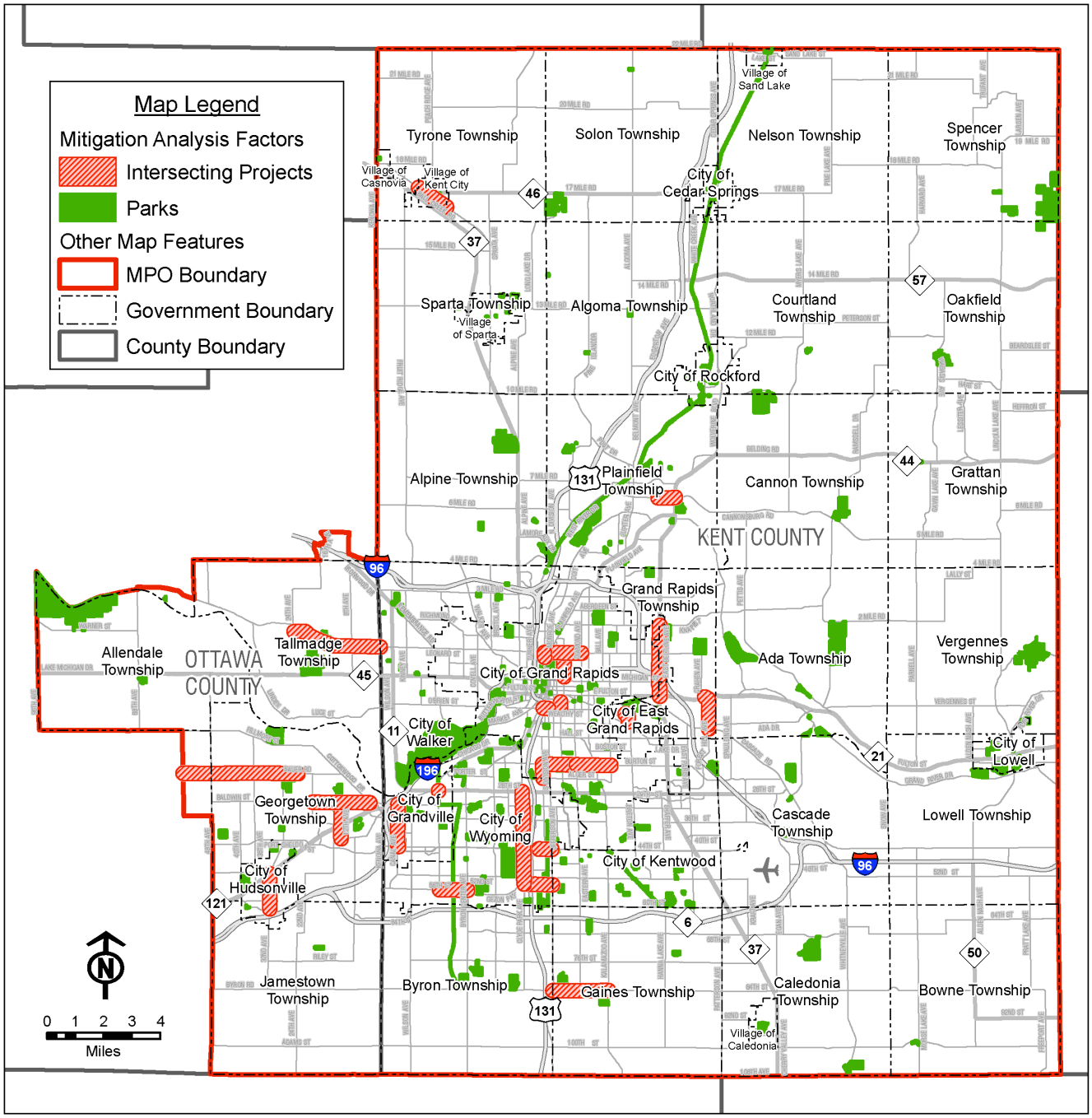
Environmental Mitigation Flagged Projects: Flood Zones

Project	From—To	Jurisdiction	Possible Alternative	Project Type	Length	County
2011-2014						
Knapp St	at Grand River Dr	KCRC–Ada Twp	Add turn lanes at the intersection by 2013	Widen	0.10	Kent
M-11/28th St	at Ivanrest and Byron Center Aves	MDOT	Intersection reconstruction by 2013	Preservation	0.00	Kent
US-131	under Franklin, Burton & Hall Sts	MDOT	Partial and full bridge deck replacement by 2011	Preservation	0.00	Kent
1st/2nd St	Lane Ave—Stocking Ave	City of Grand Rapids	Rotomill/resurface existing roadway by 2011	Preservation	0.23	Kent
44th St	8th Ave—Kenowa Ave	OCRC–Georgetown Twp	Rotomill/resurface existing roadway by 2014	Preservation	1.00	Ottawa
54th St	Clyde Park Ave—Division Ave	City of Wyoming	Resurface existing roadway by 2012	Preservation	1.00	Kent
Ada Dr	Fox Hollow Ave—Thornapple River Dr	KCRC–Grand Rapids Twp	Resurface existing roadway by 2011	Preservation	1.31	Kent
Ann St	Alpine Ave—Voorheis Ave	City of Grand Rapids	Rotomill/resurface existing roadway by 2014	Preservation	0.10	Kent
Buchanan Ave	Alger St—Burton St	City of Grand Rapids	Rotomill/resurface existing roadway by 2014	Preservation	0.49	Kent
Canal Ave	Chicago Dr—44th St	City of Grandville	Resurface existing roadway by 2014	Preservation	1.50	Kent
Cherry St	Market Ave—Grandville Ave	City of Grand Rapids	Resurface existing roadway by 2011	Preservation	0.12	Kent
Clyde Park Ave	M-11/28th St—54th St	City of Wyoming	Resurface existing roadway by 2012	Preservation	3.25	Kent
Coit Ave	Kendalwood Dr—North Park St	City of Grand Rapids	Rotomill/resurface existing roadway by 2011	Preservation	0.17	Kent
Division Ave	M-11/28th St—36th St	City of Wyoming	Resurface existing roadway by 2013	Preservation	1.00	Kent
Division Ave	44th St—54th St	City of Wyoming	Resurface existing roadway by 2013	Preservation	1.25	Kent
Division Ave	54th St—60th St	City of Kentwood	Reconstruct and partial blvd. by 2014 (AC)	Widen	0.75	Kent
East Paris Ave	44th St—Barden Dr	City of Kentwood	Reconstruct existing roadway by 2014	Preservation	0.66	Kent
Lake Michigan Dr	Garfield Ave—US-131	City of Grand Rapids	Rotomill/resurface existing roadway by 2014	Preservation	1.06	Kent
Lakeside Dr	Greenwood Dr—Wealthy St	City of East Grand Rapids	Reconstruct existing roadway by 2014	Preservation	0.36	Kent
Leonard St	Plymouth Ave—Maryland Ave	City of Grand Rapids	Resurface existing roadway by 2013	Preservation	0.74	Kent
M-11/28th St	M-37/East Beltline—I-96	MDOT	Mill, joints, resurface and concrete reconstruction by 2011	Preservation	0.00	Kent
Monroe Ave	Ottawa Ave—US-131BR/Leonard St	City of Grand Rapids	Resurface existing roadway by 2011	Preservation	0.25	Kent
Monroe Ave	Knapp St—North Park St	City of Grand Rapids	Resurface existing roadway by 2013	Preservation	1.69	Kent
Pettis Ave	Knapp St—Egypt Valley Ave	KCRC–Ada Twp	Resurface existing roadway by 2012	Preservation	2.38	Kent
Plainfield Ave	3 Mile Rd—I-96	City of Grand Rapids	Resurface existing roadway by 2012	Preservation	0.60	Kent
Plainfield Ave	US-131BR/Leonard St—Ann St	City of Grand Rapids	Resurface existing roadway by 2012	Preservation	0.85	Kent
Remembrance Rd	Leonard St—Walker Village Dr	City of Walker	Resurface and reconstruct existing roadway by 2014	Preservation	0.48	Kent
Richmond St	Alpine Ave—Scribner Ave	City of Grand Rapids	Rotomill/resurface existing roadway by 2014	Preservation	0.58	Kent
Rivertown Pkwy	Wilson Ave—Canal Ave	City of Grandville	Resurface existing roadway by 2012	Preservation	0.44	Kent
Turner Ave	Ann St—US-131 SB Ramps	City of Grand Rapids	Rotomill/resurface existing roadway by 2014	Preservation	0.27	Kent
US-131	I-196—Ann St	MDOT	Replace Freeway Lighting	Preservation	0.00	Kent
US-131 NB	US-131BR/Leonard St—Ann St	MDOT	Add NB and SB weave/merge lanes by 2011	Widen	0.50	Kent
West River Dr	Rogue River bridge—M-44/Northland Dr	KCRC–Plainfield Twp	Reconstruct and Add Center Turn Lane (4-5) by 2011	Widen	0.75	Kent
2015-2018						
I-196	WB over the Grand River—US-131	MDOT	Extend WB to SB off ramp to complete US-131 to Fuller Avenue segment by 2015	Widen	0.25	Kent
I-196	Fuller Ave—I-96	MDOT	Rehabilitation of exiting road and bridges by 2018	Preservation	2.00	Kent
Lake Michigan Dr	US-131—Garfield Ave	City of Grand Rapids	Reconfigure within Existing ROW to 3 lanes - Enhance Transit Capacity (2-3)	Widen	1.06	Kent
Leonard St	Plainfield Ave—Diamond Ave	City of Grand Rapids	Reconfigure within Existing ROW to 3 lanes (2-3)	Widen	1.14	Kent
Stocking Ave	Bridge St—7th St	City of Grand Rapids	Reconfigure within Existing ROW to 3 lanes - Enhance Transit Capacity (2-3)	Widen	0.60	Kent
US-131 SB	US-131BR/Leonard St—Ann St	MDOT	Add NB and SB weave/merge lanes by 2011	Widen	0.50	Kent
2019-2025						
Alpine Ave	Leonard St—Richmond St	City of Grand Rapids	Reconfigure within Existing ROW to 4 lanes - Enhance Transit Capacity (2-4)	Widen	0.50	Kent
Bridge St	Mount Vernon Ave—Straight Ave	City of Grand Rapids	Reconfigure within Existing ROW to 3 lanes (2-3)	Widen	0.44	Kent
I-196	Fuller Ave—I-96	MDOT	Preserve and widen from 2 to 3 lanes in each direction, add weave merge lanes by 2025	Widen/Preserve	2.00	Kent
Walker Ave	Valley Ave—Leonard St	City of Grand Rapids	Reconfigure within Existing ROW to 3 lanes (2-3)	Widen	0.44	Kent
2026-2035						
I-196	Ottawa Ave—Division	MDOT	Add WB to NB ramp from I-196 to Division from the Ottawa WB offramp by 2035	Widen	0.10	Kent

Environmental Mitigation Map - Parks

GVMC 2035 Long Range Transportation Plan

Projects were Overlaid on Parks to Determine Possible Known Impacts



Map 28 – Environmental Mitigation Map: Parks

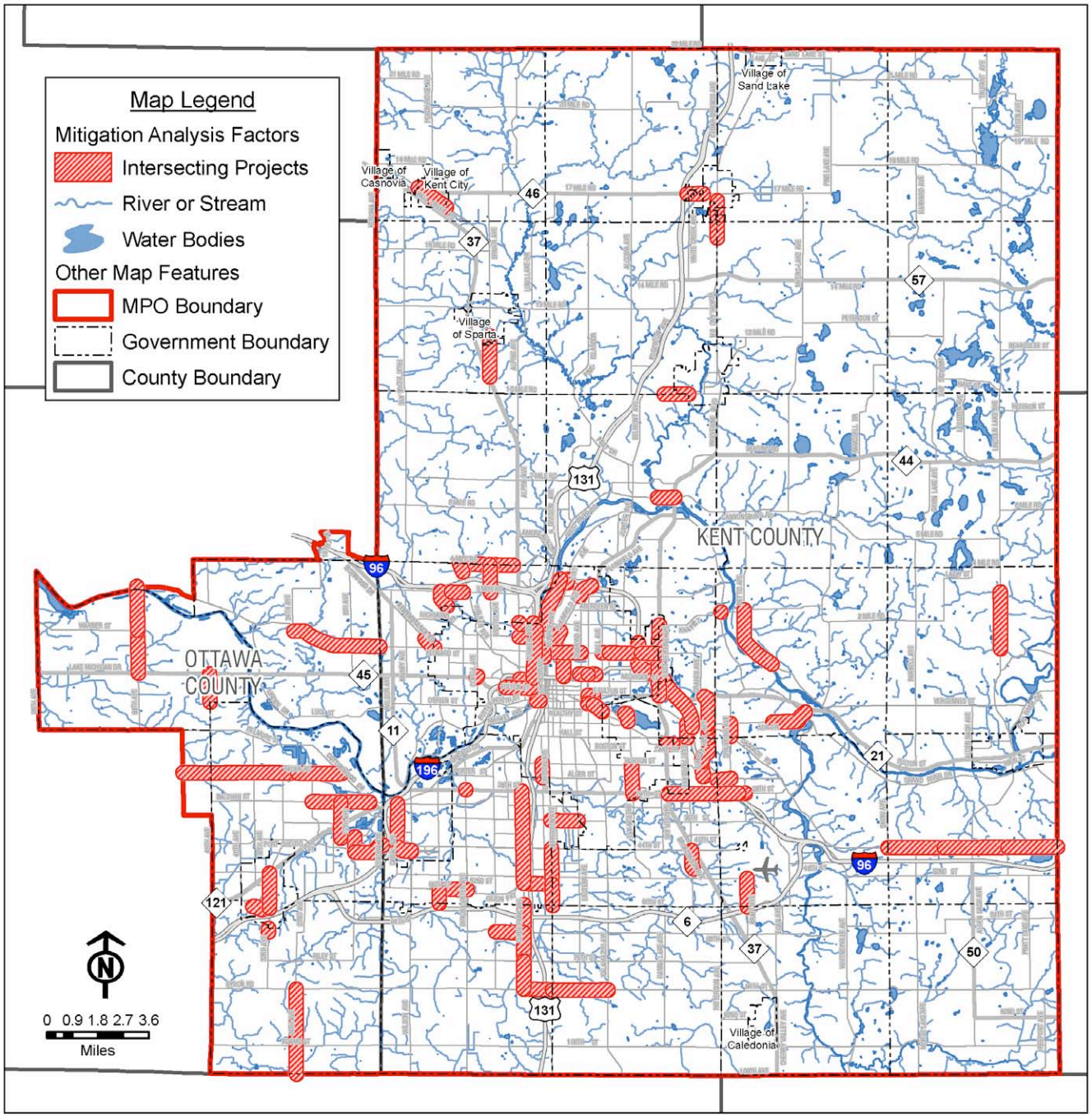
Environmental Mitigation Flagged Projects: Park

Project	From—To	Jurisdiction	Possible Alternative	Projecet Type	Length	County	Park Name
2011-2014							
12th Ave	Port Sheldon St—Baldwin St	OCRC–Georgetown Twp	Resurface existing roadway by 2011	Preservation	1.28	Ottawa	Pioneer Park
32nd Ave	M-121/Chicago Dr—Highland Dr	City of Hudsonville	Resurface existing roadway by 2012	Preservation	1.23	Ottawa	Veteran's Park, Heritage Park
44th St	Stafford Ave—Division Ave	City of Wyoming	Reconstruct existing roadway by 2014	Preservation	0.60	Kent	Interurban Trail
54th St	Clyde Park Ave—Division Ave	City of Wyoming	Resurface existing roadway by 2012	Preservation	1.00	Kent	Interurban Trail
84th St	Division Ave—Kalamazoo Ave	KCRC–Gaines Twp	Resurface existing roadway by 2014	Preservation	2.00	Kent	Earle Brewer Co. Park, Prairie Wolf Park
Baldwin St	20th Ave—Cottonwood Dr	OCRC–Georgetown Twp	Resurface existing roadway by 2013	Preservation	2.00	Ottawa	Woodcrest Park
Ball Creek Rd	NW village limit—Rusco St	Village of Kent City	Resurface existing roadway by 2014	Preservation	1.22	Kent	Ball Creek Park
Bauer Rd	56th Ave—24th Ave	OCRC–Georgetown Twp	Resurface existing roadway by 2012	Preservation	4.00	Ottawa	Hagar Park
Buchanan Ave	Alger St—Burton St	City of Grand Rapids	Rotomill/resurface existing roadway by 2014	Preservation	0.49	Kent	Plaster Creek Family Park
Burton St	Division Ave—Eastern Ave	City of Grand Rapids	Resurface existing roadway by 2012	Preservation	0.95	Kent	Garfield Park
Burton St	Eastern Ave—Plymouth Ave	City of Grand Rapids	Resurface existing roadway by 2012	Preservation	1.22	Kent	Cheeseboro Park
Canal Ave	Chicago Dr—44th St	City of Grandville	Resurface existing roadway by 2014	Preservation	1.50	Kent	Heritage Park
Clyde Park Ave	28th St—54th St	City of Wyoming	Resurface existing roadway by 2012	Preservation	3.25	Kent	Lions Park, Linus C Palmer Park
Forest Hill Ave	Cascade Rd—Ada Dr	KCRC–Ada Twp	Resurface existing roadway by 2011	Preservation	0.25	Kent	Forest Hills Association Park
Forest Hill Ave	Ada Dr—M-21/E Fulton St	KCRC–Grand Rapids Twp	Reconstruct and Add Center Turn Lane (2-3) by 2012	Widen	1.05	Kent	Forest Hills Association Park
Lakeside Dr	Greenwood Dr—Wealthy St	City of East Grand Rapids	Reconstruct existing roadway by 2014	Preservation	0.36	Kent	Remington Park, Waterfront Park, & John A Collins
Leonard St	24th Ave—Kenowa Ave	OCRC–Tallmadge Twp	Resurface existing roadway by 2013	Preservation	3.40	Ottawa	Tallmadge Twp Park
Madison Ave	Wealthy St—Cherry	City of Grand Rapids	Resurface existing roadway by 2011	Preservation	0.20	Kent	Foster Park
Monroe Ave	Ottawa Ave—Leonard	City of Grand Rapids	Resurface existing roadway by 2011	Preservation	0.25	Kent	Canal Street Park
Wealthy St	US-131—Division Ave	City of Grand Rapids	Reconstruct existing roadway by 2014	Preservation	0.18	Kent	Heartside Park
West River Dr	Rogue River bridge—M-44/Northland Dr	KCRC–Plainfield Twp	Reconstruct and Add Center Turn Lane (4-5) by 2011	Widen	0.75	Kent	DNR Boat Launch
M-11/28th St	at Ivanrest and Byron Center Aves	MDOT	Intersection reconstruction by 2013	Preservation	0.00	Kent	Kent Trails
2015-2018							
College Ave	I-196—Leonard St	City of Grand Rapids	Reconfigure within Existing ROW to 3 lanes - Enhance Transit Capacity (2-3)	Widen	0.89	Kent	Highland Park, Mary Waters Park
Leonard St	Plainfield Ave—Diamond Ave	City of Grand Rapids	Reconfigure within Existing ROW to 3 lanes (2-3)	Widen	1.14	Kent	Mary Waters Park
2019-2025							
56th St	Ivanrest Ave SW—Byron Center Ave	City of Wyoming	Reconstruct and Add Center Turn Lane (2-3)	Widen	1.00	Kent	Kent Trails
M-44/M-37/East Beltline	Knapp St—M-21/E Fulton St	MDOT	Preserve and widen from 2 to 3 lanes in each direction by 2020	Widen/Preserve	2.50	Kent	Grand Rapids Twp Park

Environmental Mitigation Map - Water Features

GVMC 2035 Long Range Transportation Plan

Projects were Overlaid on Water Features to Determine Possible Known Impacts



Map 29 – Environmental Mitigation Map: Water Features

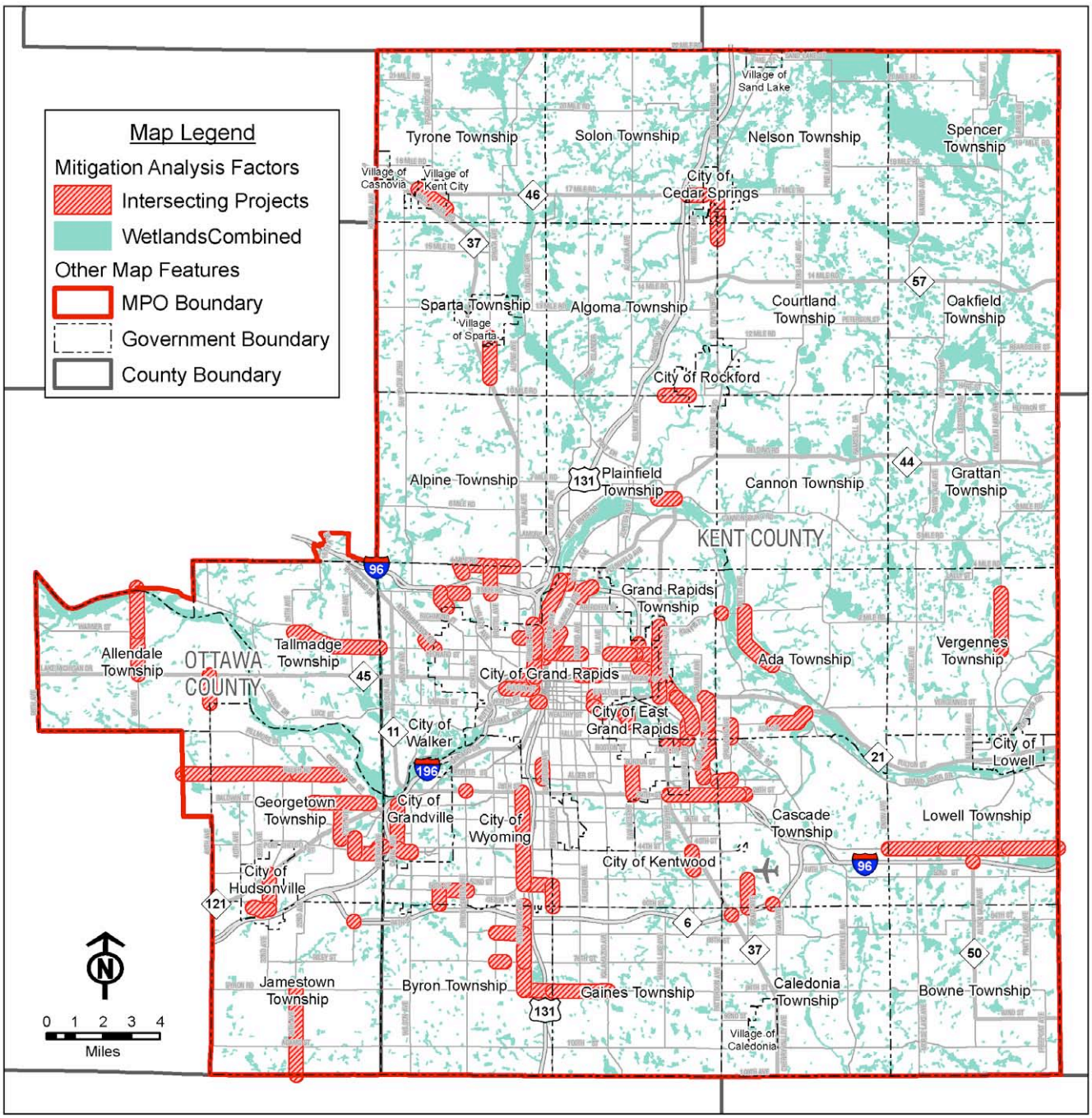
Environmental Mitigation Flagged Projects: Water Features

Project	From—To	Jurisdiction	Possible Alternative	Project Type	Length	County
2011-2014						
10 Mile Rd	West of Wolven Ave—Chilsdale Ave	KCRC–Algoma Twp	Reconstruct and widen to 5 lanes (2-5) by 2011	Widen	1.29	Kent
12th Ave	Port Sheldon St—Baldwin St	OCRC–Georgetown Twp	Resurface existing roadway by 2011	Preservation	1.28	Ottawa
17 Mile Rd	US-131 Ramps—West St	KCRC–Solon Twp	Resurface existing roadway by 2012	Preservation	0.60	Kent
A-37/24th St	Byron Rd—Ottogan St	OCRC–Jamestown Twp	Resurface existing roadway by 2011	Preservation	3.00	Ottawa
28th St	Kraft Ave—I-96 Ramps	KCRC–Cascade Twp	Resurface existing roadway by 2014	Preservation	0.30	Kent
32nd Ave	M-121/Chicago Dr—Highland Dr	City of Hudsonville	Resurface existing roadway by 2012	Preservation	1.23	Ottawa
36th St	Division Ave—Eastern Ave	City of Wyoming	Resurface existing roadway by 2012	Preservation	1.00	Kent
4 Mile Rd	Walker Ave—Old Orchard Ave	KCRC–Alpine Twp	Reconstruct and Add Center Turn Lane (2-3) by 2014	Widen	1.90	Kent
44th St	8th Ave—Kenowa Ave	OCRC–Georgetown Twp	Rotomill/resurface existing roadway by 2014	Preservation	1.00	Ottawa
54th St	Clyde Park Ave—Division Ave	City of Wyoming	Resurface existing roadway by 2012	Preservation	1.00	Kent
68th St	Clyde Park Ave—Burlingame Ave	KCRC–Byron Twp	Resurface existing roadway by 2014	Preservation	1.00	Kent
84th St	Clyde Park Ave—Division Ave	KCRC–Byron Twp	Resurface existing roadway by 2012	Preservation	1.00	Kent
84th St	Division Ave—Kalamazoo Ave	KCRC–Gaines Twp	Resurface existing roadway by 2014	Preservation	2.00	Kent
8th Ave	Port Sheldon St—44th St	OCRC–Georgetown Twp	Reconstruct and Add Center Turn Lane (2-3) by 2011	Preservation	0.54	Ottawa
Ada Dr	Fox Hollow Ave—Thornapple River Dr	KCRC–Grand Rapids Twp	Resurface existing roadway by 2011	Preservation	1.31	Kent
Ann St	Alpine Ave—Voorheis Ave	City of Grand Rapids	Rotomill/resurface existing roadway by 2014	Preservation	0.10	Kent
Baldwin St	20th Ave—Cottonwood Dr	OCRC–Georgetown Twp	Resurface existing roadway by 2013	Preservation	2.00	Ottawa
Ball Creek Rd	NW village limit—Rusco St	Village of Kent City	Resurface existing roadway by 2014	Preservation	1.22	Kent
Bauer Rd	56th Ave—24th Ave	OCRC–Georgetown Twp	Resurface existing roadway by 2012	Preservation	4.00	Ottawa
Bauer Rd	24th Ave—Cottonwood Dr	OCRC–Georgetown Twp	Resurface existing roadway by 2014	Preservation	1.50	Ottawa
Breton Ave	28th St—Burton St	City of Grand Rapids	Resurface existing roadway by 2011	Preservation	1.00	Kent
Bristol Ave	4 Mile Rd—3 Mile Rd	City of Walker	Resurface existing roadway by 2011	Preservation	0.98	Kent
Buchanan Ave	Alger St—Burton St	City of Grand Rapids	Rotomill/resurface existing roadway by 2014	Preservation	0.49	Kent
Canal Ave	Chicago Dr—44th St	City of Grandville	Resurface existing roadway by 2014	Preservation	1.50	Kent
Carlton Ave	Lake Dr—Fulton St	City of Grand Rapids	Rotomill/resurface existing roadway by 2014	Preservation	0.35	Kent
Cascade Rd	Snow Ave—Timpson Ave	KCRC–Lowell Twp	Resurface existing roadway by 2012	Preservation	2.00	Kent
Cascade Rd	Timpson Ave—Segwun Ave	KCRC–Lowell Twp	Resurface existing roadway by 2013	Preservation	2.25	Kent
Cascade Rd	Segwun Ave—County line	KCRC–Lowell Twp	Resurface existing roadway and remove bridge by 2014	Preservation	1.75	Kent
Cherry St	Market—Grandville	City of Grand Rapids	Resurface existing roadway by 2011	Preservation	0.12	Kent
Clyde Park Ave	60th St—68th St	KCRC–Byron Twp	Resurface existing roadway by 2011	Preservation	1.00	Kent
Clyde Park Ave	28th St—54th St	City of Wyoming	Resurface existing roadway by 2012	Preservation	3.25	Kent
Clyde Park Ave	76th St—84th St	KCRC–Byron Twp	Resurface existing roadway by 2012	Preservation	1.00	Kent
Clyde Park Ave	0.1 mi N of 76th St—0.1 mi S of 68th St	KCRC–Byron Twp	Reconstruct and Add Center Turn Lane (2-3) by 2012	Widen	0.80	Kent
Coit Ave	Kendalwood Dr—North Park St	City of Grand Rapids	Rotomill/resurface existing roadway by 2011	Preservation	0.17	Kent
Division Ave	44th St—54th St	City of Wyoming	Resurface existing roadway by 2013	Preservation	1.25	Kent
Division Ave	54th St—60th St	City of Kentwood	Reconstruct and partial blvd. by 2014 (AC)	Widen	0.75	Kent
East Paris Ave	44th St—Barden Dr	City of Kentwood	Reconstruct existing roadway by 2014	Preservation	0.66	Kent
East Paris Ave	Cascade Rd—City limit	KCRC–Grand Rapids Twp	Resurface existing roadway by 2014	Preservation	0.50	Kent
Elmridge Dr	3 Mile Rd—South city limit	City of Walker	Reconstruct existing roadway by 2012	Preservation	0.59	Kent
Forest Hill Ave	I-96—Burton St	City of Kentwood	Reconstruct and add turn lanes and curb and gutter by 2011 (AC)	Preservation	0.54	Kent
Forest Hill Ave	I-96—North City Limit	City of Kentwood	Reconstruct and add turn lanes and curb and gutter by 2011 (AC)	Preservation	0.92	Kent
Forest Hill Ave	Cascade Rd—Ada Dr	KCRC–Ada Twp	Resurface existing roadway by 2011	Preservation	0.25	Kent
Forest Hill Ave	Kentwood city limit—Cascade Rd	KCRC–Grand Rapids Twp	Reconstruct and Add Center Turn Lane (2-3) by 2011	Widen	0.35	Kent
Forest Hill Ave	Ada Dr—M-21/E Fulton Ave	KCRC–Grand Rapids Twp	Reconstruct and Add Center Turn Lane (2-3) by 2012	Widen	1.05	Kent
Highland Dr	32nd Ave—Creek View Dr	City of Hudsonville	Resurface existing roadway by 2013	Preservation	0.63	Ottawa
Ivanrest Ave	North city limit—56th St	City of Wyoming	Resurface existing roadway by 2013	Preservation	1.00	Kent
Kraft Ave	52nd St—60th St	KCRC–Cascade Twp	Resurface and reconstruct existing roadway by 2013	Preservation	1.00	Kent
Lake Dr	M-37/East Beltline Ave—East city limit	City of Grand Rapids	Rotomill/resurface existing roadway by 2014	Preservation	0.25	Kent
Lake Michigan Dr	Garfield Ave—US-131	City of Grand Rapids	Rotomill/resurface existing roadway by 2014	Preservation	1.06	Kent
Lakeside Dr	Greenwood Dr—Wealthy St	City of East Grand Rapids	Reconstruct existing roadway by 2014	Preservation	0.36	Kent
Leonard St	Ball Ave—Plymouth Ave	City of Grand Rapids	Resurface existing roadway by 2013	Preservation	0.25	Kent
Leonard St	I-96 WB Ramps—M-44/East Beltline Ave	City of Grand Rapids	Resurface existing roadway by 2013	Preservation	0.63	Kent
Leonard St	Plymouth Ave—Maryland Ave	City of Grand Rapids	Resurface existing roadway by 2013	Preservation	0.74	Kent
Leonard St	24th Ave—Kenowa Ave	OCRC–Tallmadge Twp	Resurface existing roadway by 2013	Preservation	3.40	Ottawa
Lincoln Lake Ave	McPherson St—3 Mile Rd	KCRC–Vergennes Twp	Resurface existing roadway by 2011	Preservation	2.00	Kent
M-11/28th St	M-37/East Beltline Ave—I-96	MDOT	Mill, joints, resurface and concrete reconstruction by 2011	Preservation	0.00	Kent
Monroe Ave	Ottawa Ave—Leonard	City of Grand Rapids	Resurface existing roadway by 2011	Preservation	0.25	Kent
Monroe Ave	Knapp St—North Park St	City of Grand Rapids	Resurface existing roadway by 2013	Preservation	1.69	Kent
Northland Dr	Indian Lakes Rd—South St	KCRC–Algoma Twp	Reconstruct and Add Center Turn Lane (2-3) - Access Management by 2013	Widen	1.20	Kent
Pettis Ave	Knapp St—Egypt Valley Ave	KCRC–Ada Twp	Resurface existing roadway by 2012	Preservation	2.38	Kent
Plainfield Ave	3 Mile Rd—I-96	City of Grand Rapids	Resurface existing roadway by 2012	Preservation	0.60	Kent
Plainfield Ave	US-131BR/Leonard St—Ann St	City of Grand Rapids	Resurface existing roadway by 2012	Preservation	0.85	Kent
Remembrance Rd	Leonard St—Walker Village Dr	City of Walker	Resurface and reconstruct existing roadway by 2014	Preservation	0.48	Kent
Richmond St	Alpine Ave—Scribner Ave	City of Grand Rapids	Rotomill/resurface existing roadway by 2014	Preservation	0.58	Kent
Rivertown Pkwy	Wilson Ave—Canal Ave	City of Grandville	Resurface existing roadway by 2012	Preservation	0.44	Kent
Sparta Ave	M-37—12 Mile Rd	KCRC–Sparta Twp	Resurface existing roadway by 2011	Preservation	1.45	Kent
Turner Ave	Ann St—US-131 SB Ramps	City of Grand Rapids	Rotomill/resurface existing roadway by 2014	Preservation	0.27	Kent
US-131	I-196—Ann St	MDOT	Replace Freeway Lighting	Preservation	0.00	Kent
US-131 NB	US-131BR/Leonard St—Ann St	MDOT	Add NB and SB weave/merge lanes by 2011	Widen	0.50	Kent
West River Dr	Rogue River bridge—M-44/Northland Dr	KCRC–Plainfield Twp	Reconstruct and Add Center Turn Lane (4-5) by 2011	Widen	0.75	Kent
Knapp St	at Grand River Dr	KCRC–Ada Twp	Add turn lanes at the intersection by 2013	Widen	0.10	Kent
M-11/28th St	at Ivanrest & Byron Center Aves	MDOT	Intersection reconstruction by 2013	Preservation	0.00	Kent
2015-2018						
3 Mile Rd	West of Walker Ave—Indian Mill Creek	City of Walker	Widen to 4 lanes with RR bridge improvement	Widen	0.35	Kent
32nd Ave	Quincy St—City limit	OCRC–Jamestown Twp	Reconstruct and widen to 5 lanes (Comm. Dev) by 2018 (3-5)	Widen	0.14	Ottawa
Burton St	Spaulding Ave—Patterson Ave	KCRC–Cascade Twp	Reconstruct and Add Center Turn Lane (2-3) (Constrained by I-96 Overpass)	Widen	0.50	Kent
College Ave	I-196—Leonard St	City of Grand Rapids	Reconfigure within Existing ROW to 3 lanes - Enhance Transit Capacity (2-3)	Widen	0.89	Kent
Lake Dr	Fuller Ave—Carleton Ave	City of Grand Rapids	Reconfigure within Existing ROW to 3 lanes - Enhance Transit Capacity (2-3)	Widen	0.21	Kent
Lake Michigan Dr	US-131—Garfield Ave	City of Grand Rapids	Reconfigure within Existing ROW to 3 lanes - Enhance Transit Capacity (2-3)	Widen	1.06	Kent
Leonard St	Plainfield Ave—Diamond Ave	City of Grand Rapids	Reconfigure within Existing ROW to 3 lanes (2-3)	Widen	1.14	Kent
Leonard St	Plainfield Ave—Diamond Ave	City of Grand Rapids	Reconfigure within Existing ROW to 3 lanes (2-3)	Widen	1.14	Kent
Leonard St	Plainfield Ave—Diamond Ave	City of Grand Rapids	Reconfigure within Existing ROW to 3 lanes (2-3)	Widen	1.14	Kent
US-131 SB	US-131BR/Leonard St—Ann St	MDOT	Add NB and SB weave/merge lanes by 2011	Widen	0.50	Kent
I-196	WB over the Grand River—US-131	MDOT	Extend WB to SB off ramp to complete US-131 to Fuller Avenue segment by 2015	Widen	0.25	Kent
I-196	Fuller Ave—I-96	MDOT	Rehabilitation of exiting road and bridges by 2018	Preservation	2.00	Kent
2019-2025						
48th Ave	Pierce St—M-45/Lake Mich. Dr	OCRC–Allendale Twp	Reconstruct to continuous 3 lanes with Non-Motorized Lanes (2-3)	Widen	1.01	Ottawa
56th St	Ivanrest Ave—Byron Center Ave	City of Wyoming	Reconstruct and Add Center Turn Lane (2-3)	Widen	1.00	Kent
68th Ave	M-45/Lake Mich. Dr—Warner St	OCRC–Allendale Twp	Reconstruct and Add Center Turn Lane (2-3)	Widen	1.51	Ottawa
68th Ave	Warner Ave—Leonard St	OCRC–Allendale Twp	Reconstruct and Add Center Turn Lane (2-3)	Widen	1.55	Ottawa
Bridge St	Covell Ave—Lake Michigan Dr	City of Grand Rapids	Reconfigure within Existing ROW to 3 lanes (2-3)	Widen	0.08	Kent
Bridge St	Mount Vernon Ave—Straight Ave	City of Grand Rapids	Reconfigure within Existing ROW to 3 lanes (2-3)	Widen	0.44	Kent
Fuller Ave	Lake Dr—Fulton St	City of Grand Rapids	Reconfigure within Existing ROW to 3 lanes (2-3)	Widen	0.30	Kent
I-196	Fuller Ave—I-96	MDOT	Preserve and widen from 2 to 3 lanes in each direction, add weave merge lanes by 2025	Widen/Preserve	2.00	Kent
Lake Dr	Carleton Ave—City limit	City of Grand Rapids	Reconfigure within Existing ROW to 3 lanes - Enhance Transit Capacity (2-3)	Widen	0.37	Kent
M-44/M-37/East Beltline	Knapp St—M-21/E Fulton Ave	MDOT	Preserve and widen from 2 to 3 lanes in each direction by 2020	Widen/Preserve	2.50	Kent
Spaulding Ave	Ada Dr—Cascade Rd	KCRC–Ada Twp	Reconstruct and Add Center Turn Lane (2-3)	Widen	0.45	Kent
Walker Ave	North Ridge Dr—4 Mile Rd	City of Walker	Reconstruct and Add Center Turn Lane (2-3)	Widen	0.32	Kent
2026-2035						
I-96	Leonard St—Cascade Rd	MDOT	Operational improvements; add ramps, collector distributor lanes with I-96/I-196 interchange, and widen per the EA and LRTP projects by 2030	Widen/Preserve	3.75	Kent

Environmental Mitigation Map - Wetlands

GVMC 2035 Long Range Transportation Plan

Projects were Overlaid on Wetlands to Determine Possible Known Impacts



Map 30 – Environmental Mitigation Map: Wetlands

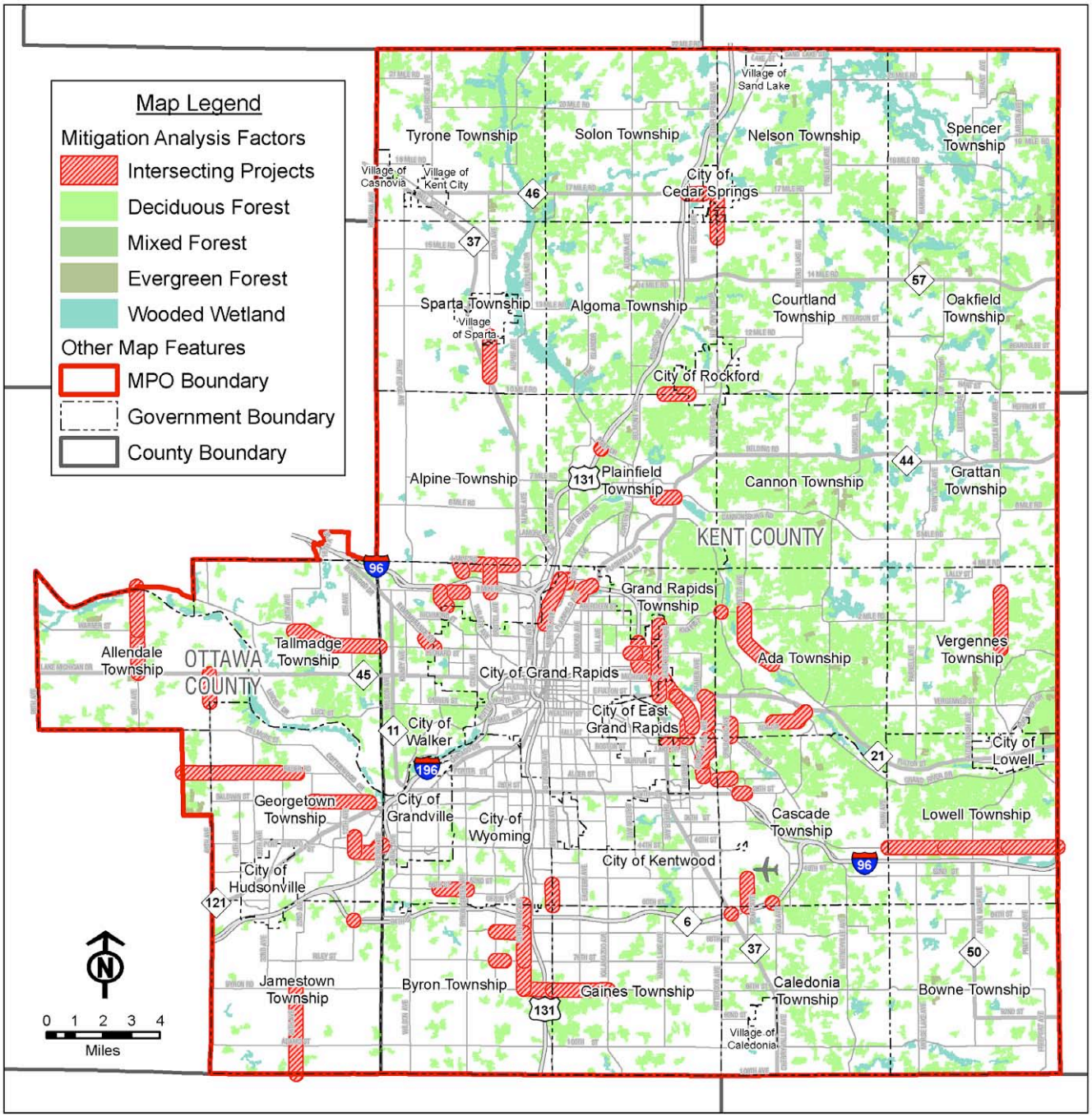
Environmental Mitigation Flagged Projects: Wetlands

Project	From—To	Jurisdiction	Possible Alternative	Project Type	Length	County
2011-2014						
10 Mile Rd	West of Wolven—Chilsdale Ave	KCRC–Algoma Twp	Reconstruct and widen to 5 lanes (2-5) by 2011	Widen	1.29	Kent
12th Ave	Port Sheldon St—Baldwin St	OCRC–Georgetown Twp	Resurface existing roadway by 2011	Preservation	1.28	Ottawa
17 Mile Rd	US-131 Ramps—West St	KCRC–Solon Twp	Resurface existing roadway by 2012	Preservation	0.60	Kent
A-37/24th St	Byron Rd—Ottogan St	OCRC–Jamestown Twp	Resurface existing roadway by 2011	Preservation	3.00	Ottawa
28th St	Kraft Ave—I-96 Ramps	KCRC–Cascade Twp	Resurface existing roadway by 2014	Preservation	0.30	Kent
32nd Ave	M-121/Chicago Dr—Highland Dr	City of Hudsonville	Resurface existing roadway by 2012	Preservation	1.23	Ottawa
4 Mile Rd	Walker Ave—Old Orchard Ave	KCRC–Alpine Twp	Reconstruct and Add Center Turn Lane (2-3) by 2014	Widen	1.90	Kent
44th St	8th Ave—Kenowa Ave	OCRC–Georgetown Twp	Rotomill/resurface existing roadway by 2014	Preservation	1.00	Ottawa
54th St	Clyde Park Ave—Division Ave	City of Wyoming	Resurface existing roadway by 2012	Preservation	1.00	Kent
68th St	Clyde Park Ave—Burlingame Ave	KCRC–Byron Twp	Resurface existing roadway by 2014	Preservation	1.00	Kent
76th St	Sierrafield Dr—Burlingame Ave	KCRC–Byron Twp	Resurface existing roadway by 2013	Preservation	0.31	Kent
84th St	Clyde Park Ave—Division Ave	KCRC–Byron Twp	Resurface existing roadway by 2012	Preservation	1.00	Kent
84th St	Division Ave—Kalamazoo Ave	KCRC–Gaines Twp	Resurface existing roadway by 2014	Preservation	2.00	Kent
8th Ave	Port Sheldon St—44th St	OCRC–Georgetown Twp	Reconstruct and Add Center Turn Lane (2-3) by 2011	Preservation	0.54	Ottawa
Ada Dr	Fox Hollow Ave—Thornapple River Dr	KCRC–Grand Rapids Twp	Resurface existing roadway by 2011	Preservation	1.31	Kent
Baldwin St	20th Ave—Cottonwood Dr	OCRC–Georgetown Twp	Resurface existing roadway by 2013	Preservation	2.00	Ottawa
Ball Creek Rd	NW village limit—Rusco St	Village of Kent City	Resurface existing roadway by 2014	Preservation	1.22	Kent
Bauer Rd	56th Ave—24th Ave	OCRC–Georgetown Twp	Resurface existing roadway by 2012	Preservation	4.00	Ottawa
Bauer Rd	24th Ave—Cottonwood Dr	OCRC–Georgetown Twp	Resurface existing roadway by 2014	Preservation	1.50	Ottawa
Breton Ave	28th St—Burton St	City of Grand Rapids	Resurface existing roadway by 2011	Preservation	1.00	Kent
Bristol Ave	4 Mile Rd—3 Mile Rd	City of Walker	Resurface existing roadway by 2011	Preservation	0.98	Kent
Buchanan Ave	Alger St—Burton St	City of Grand Rapids	Rotomill/resurface existing roadway by 2014	Preservation	0.49	Kent
Canal Ave	Chicago Dr—44th St	City of Grandville	Resurface existing roadway by 2014	Preservation	1.50	Kent
Carlton Ave	Lake Dr—Fulton St	City of Grand Rapids	Rotomill/resurface existing roadway by 2014	Preservation	0.35	Kent
Cascade Rd	Snow Ave—Timpson Ave	KCRC–Lowell Twp	Resurface existing roadway by 2012	Preservation	2.00	Kent
Cascade Rd	Timpson Ave—Segwun Ave	KCRC–Lowell Twp	Resurface existing roadway by 2013	Preservation	2.25	Kent
Cascade Rd	Segwun Ave—County line	KCRC–Lowell Twp	Resurface existing roadway and remove bridge by 2014	Preservation	1.75	Kent
Cherry St	Market Ave—Grandville Ave	City of Grand Rapids	Resurface existing roadway by 2011	Preservation	0.12	Kent
Clyde Park Ave	60th St—68th St	KCRC–Byron Twp	Resurface existing roadway by 2011	Preservation	1.00	Kent
Clyde Park Ave	28th St—54th St	City of Wyoming	Resurface existing roadway by 2012	Preservation	3.25	Kent
Clyde Park Ave	76th St—84th St	KCRC–Byron Twp	Resurface existing roadway by 2012	Preservation	1.00	Kent
Clyde Park Ave	0.1 mi N of 76th St—0.1 mi S of 68th St	KCRC–Byron Twp	Reconstruct and Add Center Turn Lane (2-3) by 2012	Widen	0.80	Kent
Coit Ave	Kendalwood Ave—North Park St	City of Grand Rapids	Rotomill/resurface existing roadway by 2011	Preservation	0.17	Kent
Division Ave	54th St—60th St	City of Kentwood	Reconstruct and partial blvd. by 2014 (AC)	Widen	0.75	Kent
East Paris Ave	44th St—Barden Dr	City of Kentwood	Reconstruct existing roadway by 2014	Preservation	0.66	Kent
East Paris Ave	Cascade Rd—Kentwood city limit	KCRC–Grand Rapids Twp	Resurface existing roadway by 2014	Preservation	0.50	Kent
Elmridge Dr	3 Mile Rd—South city limit	City of Walker	Reconstruct existing roadway by 2012	Preservation	0.59	Kent
Forest Hill Ave	I-96—Burton St	City of Kentwood	Reconstruct and add turn lanes and curb and gutter by 2011 (AC)	Preservation	0.54	Kent
Forest Hill Ave	I-96—North city limit	City of Kentwood	Reconstruct and add turn lanes and curb and gutter by 2011 (AC)	Preservation	0.92	Kent
Forest Hill Ave	Kentwood city limit—Cascade	KCRC–Grand Rapids Twp	Reconstruct and Add Center Turn Lane (2-3) by 2011	Widen	0.35	Kent
Forest Hill Ave	Ada Dr—M-21/E Fulton St	KCRC–Grand Rapids Twp	Reconstruct and Add Center Turn Lane (2-3) by 2012	Widen	1.05	Kent
Highland Dr	32nd Ave—Creek View Dr	City of Hudsonville	Resurface existing roadway by 2013	Preservation	0.63	Ottawa
Ivanrest Ave	North city limit—56th St	City of Wyoming	Resurface existing roadway by 2013	Preservation	1.00	Kent
Kraft Ave	52nd St—60th St	KCRC–Cascade Twp	Resurface and reconstruct existing roadway by 2013	Preservation	1.00	Kent
Lake Dr	East Beltline—East city limit	City of Grand Rapids	Rotomill/resurface existing roadway by 2014	Preservation	0.25	Kent
Lake Michigan Dr	Garfield Ave—US-131	City of Grand Rapids	Rotomill/resurface existing roadway by 2014	Preservation	1.06	Kent
Lakeside Dr	Greenwood Dr—Wealthy St	City of East Grand Rapids	Reconstruct existing roadway by 2014	Preservation	0.36	Kent
Leonard St	I-96 EB Ramps—I-96 WB Ramps	City of Grand Rapids	Resurface existing roadway by 2013	Preservation	0.20	Kent
Leonard St	I-96 WB Ramps—M-44/East Beltline Ave	City of Grand Rapids	Resurface existing roadway by 2013	Preservation	0.63	Kent
Leonard St	Maryland Ave—I-96 EB Ramps	City of Grand Rapids	Resurface existing roadway by 2013	Preservation	0.20	Kent
Leonard St	Plymouth Ave—Maryland Ave	City of Grand Rapids	Resurface existing roadway by 2013	Preservation	0.74	Kent
Leonard St	24th Ave—Kenowa Ave	OCRC–Tallmadge Twp	Resurface existing roadway by 2013	Preservation	3.40	Ottawa
Lincoln Lake Ave	McPherson St—3 Mile Rd	KCRC–Vergennes Twp	Resurface existing roadway by 2011	Preservation	2.00	Kent
M-11/28th St	M-37/East Beltline Ave—I-96	MDOT	Mill, joints, resurface and concrete reconstruction by 2011	Preservation	0.00	Kent
Monroe Ave	Ottawa Ave—US-131BR/Leonard St	City of Grand Rapids	Resurface existing roadway by 2011	Preservation	0.25	Kent
Monroe Ave	Knapp St—North Park St	City of Grand Rapids	Resurface existing roadway by 2013	Preservation	1.69	Kent
Northland Dr	Indian Lakes Rd—South St	KCRC–Algoma Twp	Reconstruct and Add Center Turn Lane (2-3) - Access Management by 2013	Widen	1.20	Kent
Pettis Ave	Knapp St—Egypt Valley Ave	KCRC–Ada Twp	Resurface existing roadway by 2012	Preservation	2.38	Kent
Plainfield Ave	3 Mile Rd—I-96	City of Grand Rapids	Resurface existing roadway by 2012	Preservation	0.60	Kent
Plainfield Ave	US-131BR/Leonard St—Ann St	City of Grand Rapids	Resurface existing roadway by 2012	Preservation	0.85	Kent
Remembrance Rd	Leonard St—Walker Village Dr	City of Walker	Resurface and reconstruct existing roadway by 2014	Preservation	0.48	Kent
Richmond St	Alpine Ave—Scribner Ave	City of Grand Rapids	Rotomill/resurface existing roadway by 2014	Preservation	0.58	Kent
Rivertown Pkwy	Wilson Ave—Canal Ave	City of Grandville	Resurface existing roadway by 2012	Preservation	0.44	Kent
Sparta Ave	M-37—12 Mile Rd	KCRC–Sparta Twp	Resurface existing roadway by 2011	Preservation	1.45	Kent
Turner Ave	Ann St—US-131 SB Ramps	City of Grand Rapids	Rotomill/resurface existing roadway by 2014	Preservation	0.27	Kent
US-131	I-196—Ann St	MDOT	Replace Freeway Lighting	Preservation	0.00	Kent
US-131 NB	US-131BR/Leonard St—Ann St	MDOT	Add NB and SB weave/merge lanes by 2011	Widen	0.50	Kent
West River Dr	Rogue River bridge—M-44/Northland Dr	KCRC–Plainfield Twp	Reconstruct and Add Center Turn Lane (4-5) by 2011	Widen	0.75	Kent
I-96	under M-50/Alden Nash Ave	MDOT	Bridge replacement preliminary engineering by 2011	Preservation	0.00	Kent
Knapp St	at Grand River Dr	KCRC–Ada Twp	Add turn lanes at the intersection by 2013	Widen	0.10	Kent
M-11	at Ivanrest & Byron Center Aves	MDOT	Intersection reconstruction by 2013	Preservation	0.00	Kent
M-6	at M-37/Broadmoor Ave and 60th St	MDOT	Crack sealing by 2011	Preservation	0.00	Kent
M-6	at 8th Ave NE quadrant	MDOT	Crack sealing by 2011	Preservation	0.00	Ottawa
2015-2018						
3 Mile Rd	West of Walker Ave—Indian Mill Creek	City of Walker	Widen to 4 lanes with RR bridge improvement	Widen	0.35	Kent
Burton St	Spaulding Ave—Patterson Ave	KCRC–Cascade Twp	Reconstruct and Add Center Turn Lane (2-3) (Constrained by I-96 Overpass)	Widen	0.50	Kent
Lake Michigan Dr	US-131—Garfield Ave	City of Grand Rapids	Reconfigure within Existing ROW to 3 lanes - Enhance Transit Capacity (2-3)	Widen	1.06	Kent
Leonard St	Plainfield Ave—Diamond Ave	City of Grand Rapids	Reconfigure within Existing ROW to 3 lanes (2-3)	Widen	1.14	Kent
US-131 SB	US-131BR/Leonard St—Ann St	MDOT	Add NB and SB weave/merge lanes by 2011	Widen	0.50	Kent
I-196	WB over the Grand River—US-131	MDOT	Extend WB to SB off ramp to complete US-131 to Fuller Avenue segment by 2015	Widen	0.25	Kent
I-196	Fuller Ave—I-96	MDOT	Rehabilitation of exiting road and bridges by 2018	Preservation	2.00	Kent
2019-2025						
48th Ave	Pierce St—M-45/Lake Mich. Dr	OCRC–Allendale Twp	Reconstruct to continuous 3 lanes with Non-Motorized Lanes (2-3)	Widen	1.01	Ottawa
56th St	Ivanrest Ave—Byron Center Ave	City of Wyoming	Reconstruct and Add Center Turn Lane (2-3)	Widen	1.00	Kent
68th Ave	M-45/Lake Mich. Dr—Warner St	OCRC–Allendale Twp	Reconstruct and Add Center Turn Lane (2-3)	Widen	1.51	Ottawa
68th Ave	Warner Ave—Leonard St	OCRC–Allendale Twp	Reconstruct and Add Center Turn Lane (2-3)	Widen	1.55	Ottawa
Bridge St	Mount Vernon Ave—Straight Ave	City of Grand Rapids	Reconfigure within Existing ROW to 3 lanes (2-3)	Widen	0.44	Kent
I-196	Fuller Ave—I-96	MDOT	Preserve and widen from 2 to 3 lanes in each direction, add weave merge lanes by 2025	Widen/Preserve	2.00	Kent
Lake Dr	Carleton Ave—City limit	City of Grand Rapids	Reconfigure within Existing ROW to 3 lanes - Enhance Transit Capacity (2-3)	Widen	0.37	Kent
M-44/M-37/East Beltline	Knapp St—M-21/E Fulton St	MDOT	Preserve and widen from 2 to 3 lanes in each direction by 2020	Widen/Preserve	2.50	Kent
Spaulding Ave	Ada Dr—Cascade Rd	KCRC–Ada Twp	Reconstruct and Add Center Turn Lane (2-3)	Widen	0.45	Kent
Walker Ave	North Ridge Dr—4 Mile Rd	City of Walker	Reconstruct and Add Center Turn Lane (2-3)	Widen	0.32	Kent
I-96	at M-21/E Fulton St	MDOT	Add additional ramps by 2020	Widen	0.25	Kent
2026-2035						
I-96	Leonard St—Cascade Rd	MDOT	Operational improvements; add ramps, collector distributor lanes with I-96/I-196 interchange, and widen per the EA and LRTP projects by 2030	Widen/Preserve	3.75	Kent

Environmental Mitigation Map - Woodlands

GVMC 2035 Long Range Transportation Plan

Projects were Overlaid on Woodlands to Determine Possible Known Impacts



Map 31 – Environmental Mitigation Map: Woodlands

Environmental Mitigation Flagged Projects: Woodlands

Project	From—To	Jurisdiction	Possible Alternative	Project Type	Length	County
2011-2014						
A-37/24th St	Byron Rd—Ottogan St	OCRC–Jamestown Twp	Resurface existing roadway by 2011	Preservation	3.00	Ottawa
44th St	8th Ave—Kenowa Ave	OCRC–Georgetown Twp	Rotomill/resurface existing roadway by 2014	Preservation	1.00	Ottawa
8th Ave	Port Sheldon St—44th St	OCRC–Georgetown Twp	Reconstruct and Add Center Turn Lane (2-3) by 2011	Preservation	0.54	Ottawa
Baldwin St	20th Ave—Cottonwood Dr	OCRC–Georgetown Twp	Resurface existing roadway by 2013	Preservation	2.00	Ottawa
Bauer Rd	56th Ave—24th Ave	OCRC–Georgetown Twp	Resurface existing roadway by 2012	Preservation	4.00	Ottawa
Leonard St	24th Ave—Kenowa Ave	OCRC–Tallmadge Twp	Resurface existing roadway by 2013	Preservation	3.40	Ottawa
M-6	at 8th Ave NE quadrant	MDOT	Crack sealing by 2011	Preservation	0.00	Ottawa
10 Mile Rd	West of Wolven Ave—Chilsdale Ave	KCRC–Algoma Twp	Reconstruct and widen to 5 lanes (2-5) by 2011	Widen	1.29	Kent
17 Mile Rd	US-131 Ramps—West St	KCRC–Solon Twp	Resurface existing roadway by 2012	Preservation	0.60	Kent
28th St	Kraft Ave—I-96 Ramps	KCRC–Cascade Twp	Resurface existing roadway by 2014	Preservation	0.30	Kent
4 Mile Rd	Walker Ave—Old Orchard Ave	KCRC–Alpine Twp	Reconstruct and Add Center Turn Lane (2-3) by 2014	Widen	1.90	Kent
68th St	Clyde Park Ave—Burlingame Ave	KCRC–Byron Twp	Resurface existing roadway by 2014	Preservation	1.00	Kent
76th St	Sierrafield Dr—Burlingame Ave	KCRC–Byron Twp	Resurface existing roadway by 2013	Preservation	0.31	Kent
84th St	Clyde Park Ave—Division Ave	KCRC–Byron Twp	Resurface existing roadway by 2012	Preservation	1.00	Kent
84th St	Division Ave—Kalamazoo Ave	KCRC–Gaines Twp	Resurface existing roadway by 2014	Preservation	2.00	Kent
Ada Dr	Fox Hollow Ave—Thornapple River Dr	KCRC–Grand Rapids Twp	Resurface existing roadway by 2011	Preservation	1.31	Kent
Bristol Ave	4 Mile Rd—3 Mile Rd	City of Walker	Resurface existing roadway by 2011	Preservation	0.98	Kent
Cascade Rd	Snow Ave—Timpson Ave	KCRC–Lowell Twp	Resurface existing roadway by 2012	Preservation	2.00	Kent
Cascade Rd	Timpson Ave—Segwun Ave	KCRC–Lowell Twp	Resurface existing roadway by 2013	Preservation	2.25	Kent
Cascade Rd	Segwun Ave—County line	KCRC–Lowell Twp	Resurface existing roadway and remove bridge by 2014	Preservation	1.75	Kent
Clyde Park Ave	60th St—68th St	KCRC–Byron Twp	Resurface existing roadway by 2011	Preservation	1.00	Kent
Clyde Park Ave	76th St—84th St	KCRC–Byron Twp	Resurface existing roadway by 2012	Preservation	1.00	Kent
Clyde Park Ave	0.1 mi N of 76th St—0.1 mi S of 68th St	KCRC–Byron Twp	Reconstruct and Add Center Turn Lane (2-3) by 2012	Widen	0.80	Kent
Coit Ave	Kendalwood Dr—North Park St	City of Grand Rapids	Rotomill/resurface existing roadway by 2011	Preservation	0.17	Kent
Division Ave	54th St—60th St	City of Kentwood	Reconstruct and partial blvd. by 2014 (AC)	Widen	0.75	Kent
East Paris Ave	Cascade Rd—Kentwood city limit	KCRC–Grand Rapids Twp	Resurface existing roadway by 2014	Preservation	0.50	Kent
Elmridge Dr	3 Mile Rd—South city limit	City of Walker	Reconstruct existing roadway by 2012	Preservation	0.59	Kent
Forest Hill Ave	I-96—Burton St	City of Kentwood	Reconstruct and add turn lanes and curb and gutter by 2011 (AC)	Preservation	0.54	Kent
Forest Hill Ave	I-96—North city limit	City of Kentwood	Reconstruct and add turn lanes and curb and gutter by 2011 (AC)	Preservation	0.92	Kent
Forest Hill Ave	Ada Dr—M-21/E Fulton St	KCRC–Grand Rapids Twp	Reconstruct and Add Center Turn Lane (2-3) by 2012	Widen	1.05	Kent
Kraft Ave	52nd St—60th St	KCRC–Cascade Twp	Resurface and reconstruct existing roadway by 2013	Preservation	1.00	Kent
Lake Dr	M-37/East Beltline Ave—East City Limit	City of Grand Rapids	Rotomill/resurface existing roadway by 2014	Preservation	0.25	Kent
Leonard St	I-96 EB Ramps—I-96 WB Ramps	City of Grand Rapids	Resurface existing roadway by 2013	Preservation	0.20	Kent
Leonard St	I-96 WB Ramps—M-44/East Beltline Ave	City of Grand Rapids	Resurface existing roadway by 2013	Preservation	0.63	Kent
Leonard St	Maryland Ave—I-96 EB Ramps	City of Grand Rapids	Resurface existing roadway by 2013	Preservation	0.20	Kent
Lincoln Lake Ave SE	McPherson St—3 Mile Rd	KCRC–Vergennes Twp	Resurface existing roadway by 2011	Preservation	2.00	Kent
Monroe Ave	Knapp St—North Park St	City of Grand Rapids	Resurface existing roadway by 2013	Preservation	1.69	Kent
Northland Dr	Indian Lakes Rd—South St	KCRC–Algoma Twp	Reconstruct and Add Center Turn Lane (2-3) - Access Management by 2013	Widen	1.20	Kent
Pettis Ave	Knapp St—Egypt Valley Ave	KCRC–Ada Twp	Resurface existing roadway by 2012	Preservation	2.38	Kent
Plainfield Ave	3 Mile Rd—I-96	City of Grand Rapids	Resurface existing roadway by 2012	Preservation	0.60	Kent
Remembrance Rd	Leonard St—Walker Village Dr	City of Walker	Resurface and reconstruct existing roadway by 2014	Preservation	0.48	Kent
Sparta Ave	M-37—12 Mile Rd	KCRC–Sparta Twp	Resurface existing roadway by 2011	Preservation	1.45	Kent
West River Dr	Rogue River bridge—M-44/Northland Dr	KCRC–Plainfield Twp	Reconstruct and Add Center Turn Lane (4-5) by 2011	Widen	0.75	Kent
Knapp St	at Grand River Dr	KCRC–Ada Twp	Add turn lanes at the intersection by 2013	Widen	0.10	Kent
M-6	at M-37/Broadmoor Ave and 60th St	MDOT	Crack sealing by 2011	Preservation	0.00	Kent
US-131	at Post Dr	MDOT	Resurface by 2011	Preservation	0.00	Kent
2015-2018						
3 Mile Rd	West of Walker Ave—Indian Mill Creek	City of Walker	Widen to 4 lanes with RR bridge improvement	Widen	0.35	Kent
Burton St	Spaulding Ave—Patterson Ave	KCRC–Cascade Twp	Reconstruct and Add Center Turn Lane (2-3) (Constrained by I-96 Overpass)	Widen	0.50	Kent
2019-2025						
48th Ave	Pierce St—M-45/Lake Mich. Dr	OCRC–Allendale Twp	Reconstruct to continuous 3 lanes with Non-Motorized Lanes (2-3)	Widen	1.01	Ottawa
68th Ave	M-45/Lake Mich. Dr—Warner St	OCRC–Allendale Twp	Reconstruct and Add Center Turn Lane (2-3)	Widen	1.51	Ottawa
68th Ave	Warner Ave—Leonard St	OCRC–Allendale Twp	Reconstruct and Add Center Turn Lane (2-3)	Widen	1.55	Ottawa
56th St	Ivanrest Ave—Byron Center Ave	City of Wyoming	Reconstruct and Add Center Turn Lane (2-3)	Widen	1.00	Kent
M-44/M-37/East Beltline	Knapp St—M-21/E Fulton St	MDOT	Preserve and widen from 2 to 3 lanes in each direction by 2020	Widen/Preserve	2.50	Kent
Spaulding Ave	Ada Dr—Cascade Rd	KCRC–Ada Twp	Reconstruct and Add Center Turn Lane (2-3)	Widen	0.45	Kent
Walker Ave	North Ridge Dr—4 Mile Rd	City of Walker	Reconstruct and Add Center Turn Lane (2-3)	Widen	0.32	Kent
I-96	at M-21/E Fulton St	MDOT	Add additional ramps by 2020	Widen	0.25	Kent
2026-2035						
I-96	Leonard St—Cascade Rd	MDOT	Operational improvements; add ramps, collector distributor lanes with I-96/I-196 interchange, and widen per the EA and LRTP projects by 2030	Widen/Preserve	3.75	Kent

Historic Sites and Structures Map is Forthcoming.

Map 32 – Environmental Mitigation Map: Historic Sites and Structures

Environmental Mitigation Flagged Projects: Historic Sites and Structures

Historic Sites and Structures Listing is Forthcoming.