Michigan Department of Transportation

Michigan 2045 Mobility

A transportation plan for a connected future #MM45

MM2045 Executive Summary
Draft for State Transportation Commission, Nov. 4, 2021

Contents

Dear Fellow Michiganders:

The Michigan Department of Transportation (MDOT), with significant support and input from the public and a broad array of associations and business interests across the state, has set an ambitious vision for transportation in Michigan. The Michigan Mobility 2045 (MM2045) state long-range transportation plan presents the state's vision for Michigan's existing and future transportation systems and identifies goals and strategies to guide long-term, multimodal transportation investments for the next 25 years.

Building upon Michigan's long-standing tradition of innovation, the MM2045 plan is the first in the country to combine several federally required planning documents (i.e., freight and rail plans) into one long-range transportation plan. MDOT also initiated the creation of a comprehensive statewide active transportation plan and a statewide transit strategy to align and advance progress for these modes alongside those that are federally required.

A vibrant and sustainable multimodal transportation system is vital to Michigan's future economic viability and competitiveness. It is also essential that Michigan's future transportation network is resilient while continuing to address the safe and easy movement of people and goods throughout the state. I believe all Michiganders can support a robust, reliable, and resilient transportation network. MM2045 lays out how MDOT and transportation agencies throughout Michigan can continue striving toward this vision while positioning the state for inevitable changes across the entire transportation landscape.

MM2045 will provide direction to transportation policymakers for years to come and will provide a framework to build upon as new technologies and new travel preferences shape Michigan transportation. This plan will also help transportation agencies and partners address the many challenges and transformative changes facing the state for years to come.

This plan reflects extensive public and stakeholder engagement with representation and participation from all parts of Michigan. Involvement in this plan was diverse and inclusive of representatives from many backgrounds and interest areas to develop a plan that serves all citizens of the state.

I want to express my sincere appreciation to all the individuals and organizations who contributed to this plan. Working together as one Michigan, we will continue to innovate and improve our state's multimodal transportation systems, ensuring a reliable and safe transportation network for all users.

Very respectfully yours,

Gretchen Whitmer
Governor of Michigan

Dear Michiganders,

MDOT is pleased to deliver Michigan's new state long-range transportation plan, MM2045. MM2045 establishes the long-term direction and vision for the future of Michigan's multimodal transportation network for all users. It is the first step in the planning and program development process, which ultimately provides the strategies that establish transportation investment decisions and projects.

MM2045 is a family of plans that, along with the long-range transportation plan, integrates the components of a state freight plan, a state rail plan, a statewide active transportation plan, and a statewide transit strategy. It has brought together stakeholders, partnering agencies, subject-matter experts, and Michigan residents to develop a forward-thinking vision statement and coordinated goals and strategies that are future-focused and multimodal in nature.

The future of transportation offers many opportunities for new and innovative advancements, utilizing technology and the redefining of multiple modes of transportation that seemed unfathomable 10 years ago. Utilization of on-demand vehicles (e.g., Uber or Lyft), e-bikes, and bus rapid transit has grown and will continue to evolve into the future. MM2045 provides the foundation for Michigan to provide new, pioneering opportunities while continuing to preserve and maintain current infrastructure. It seeks to find a balance between near-term needs while preparing for long-term, technology-based multimodal investments for the next 25 years. The MM2045 vision provides the framework while the goals, objectives and strategies describe how this vision can be achieved.

This plan also provides the foundation for every project that MDOT or other transportation agencies implement to provide safe, timely, and reliable transportation choices. Every project, whether it's a road building project, a transit initiative, a high-speed rail advancement, a freight corridor improvement, or a recreational trail or active transportation pathway can be linked back to the vision, goals, and strategies of MM2045.

Finally, this plan reflects extensive public and stakeholder engagement. People from all 83 counties of the state have participated in providing input on the plan's priorities, vision, and strategies. We strongly thank the citizens of Michigan for their input and involvement in developing this plan and we look forward to working with everyone in the implementation stages of MM2045. All MM2045 documents and supplemental materials may be found on the MM2045 website at www.MichiganMobility.org.

Sincerely,

Paul C. Ajegba, P.E.
Director

Michigan Mobility 2045 (MM2045) Contributors

State Transportation Commission

Todd Wyett, Chairman

Michael D. Hayes, Vice Chair

Stephen F. Adamini

Richard W. Turner

Helen Zeerip

Gregory C. Johnson

MDOT Executive Team

Paul C. Ajegba, P.E., Director

Tony Kratofil, P.E., Chief Operations Officer

Laura J. Mester, C.P.A., Chief Administrative Officer

Terri Slaughter, Chief Culture, Equity, and Inclusion Officer

MM2045 Project Sponsors

Todd White, Director, Bureau of Transportation Planning

David E. Wresinski, Past Director, Bureau of Transportation Planning

Mike Trout, Director, Office of Aeronautics

Jean Ruestman, Administrator, Office of Passenger Transportation

Sharon Edgar, Past Administrator, Office of Passenger Transportation

Brad Wieferich, Director, Bureau of Development

Erick Kind, Region Engineer, Grand Region

Peter Anastor, Director, Office of Rail

Timothy Hoeffner, Past Director, Office of Rail

Craig B. Newell, Administrator, Statewide Transportation Planning Division

Denise B. Jones, Past Administrator, Statewide Transportation Planning Division

Eric Mullen, Administrator, Asset Management and Policy Division

MM2045 Project Management Team

Bradley M. Sharlow, AICP, Project Manager

Kyle Haller, AICP, Deputy Project Manager

Niles Annelin, Assistant Project Manager – Policy and Plan Implementation

Elisha Wulff, Assistant Project Manager – Freight

Sara Moore, Assistant Project Manager – Rail

Joshua DeBruyn, AICP, Assistant Project Manager – Active Transportation

Janet Geissler, Co-Assistant Project Manager – Passenger Transportation

Ellen Kent, Co-Assistant Project Manager – Passenger Transportation

Kelly Travelbee, Assistant Project Manager – Goals/Strategies/ Performance Development

Anu Sikka, Project Support

James Dell, Project Support

Ryan Ellison, Project Support

Pam Sebenick, Project Support

Amara Vogt, Project Support

MM2045 Task Team Leads

Garth Banninga

Margaret Barondess

Richard Bayus

Dan Belcher

Karen Faussett

Michele Fedorowicz, AICP

Jesse Frankovich

Chris Hundt

Kevin McKnight

Monica Monsma

Kyle Nelson

Heidi Phaneuf

Zachary Rable, AICP

Anita Richardson

Timothy Ryan

Administrative Support

Ebony Anderson

Ashley Arras

Janese Bouters

Kristen Halfmann

Suzie Karls

Alicia Morrison

Jana Nicol

MDOT Office of Communications

Courtney Bates

Jeff Cranson

Randy Debler

Tim Fischer

Michael Frezell

Corey Petee

Bill Phillips

Scott Sarka

MDOT Region Planners

Vincent Bevins

Michael Davis

Julie Edwards

Dennis Kent

Tyler Kent

Amy Lipset

Kari Martin

Patty O'Donnell

Steve Redmond

Jay Reithel

Brian Sanada

James Schultz

MM2045 Core Team

Jacob Armour

Bryan Armstrong

James Ashman

Mallory Avis

Kelly Bartlett

Katie Beck

Mike Belligan

Mark Bott

Heather Bowden

Deb Brown

Andy Brush

Bryan Budds

Wendi Burton

Collin Castle

Lina Chapman

Bertha Chester

Steve Cook

Eric Costa

Rebecca Curtis

Hong Dang

Fran Deatrick

John Engle

Andy Esch

Jason Firman

Kris Foondle

Colin Forbes

Edward Fowler

Matthew Galbraith

Mark Geib

Amy Gill

Ryan Gladding

Jason Gutting

Jesse Gwilliams

Maria Habba

David Hartman

Kevin Hohf

Karen Howe

Shun-Chuen Huang

Al Johnson

Kim Johnson

Nikkie Johnson

Dean Kanitz

Michael Kapp

Larry Karnes

Daniela Khavajian

Cindy Krupp

Brandon Lambrix

Todd Lassen

Tracie Leix

Tim Lemon

Rob Lippert

Lisa Lubahn

Robert Maffeo

Tarun Malhotra

Jeff Martin

Amy Matisoff

Steve Minton

Michele Mueller

Eric Mullen

Lee Nederveld

Brad Peterson

Eileen Phifer

Matt Pitlock

Jon Roberts

Susan Rozema

Valerie Schulz

Steve Shaughnessy

Linn Smith

Claire Stevens

James Sturdevant

Roy Taylor

Julie Van Portfliet

Michelle Weber-Currie

MM2045 Stakeholder Team

Craig Atwood – County Road Association, Allegan County Road Commission

Nicole Baumer – Tri-County Regional Planning Commission

Tyler Bevier – Bay Area Transportation Authority

Christopher Bolt – Jackson County Department of Transportation, Transportation Asset Management Council

Ashley Bradshaw – Michigan Department of Health and Human Services

Ron Brenke – American Council of Engineering Companies

J. Thomas Bruff – Southeast Michigan Council of Governments

Andrea Brown – Michigan Association of Planning

Trevor Brydon – Southeast Michigan Council of Governments

Ryan Buck – Washtenaw Area Transportation Study

Vince Carahaly – Michigan Association of Regions, South Central Michigan Planning Commission

Judith-Kay Chase – Michigan Association of Railroad Passengers

Beth Colosimo – Michigan Economic Development Council, Commission for Logistics and Supply Chain Collaboration

Cory Connolly – Michigan Energy Innovation Business Council

Mathew Cooke – Networks Northwest

Michelle Crook – Michigan Department of Natural Resources

Aaron Dawson – Federal Highway Administration

Andrea Dewey – Federal Highway Administration

Will Dyer – Federal Railroad Administration

Andrea Faber – Grand Valley Metropolitan Council

Patricia Fedewa – Michigan Transportation Riders United

Kelley Frake – Michigan Department of Civil Rights

Michael Frederick – Michigan Association of Regions

Suzann Flowers – Washtenaw Area Transportation Study

Karlee Gruetzner – Michigan Department of Civil Rights, Division of Deaf, Deaf-Blind and Hard of Hearing

Karin Gyger – Michigan Department of Insurance and Financial Services

Sean Hammond – Michigan Environmental Council

Clark Harder – Michigan Public Transportation Association

Judson Herzer – Michigan Department of Labor and Economic Opportunity

Elisa Hoekwater – Macatawa Area Transit – MAX Express

Justin Horvath – Shiawassee County Economic Development Partnership

Christina Ignasiak, Federal Highway Administration

Ken Jimkoski – Michigan Association of Transportation Systems (MASSTrans), Huron Transit Corporation

Joanna Johnson – County Road Association, Transportation Asset Management Council

Laurel Joseph – Grand Valley Metropolitan Council

Jamie Junior – Detroit Area Warriors on Wheels

Karen Kafantaris – American Association of Retired Persons

Erin Kuhn – Michigan Association of Regions, West Michigan Shoreline Regional Development Commission

John P. LaMacchia II – Michigan Municipal League

Alayna Lail – Michigan Department of Civil Rights, Division of Deaf, Deaf-Blind and Hard of Hearing

Shawnese Laury – Michigan Bureau of Services for Blind Persons, Michigan Department of Labor and Economic Opportunity

John Lindenmayer – League of Michigan Bicyclists

Joshua Lunger – City of Grand Rapids

Justin Lyons – City of Ferndale

Michelle Martinez – Michigan Environmental Justice Coalition

Matthew McCauley – Networks Northwest

Gary Mekjian – Transportation Asset Management Council

Jessica Moy – Michigan Department of Treasury, Michigan Infrastructure Council

Tim Mroz – The Right Place

Sarah Panken – Michigan Fitness Foundation

Trevor Pawl – Michigan Economic Development Corp.

Andy Pickard – Federal Highway Administration

Jeff Price – Federal Railroad Administration

Tongbin (Teresa) Qu – Michigan State University

Dawn Rodman – Michigan Department of Health and Human Services

Jody Roethle – Shiawassee County Economic Development Partnership

Fred Schlemmer – Alco Transportation, Commission for Logistics and Supply Chain Collaboration

Peter Schwartz – Federal Railroad Administration

Dana Sherry – Gov. Whitmer's Office

Andrew Sibold, Federal Highway Administration

Donald Stypula – Michigan Association of Regions

Jan de la Torre – Michigan Department of Health and Human Services

Carolyn Ulstad – Macatawa Area Coordinating Council

Annie Urasky – Michigan Department of Civil Rights, Division of Deaf, Deaf-Blind and Hard of Hearing

Rachelle VanDeventer – Michigan Infrastructure and Transportation Association

Susan Weber – Federal Transit Administration

Kuilin Zhang – Michigan Technological University

MM2045 Project Consultants

WSP

Todd Davis

Jeanne Stevens

Joe Bryan

Joe Gurskis

Shane Peck

Jared Gulbranson

Eric Hanss

Alex King

Bridget Wieghart

Sophie Cohen

Robin Christians

Kathryn DeForrest

Michael Babin

Allyson Powers

Scudder Smith

Sebastian Guerrero

Shashank Pulikanti

Adam Miliszewski

Dan Silverman

Ben Stupka

Matt Wendling

Michael Flood

Stephanie Brown

High Street

Jeff Carroll

Erin Dean

Peter Hylton

Alice Beattie

EBP

Naomi Stein

Kyle Schroeckenthaler

Stephen Fitzroy

Adam Blair

Wade Trim

Lori Pawlik

Charles Smith

Arthur Mullen

The Prewitt Group

Renee Prewitt

What is MM2045

Why do we need a plan?

Michigan's State Long-Range Transportation Plan (SLRTP), Michigan Mobility 2045 (MM2045), informs the transportation investments that drive Michigan's social and economic prosperity, including MDOT's Five-Year Transportation Program (5YTP) and the statewide, rural and metropolitan transportation improvement programs.

Coordinated investments across Michigan's public roads, bridges, rail corridors, nonmotorized facilities, transit services, ports, and airports are necessary to ensure equitable quality of life over the next 25 years while accounting for the major challenges and opportunities brought by technological innovation, population and economic shifts, climate change, and other significant trends.

MM2045 complements transportation decision-making in Michigan. Alone, MM2045 cannot increase or redistribute transportation funding set by the federal government or the Michigan Legislature. The plan informs transportation stakeholders, elected officials, and the public of investment priorities, needs, and trends that will affect Michigan.

MM2045 establishes a future-oriented, multimodal, integrated framework for transportation agencies throughout the state that:

- **Sets the long-term direction for transforming Michigan's transportation system to meet the state's transportation needs through 2045.**
- **Prepares the system to rise to the urgent challenges of climate change, leverage new technologies, and anticipate changes to Michigan's population and economy.**
- **Promotes multimodal, integrated decision-making to better move people and goods.**
- **Enhances transportation partnerships that overcome jurisdictional challenges.**
- **Identifies the funding, resource, workforce, and data gaps that impede Michigan's ability to maintain and further develop the transportation system.**
- **Increases understanding of the relationships, needs, and challenges of each of the transportation modes and how the transportation system can provide equitable access for all users.**

Planning and Program Development Process

MM2045 represents the first long-range transportation plan for all modes across all of Michigan, with a focus on infrastructure eligible for federal funding.

All Modes

MM2045 integrates all modes and multiple federally required plans into a single document to guide Michigan's long-range transportation vision.

MM2045 is the first SLRTP in the country to fully integrate state freight and rail plans into a unified long-range transportation plan. In addition, MM2045 incorporates Michigan's first statewide active transportation plan and statewide transit strategy alongside goals and investment priorities from the 2017 Michigan Aviation System Plan (MASP).

All of Michigan

MM2045 sets a vision for all parts of Michigan's federal aid-eligible transportation system, not just MDOT assets.

MDOT does not directly control all aspects of the transportation system that Michiganders use every day. More than 600 public agencies, including counties, cities, and villages, are responsible for roads and bridges, while approximately 80 transit providers and many public and private entities provide infrastructure and operations for rail, ports, aviation, and active transportation. MM2045 is a comprehensive "family of plans" that knits together the input and needs of all stakeholders and modes into a cohesive transportation vision for all of Michigan.

Transportation Infrastructure Included in MM2045:

Roads

Michigan's federal-aid system

MDOT-owned:
34,960
lane miles

Locally owned:
92,950
lane miles

Bridges

11,000 plus
bridges more than 20 feet long

Transit

More than 80
transit providers operating local and intercity buses, demand-response services, and ferries

Rail

3,600
miles of private and state-owned freight and passenger rail corridors

Aviation

All airports

18
commercial airports

219
licensed, public-use airports

Ports

More than 30
ports

Trends

What future do we anticipate?

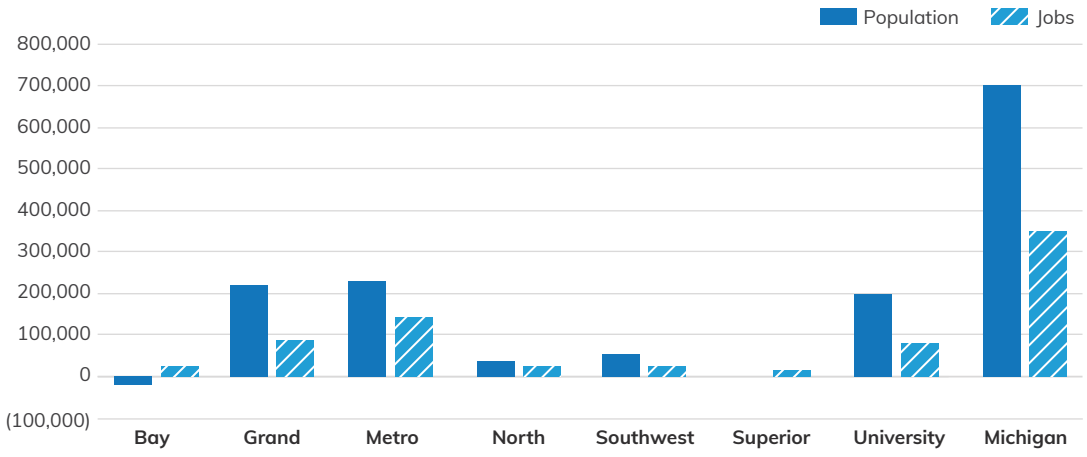
Michigan's population and economy are changing in response to trends that affect travel patterns and demand across all modes of transportation. Population and jobs are projected to grow gradually over the next 25 years and will likely increase demand for travel, particularly in urban areas. An aging population, structural changes in the economy, and the further implementation of new technologies will shape the character of that growth. Importantly, the COVID-19 pandemic has accelerated some of these changes.

Climate change is directly impacting Michigan's public health, environment, economy, and families. Without meaningful investments in resiliency and policies to decarbonize Michigan's transportation system, such impacts will only deepen.

All the signs point to diversification in the way people and goods move around Michigan, and a more complex and precise coordination between the various modes, land uses, and policies is needed to harness the best returns over the long run. Key trends that will impact Michigan through 2045 include:

- **Job and population growth**, particularly in urban areas, will increase travel demand and freight volumes, but congestion will remain low across the state.
- **Non-auto mobility options** will be critical to accommodate demographic change and promote health, equitable access to opportunity, and achieve Michigan's climate goals.
- **Fleet electrification and big data** will increase the need for partnerships and coordination for a seamless transportation experience.
- **The supply chain** and freight transportation will diversify.
- **E-commerce** will heighten consumer expectations of freight reliability.
- **New technologies** like connected and automated vehicles (CAV) and connected infrastructure will positively affect freight movement and passenger travel.
- **Training for the next generation of mobility jobs** will be necessary to avoid disruptions to Michigan's economy.

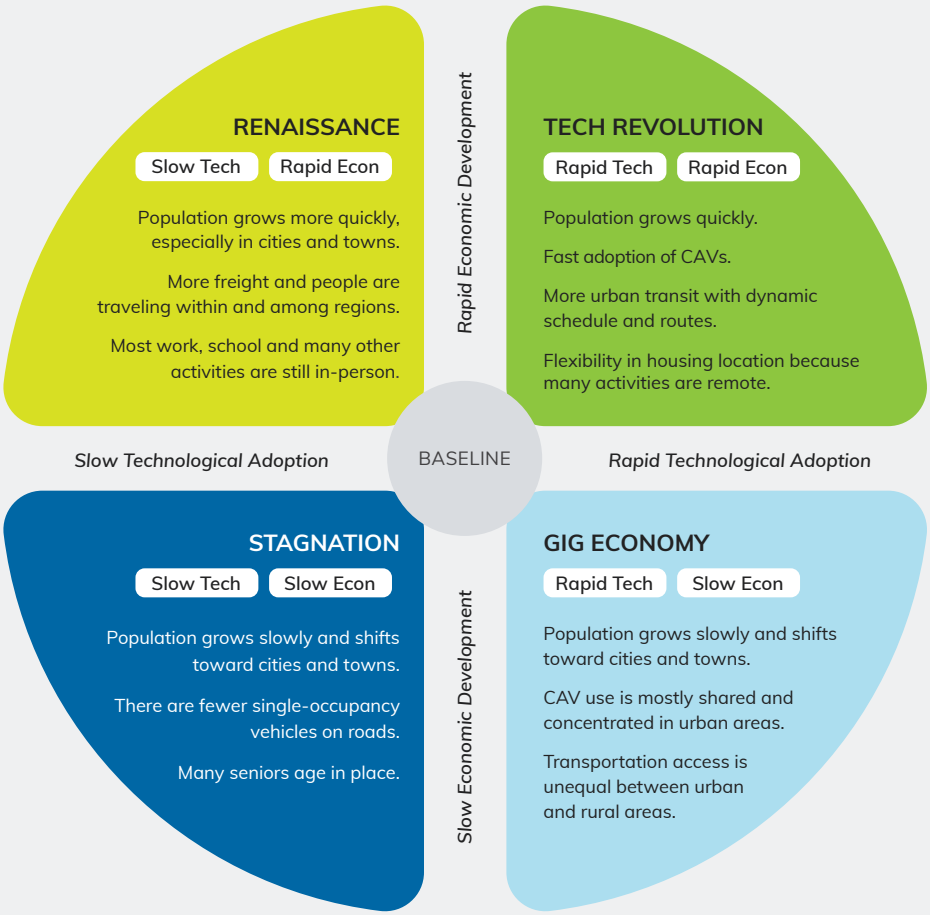
Change in Population and Employment, by Region, 2015-2045



Source: MDOT Statewide Passenger and Freight Travel Demand Model (TDM)

Scenario Planning

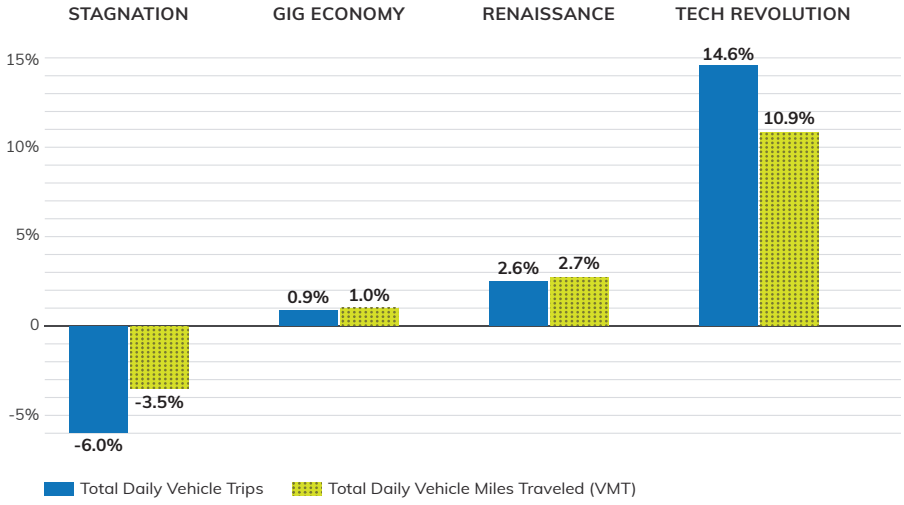
To understand the outcome of potential changes in economic activity and technological adoption, MM2045 modeled four future scenarios: Renaissance, Tech Revolution, Stagnation, and Gig Economy.



High-level findings included:

- At the statewide scale, Michigan's transportation network will be largely uncongested and appears well positioned to handle even significant increases in travel from a strong economy or technological adoption.
- CAV adoption and broad economic changes may have equivalent impacts on vehicle miles traveled (VMT).
- Growth concentrated in urban areas and small cities and towns is less likely to add VMT and congestion to Michigan's roads.
- Widespread adoption of telecommuting substantially higher than pre-pandemic levels could result in significantly less commuter travel.

Changes in Primary Travel Characteristics from Baseline in 2045



Source: MDOT Statewide Passenger and Freight Travel Demand Model (TDM), 2020

MM2045 Partnerships and Engagement

What did we hear?

MM2045 is a starting point for continued, ongoing collaboration. The development of Michigan's first integrated plan revealed new areas for analysis and understanding. By bringing all modes together, it became apparent that while each aspires to provide safe, reliable, accessible, equitable, high-quality choices for passengers and freight alike, they are each at a different point on the journey to reach that vision.

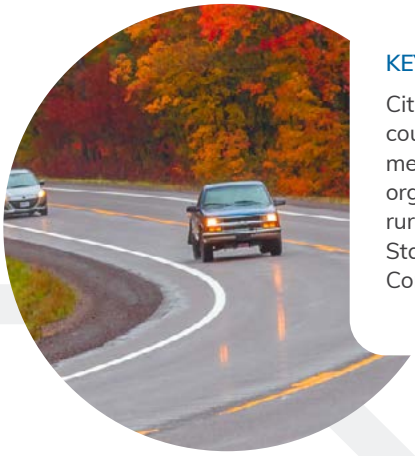
MM2045 recognizes that partnerships and engagement with Michigan's diverse stakeholders and communities are essential to the comprehensive development of the state's transportation system.

The transportation system in Michigan involves numerous public and private entities with no single organization overseeing the entire system. MDOT does not directly control all aspects of the transportation system that Michiganders use every day. Each mode and owner have their own processes, priorities, missions, and areas of influence. Even within a single mode, there may be a diverse range of owners who do not fully control all safety oversight and funding decisions.

Rail

KEY ORGANIZATIONS

Surface Transportation Board; National Transportation Safety Board (NTSB); Federal Railroad Administration (FRA); Federal Highway Administration (FHWA); private companies; MDOT



Roadways

KEY ORGANIZATIONS

Cities and villages; county road commissions; metropolitan planning organizations (MPOs); rural task forces; MDOT; State Transportation Commission; FHWA

Transit

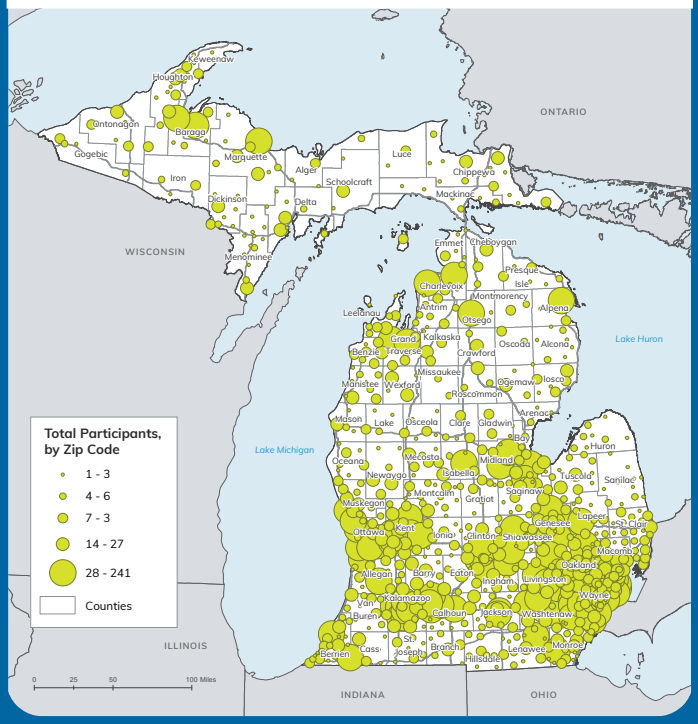
KEY ORGANIZATIONS

Local transit agencies; intercity bus carriers; ferry operators; local government; MPOs; MDOT; Federal Transit Administration (FTA)

Despite the COVID-19 pandemic, MM2045 included an expansive outreach and public involvement process utilizing virtual and remote methods to engage partners, stakeholders, and the public in the plan's development. Stakeholder input deepened understanding of the nature of transportation needs and contributed to vision, goal, and strategy development.

MM2045 aimed to engage a diverse cross-section of Michiganders. Stakeholder and public engagement specific to freight, marine, rail, transit, and active transportation issues was also conducted to ensure full voice for all modes. In addition to virtual workshops, small group meetings and interviews were conducted. The Public and Stakeholder Participation Report details the engagement conducted for MM2045.

MetroQuest Survey and Telephone Townhall Participants



MM2045 engaged residents in every county of the state through the following tactics:

MetroQuest Surveys
7,537
completed surveys

Active Transportation Townhall
88
participants

Virtual Workshops
300+
participants

MM2045 Website
10,848
visitors

Transit Forums
48
participants

Telephone Townhalls
6,352
participants

Social Media Advertisements
1.2 million
impressions

Freight Workshop and Industry Forums
122
participants

MM2045 Draft Plan
63
public comments

Survey on Transportation for Disabled Users
200
participants

Statistically Valid Attitudes and Perceptions Survey of Michigan Residents
1,500
respondents

Outreach Takeaways

Michigan residents and businesses need:

- A well-maintained transportation system
- Transportation options for people and goods
- Safety for all users

MM2045 Vision, Guiding Principles, Goals and Objectives

What direction are we going and how will we know when we get there?

Over the course of MM2045 development, a diverse array of stakeholders came together to develop a shared, statewide vision and roadmap for Michigan's transportation system over the next 25 years.

The MM2045 Vision, rooted in public and stakeholder values, enables Michigan's constellation of transportation agencies, service providers, private operators, and local, tribal, and regional governments to better collaborate on present and future challenges and opportunities. Achieving the MM2045 Vision hinges on consistent cooperation across sectors and levels of government. Four MM2045 Guiding Principles align stakeholder missions, values, and capabilities with the overall vision. The MM2045 Goals and Objectives help MDOT and individual partners prioritize limited resources for consistent, collective impact over the long term.

Vision

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

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

Guiding Principles

Preservation

Preserve, operate, enhance, and right-size the existing multimodal network as efficiently and effectively as possible, build and manage it to withstand and recover rapidly from disruptions, and maintain a network that provides for predictable access, movement, and interconnectivity.

Modal Choice

Build, maintain, and operate a multimodal mobility network for all users that is safe, adapts to new demographic, economic, and technological conditions, equitably distributes costs and benefits, responds to the public's demand for more modal choices and strengthens economic opportunity with high-quality access to jobs, to commerce, and between economic centers in and out of Michigan.

Future Oriented

Protect mobility investments by pursuing and planning for emerging trends, embracing technology, seeking flexible and diversified funding and financing tools to strengthen cross-jurisdiction and multidisciplinary partnerships, and pursue innovation in every aspect of transportation.

Sustainable Communities

Foster livable, healthy, and connected communities with convenient, multimodal access to jobs, services, social support, and activities by facilitating the safe and convenient movement of all people regardless of age, income, race, or ability, providing strong intermodal connections, and engaging in health-promoting projects and policies that support clean air.

Goals and Objectives

The six MM2045 Goals articulate broad priorities for Michigan's multimodal transportation system over the next 25 years based on input from MDOT, stakeholders, public comments, national goals, and federal planning factors. Each Goal is accompanied by measurable, outcome-based Objectives that describe what must be done to achieve the Goal and advance the MM2045 Vision.

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

- Create opportunities for safe physical activity, equitable transportation choice, and community engagement.
- Plan, develop, and maintain transportation facilities in a manner that protects the natural, historic, and cultural environment and avoids or minimizes adverse impacts.
- Pursue community-supportive transportation outcomes.
- Strive for cleaner, more efficient and sustainable energy sources for transportation operations and facilities.

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

- Improve access and connectivity between modes.
- Provide accessible and equitable modal options for the movement of people.
- Mitigate travel delays and alleviate congestion to provide predictable, reliable travel times.
- Leverage technology, communications, and management strategies to maximize safety and operational efficiency of existing systems.
- Identify redundancy gaps in the network to ensure continued mobility in the event of disaster or other interruption.

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

- Reduce the number of lives lost and injuries sustained on Michigan's transportation network, striving for zero.
- Foster a community and workplace culture of safety first.
- Reduce vulnerability from various threats; protect physical assets, cyber assets, and transportation systems.
- Prepare for and implement efficient coordinated response and recovery to emergency and disaster events.

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

- Achieve and maintain a state of good repair of transportation assets within the limitations of available resources.
- Cost-effectively maintain, operate and upgrade assets to maximize the useful life.
- Incorporate resiliency, adaptability, and redundancy in the transportation network, systems management, and operations.

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

- Pursue transportation asset and operational improvements that will expand access to economic opportunities, jobs, and core services.
- Improve transportation connectivity to established and emerging activity centers and tourist destinations.
- Create and enlarge competitive advantage for Michigan supply chains through higher productivity and dependability in the state freight system, supporting economic growth and strengthening economic resilience.
- Coordinate transportation systems with land use for efficient and sustainable use of resources.

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

- Ensure key transportation data is collected, maintained, usable, and accessible to transportation partners and the public.
- Use performance measurement to inform decision-making and show progress toward local, regional, state, and national goals.
- Strengthen collaborative partnerships between public and private sectors and leverage diverse investment opportunities.
- Strengthen coordination of transportation facilities and services between agencies and municipalities.
- Strengthen community engagement and open decision-making processes offered through a combination of inclusive traditional and innovative methods.

Multimodal Network Performance

Where are we today?

Performance management enables Michigan's transportation agencies, stakeholders, and the public to assess progress made toward the MM2045 Vision and Goals.

Michigan monitors many key performance measures, exceeding federal requirements to encompass all modes, which are regularly updated in the System Performance Report. The full list of performance measures is found in the MM2045 Plan.

Performance management will allow Michigan to make investment and policy decisions to help achieve performance goals over the next 25 years.

Mobility

- 88.6 percent of person miles traveled on Michigan's interstates has reliable travel times (2020, based on Level of Travel Time Reliability)
- 88.5 percent of person miles traveled on Michigan's non-interstate National Highway System has reliable travel times (2020, based on Level of Travel Time Reliability)

Network Condition

- 6.2 percent of National Highway System bridges in poor condition (2020, weighted by deck area)
- 4.6 percent of interstate pavements in poor condition (2020)
- 19.1 percent of non-interstate National Highway System pavements in poor condition (2020)

Safety and Security

- 1,083 traffic fatalities, 5,433 serious injuries (Statewide, 2020)
- 727 nonmotorized traffic fatalities and serious injuries (Statewide, 2020)

Quality of Life

- 16.1 percent of travel in Metro Detroit is not in a single-occupant vehicle (2020)

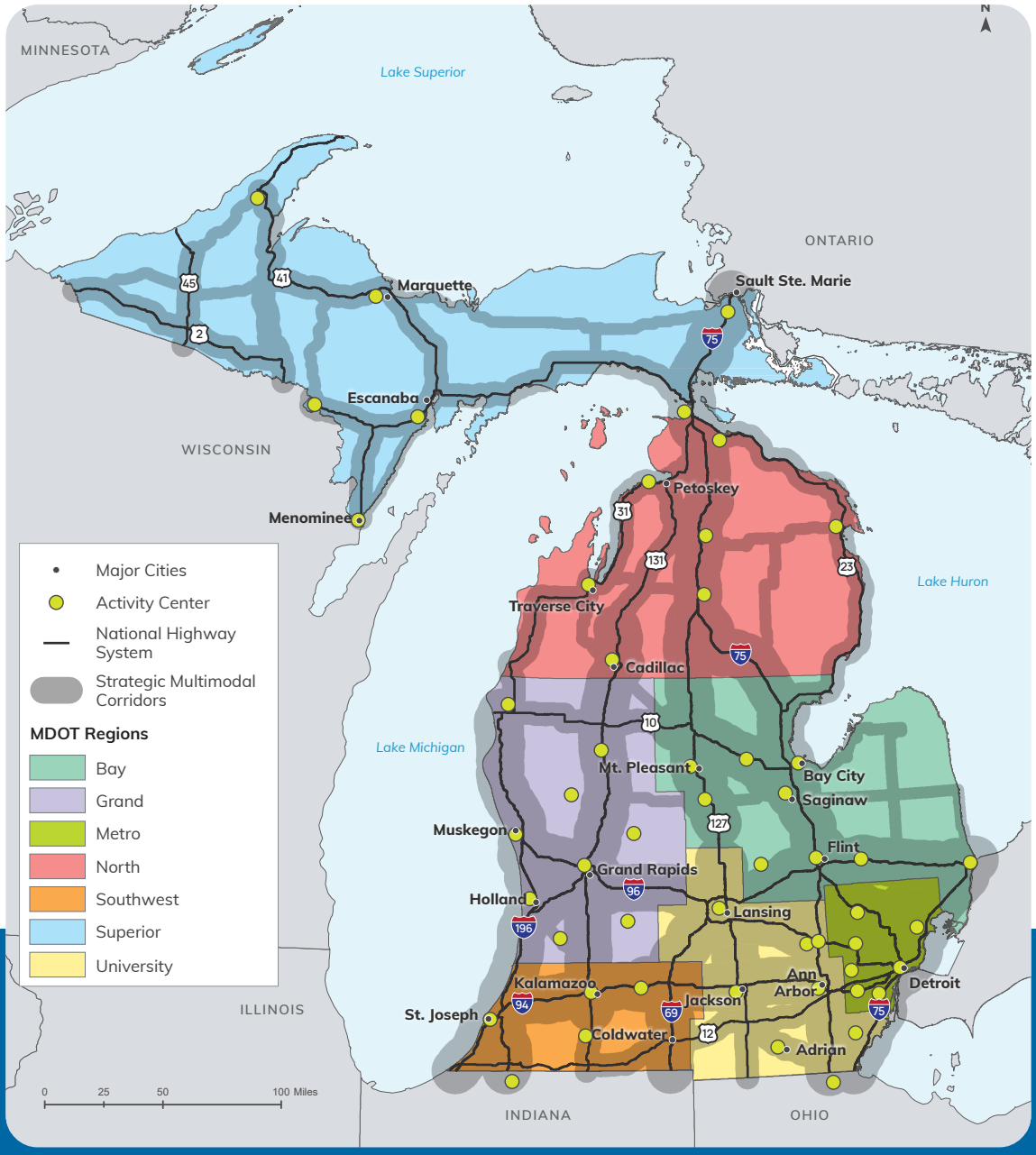
The MM2045 performance measures are truly multimodal, covering active transportation, transit, rail, and aviation, as well as roads and bridges.

Michigan Strategic Multimodal Corridors

Through MM2045, MDOT has defined a network of Strategic Multimodal Corridors that represent an integrated statewide system encompassing major roads and other modes within a set footprint serving the movement of people, services, and goods that are vital to the economy and security. The corridors link the state's key activity centers to each other and also constitute Michigan's core highway freight network: the critical truck routes and less-traveled highways that are important to reaching key destinations in rural areas of the state.

In addition to performance of the statewide system, MDOT will track multimodal performance measures for each corridor.

Focusing MDOT's major transportation investments on these strategic multimodal corridors allows the state to achieve the strongest return on investment, given limited funds.



Network and System Needs

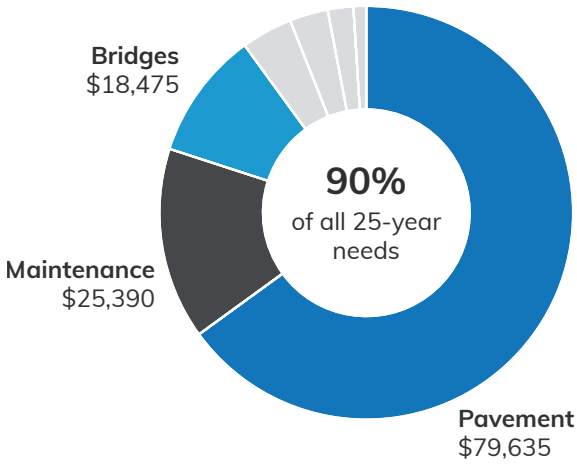
What do we need today and in the future?

Network and System Preservation

Maintaining the roads, bridges, railroad corridors, locks, runways, buses and fleet vehicles, intelligent transportation system (ITS) technologies, and other infrastructure and assets that make up Michigan's transportation system is critical to moving people and goods affordably, safely, and efficiently.

Over the next 25 years, the cost of preserving Michigan's roads and bridges amounts to $123.5 billion, the most significant of all investment needs identified in MM2045. This sum reflects the level of investment required to achieve pavement and bridge preservation performance targets on MDOT and federal aid-eligible locally owned networks as well as maintenance operations on MDOT's roads and the county primary network. The real total costs of preserving Michigan's transportation infrastructure and assets are likely higher.

25-year Network and System Preservation Needs (in millions of U.S. dollars)



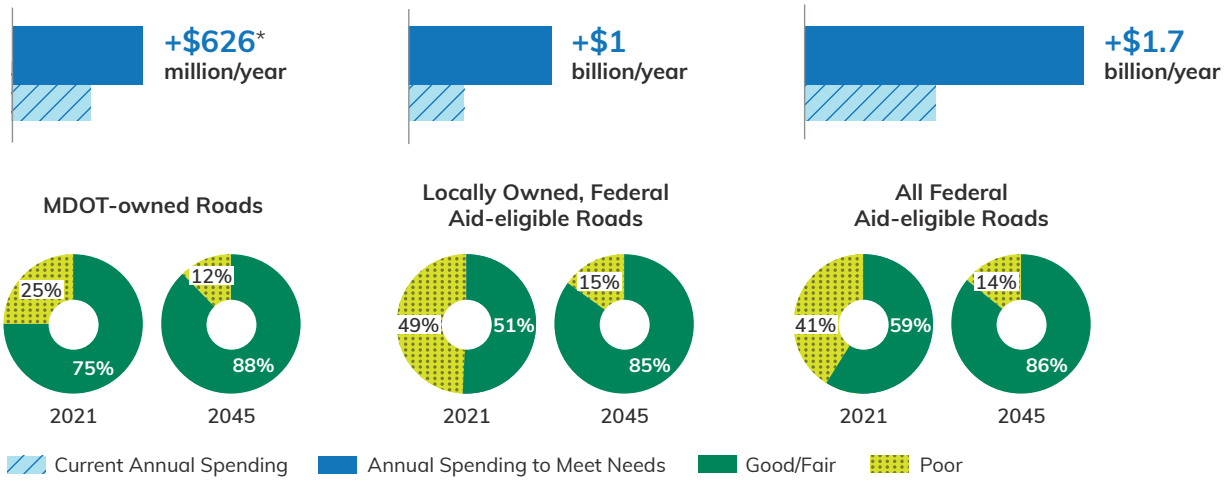
Investments in network and system preservation include:

Mode	Investment Type
Roads and Bridges	Pavement rebuilding, improvements, and preventive maintenance; overlays; pothole patching; joint repair; pavement markings; sweeping and snow clearance; bridge replacement, improvements, and preservation; ITS and signals maintenance; carpool lot pavement preservation; pump stations.
Freight	Pavement rebuilding to include heavier truck weights, airport runway extensions, marine port dredging; local port improvement projects; locks.
Freight Rail	Bridge replacement, improvements, and preservation; track and signals maintenance, building maintenance (engine houses, train sheds).
Passenger Rail	Bridge replacement, improvements, and preservation; track and signals maintenance; train car preservation; building maintenance (engine houses, train sheds).
Aviation	Runway and taxiway pavement improvements and preventive maintenance; runway extensions; approach protection (tree trimming); and lighting/visual aid maintenance.
Transit	Vehicle replacement; facility maintenance (stations, administration buildings, repair shops).
Active Transportation	Sidewalk, bikeways, and trails asset inventory; trail surface and pavement rebuilding; overlays, signs; drainage maintenance.

Network and System Preservation Needs

Pavement Preservation, Annual Needs

Getting Michigan's federal aid-eligible roads to a state of good repair requires about $1.7 billion in additional investment every year, more than doubling current expenditures.



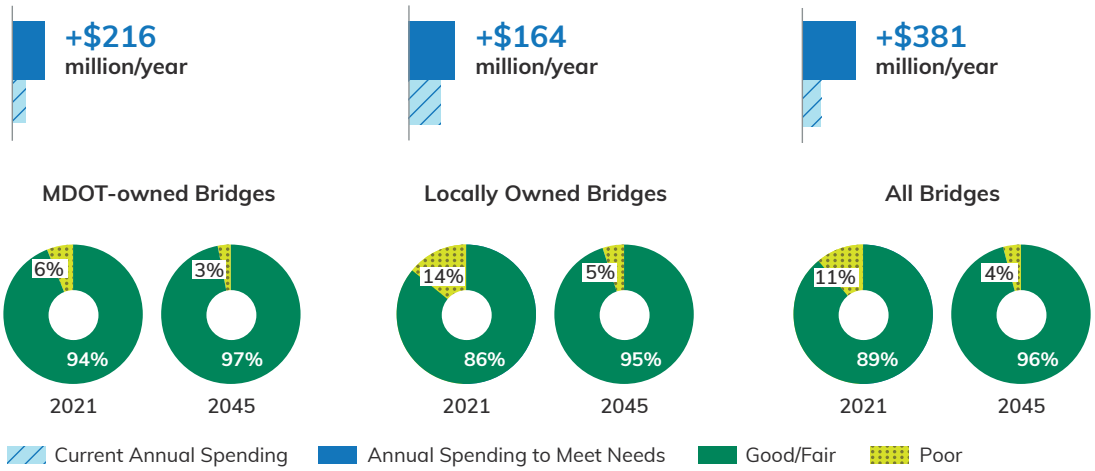
MDOT and local agencies use different primary performance measures for assessing pavement condition. MDOT uses Remaining Service Life (RSL), while local agencies use Pavement Surface Evaluation Rating (PASER). Good, Fair, and Poor ratings are generally consistent across RSL and PASER performance measures. 2045 needs correspond to meeting the pavement performance criteria in the 2019 Transportation Asset Management Plan (TAMP).

*Estimate represents an average annual investment over all 25 plan years, reflecting additional expenditures of $1.9 billion between 2021 and 2031 necessary to catch up to performance goals, tapering to lower levels through 2045 to maintain pavement at goal levels.

Source: MDOT

Bridge Preservation, Annual Needs

Getting Michigan's bridges to a state of good repair requires $381 million in additional investment every year, more than doubling current expenditures.



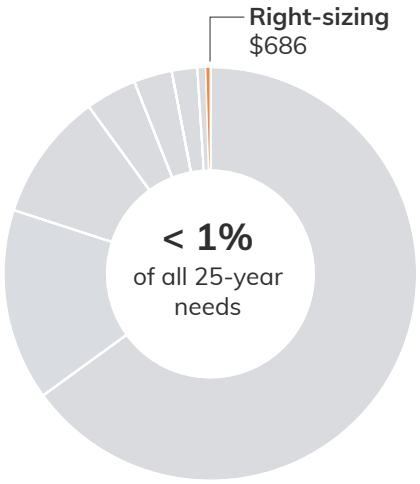
Source: MDOT

Network Capacity/Right-sizing

Right-sizing the transportation system is a priority for Michigan. Aging infrastructure, inadequate funding, and changing needs are challenging all transportation agencies in Michigan. Managing a cost-effective, efficient transportation system that meets the MM2045 Vision requires strategically deciding where to contract existing infrastructure and where to expand the system, particularly in light of the negative impact of past policy decisions on certain communities and modes.

MM2045 represents the first attempt at systematically identifying opportunities to right-size Michigan's multimodal transportation network and services. **Adding new lanes is expected to cost $686 million over the next 25 years.** The full needs and corresponding costs of freeway decommissioning, road diets, expanding active transportation networks, and enhancing transit and passenger rail service have not yet been quantified. The scale of needs over the next 25 years is higher.

25-year Network Capacity/Right-sizing Needs
(in millions of U.S. dollars)



Investments in network capacity and right-sizing include:

Mode	Investment Type
Roads and Bridges	Road diets; conversion of traditional highways to multimodal complete streets; flex routes; removal of underutilized bridges; conversion of signalized intersections to roundabouts; operational improvements; targeted lane additions to support economic growth; turning state management and jurisdiction of roadways over to local agencies.
Freight	New lanes; interchange reconfiguration; lane and shoulder widths (fixing substandard geometry); port planning and investment.
Freight Rail	Signal and track upgrades; track relocation; yard improvements; and equipment maintenance.
Passenger Rail	Expansion of passenger route services; separation of passenger and freight train operations; station improvements.
Aviation	Runway extensions; new hangars; retain smaller adjacent airports to relieve capacity constraints at larger airports.
Transit	Increased service frequency and service span; expanded service areas; increased flexibility.
Active Transportation	Leverage right-sizing to expand/add sidewalks and add low-stress bike facilities; expand active transportation network through complete streets and rural shoulder widening.

Right-sizing (Michigan's adopted definition):

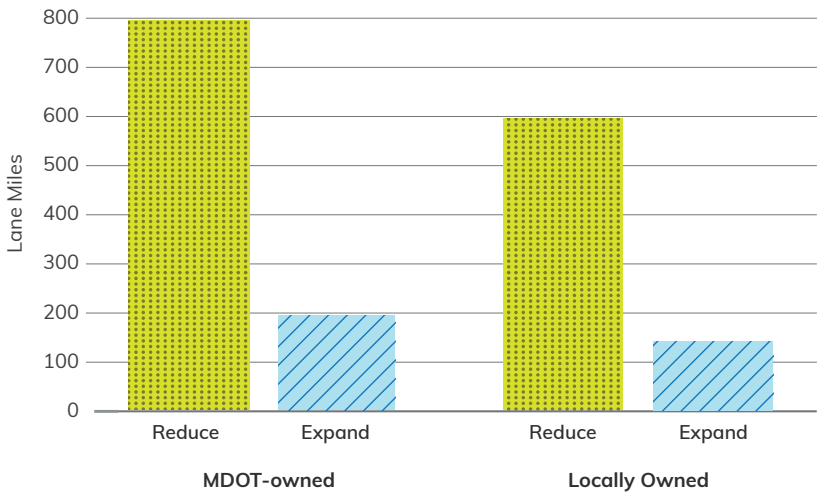
"The modernization and changing of infrastructure to meet the current and future transportation needs of communities, people, and freight movement. It is a process by which a transportation agency makes intentional decisions to adjust the size, extent, function, and composition of its existing or planned infrastructure and service portfolio in response to changing needs over time. Right-sizing transportation infrastructure is repurposing or physically re-sizing (either expansion or reduction) an existing asset or future asset for a newly understood economic function, purpose or need."

Opportunities to reduce travel lanes and enhance Michigan's roads to better serve all users

Nearly 800 lane miles of MDOT roads and 600 lane miles of city, village, and county roads are candidates for lane reductions. Reducing lanes saves in long-term costs and better balances the safety and needs of all users.

Based on projections from MDOT's Statewide Travel Demand Model, less than 10 percent of Michigan's lane-miles will be congested in 2045, and many miles of uncongested locally and state-owned highways and roads will have excess capacity that can be rebalanced to comfortably accommodate people walking, biking, and taking transit. Right-sizing projects on the MDOT-owned network will be developed collaboratively with the public and stakeholders.

Candidates for Lane Reduction and Expansion by 2045: MDOT- and Locally Owned Roads

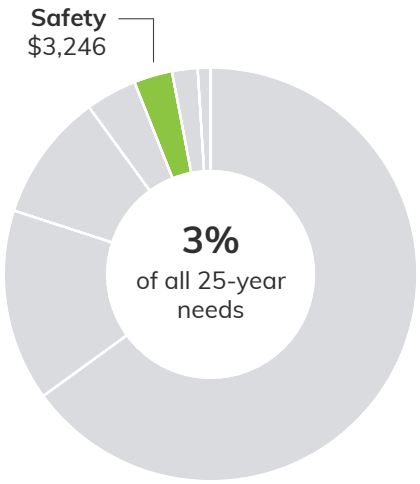


Transportation Safety and Security

Safety for all users of Michigan's transportation system is a priority for all transportation agencies, railroads, airports, and service providers. Nearly 1,000 people lose their lives every year on Michigan's roads.[1] Injuries and fatalities from traffic crashes continue to be a critical public health concern in Michigan. From keeping roads, rail corridors, and airports open to protecting Michigan's digital infrastructure from cyberattacks, securing Michigan's transportation system is crucial to the safety of the state and the nation.

Over the next 25 years, Michigan's safety needs amount to $3.2 billion. The safety needs include the cost of installing safety countermeasures to address systemic improvements (such as rumble strips, traffic signals, cable median barriers), freeway pavement markings, and non-freeway pavement markings on roads owned by MDOT. The full accounting of safety needs is likely considerably higher, as the needs do not account for cyber security, mode-specific needs (like improvements for people walking and biking), and safety improvements on local roads.

25-year Transportation Safety and Security Needs (in millions of U.S. dollars)



Investments in transportation safety and security include:

Mode	Investment Type
Roads and Bridges	Pavements markings; roadway delineation; roundabouts; reducing the number/frequency of bottlenecks; targeted safety campaigns.
Freight	Queue warning/management system; roundabout upgrades; incentives for retrofitting older fleet vehicles with new safety technologies; cable median barriers.
Freight Rail	At-grade crossing improvements and separation; reducing rail trespassers; rail safety education campaigns; positive train control systems.
Passenger Rail	At-grade crossing improvements and separation; reducing rail trespassers; rail safety education campaigns; positive train control systems.
Aviation	Meet all-weather and year-round access airport development goals to serve isolated communities; lighting and visual upgrades.
Transit	Safer bike and pedestrian access to transit stops; vehicle collision avoidance systems; bus stop lighting and security.
Active Transportation	Expand low-stress bike and pedestrian facilities and safety countermeasures; lighting; speed reduction.

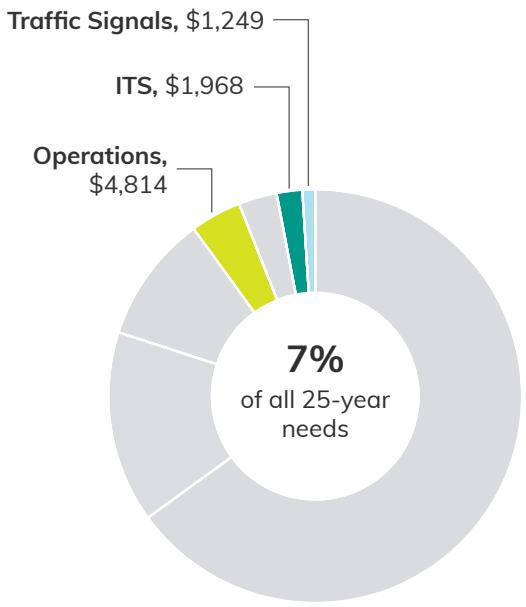
1 Michigan Office of Highway Safety Planning, Michigan Traffic Crash Facts, 2015-2019

Network Management and Operations

Minimizing the delay people and goods encounter on the way to their destinations isn't always accomplished by widening roads or adding more service. Often, it's achieved by better managing and getting the most performance out of current assets and infrastructure. In many situations, transportation agencies cannot simply build their way out of congestion, nor would it be feasible to do so from a financial or practical perspective. Funding and implementing strategies for Michigan's overall transportation system can improve quality of life and safety, reduce congestion and fuel consumption, provide cleaner air, and improve economic opportunities.

Maintaining existing network management and operations infrastructure and expanding it to meet growth over the next 25 years will require at least $8 billion in investment. Capital and maintenance needs for operational improvements and operations management on MDOT-owned highways and roads amounts to $4.8 billion, with MDOT ITS and traffic signals accounting for an additional $2 billion and $1.2 billion, respectively. While local signals, freight, rail, transit, and active transportation will benefit from network management and operations investments, their specific needs are not yet fully quantified.

25-year Network Management and Operations Needs (in millions of U.S. dollars)



Investments in network management and operations include:

Mode	Investment Type
Roads and Bridges	Traffic incident management; work zone management; implementing connected infrastructure; maintaining and upgrading traffic signals; operational improvements, such as turning lanes and weave/merge lanes; advanced traffic management systems (ATMS).
Freight	Trucker talent attraction and retention; pavement markings to help with lane designation; wayfinding; alternative routing in areas of high congestion; weather advisory services.
Freight Rail	Centralized traffic control (CTC); automatic block signaling (ABS).
Passenger Rail	CTC; ABS.
Aviation	Pilot/mechanic talent attraction and retention; year-round access; pilot and aircraft services; landslide access; lighting and visual aids.
Transit	Operator/mechanic talent attraction and retention; statewide transit data dashboard; transit signal priority; connected and automated transit vehicles; upgrade dispatching software and systems; farebox modernization.
Active Transportation	Active transportation activity counts; statewide active transportation asset inventory; pedestrian signal timing; crosswalk spacing.

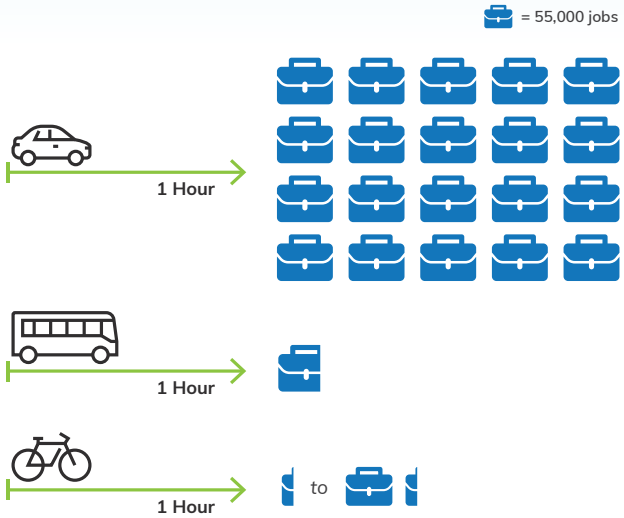
Network Accessibility and Connectivity

Getting people and freight where they need to go safely and conveniently is the bedrock of the transportation system and fundamental to unlocking economic growth, equitable access to opportunity, and improved health outcomes. Michigan's access needs include investing in new infrastructure as well as digital connections between people and services, vehicles and infrastructure.

> The level of investment necessary to address Michigan's accessibility and connectivity needs is currently unknown.

In part, this is the result of historical underfunding (when all resources are needed for preservation, few are available for new services) coupled with uncertainty in projecting who pays for emerging technologies like electric-vehicle charging stations and connected, 5G-enabled infrastructure, and how much.

Job Access by Transportation Mode



Investments in network accessibility and connectivity include:

Mode	Investment Type
Roads and Bridges	Electric vehicle charging stations; ITS and connected infrastructure.
Freight	First-and last-mile improvements; ITS and connected infrastructure; access bottleneck improvements at ports, airports, and pipelines.
Freight Rail	New and upgraded sidings for short lines; new transload facilities; improvements to inter-modal facilities.
Passenger Rail	Expand and extend passenger rail service to neighboring states and within Michigan.
Aviation	Year-round/all-weather access, landside access, runway extensions, lighting and visual aids, and airport services.
Transit	First- and last-mile connections; increase coverage and flexibility of on-demand services; expand fixed route service coverage and span; expand intercity/regional transportation.
Active Transportation	First- and last-mile connections; ADA-compliant sidewalks and curb ramps; close gaps in biking and walking networks.

Network Resiliency

Resilience is the ability to minimize the costs of a disaster and to return to a state as good as or better than the status quo in the shortest feasible time. The need for resilience can come from many sources, including human-caused (e.g., terrorism and cyberattacks) and natural disasters (e.g., extreme heat, cold, precipitation, and flooding). In the 2019 Transportation Asset Management Plan (TAMP), MDOT developed a risk management plan to get ahead of potential negative impacts.

The TAMP identifies the following principles to improve the statewide transportation network's resiliency:

- Identify disruptive events and risks.
- Estimate the likelihood that each of those events might happen.
- Identify options to minimize the likelihood of negative events occurring or reducing the magnitude of the negative impacts.
- Estimate the costs to implement each of those options; strategies for recovering from unanticipated events.

The cost of making Michigan's transportation networks more resilient is unknown but likely significant and undoubtedly urgent. Recent weather events coupled with decades of underinvestment in the state's infrastructure have brought this issue into focus for many Michiganders contending with shoreline erosion, flooded highways, and washed-away dams.

Expanding and Enhancing Mobility Options

MM2045 reveals that each mode of transportation is at a different point on the journey to reach the Vision of safe, reliable, accessible, equitable, and high-quality choices for passengers and freight alike.

Michigan's system of roads and bridges form a mature network supported by robust planning processes, while other modes critical to equity, resiliency, and the economy (like transit and active transportation) lag behind other modes.

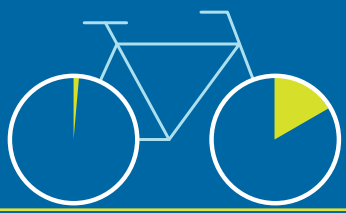
Transit

In many markets, there is unmet demand for transit service. Often, service is not available where and when people need to travel. Many in Michigan rely on flexible demand-response services like paratransit to shop and get to medical appointments. As Michiganders age out of driving, demand for these services is likely to increase. Transit is also a key tool in addressing climate change by reducing single-occupancy vehicle trips. MM2045 produced Michigan's first Statewide Transit Strategy to set forth near-term actions to accelerate transit development.

Active Transportation

Unlocking healthy behaviors and more transportation options depends on completing low-stress networks that safely accommodate users of all ages and abilities.

Michigan's first Active Transportation Plan represents a renewed commitment by MDOT and partners throughout the state to expand the active transportation network, improve safety, and improve multimodal connections.



Between 2013 and 2019, pedestrians and bicyclists were involved in less than **1.5 percent** of the crashes in the state, while disproportionately accounting for nearly **20 percent** of all fatalities.

The Impact of Electrification

The future of vehicle propulsion is electric. Today, electric vehicles account for only 2 percent of the nation's vehicle fleet, and there are large gaps in electric charging infrastructure. Michigan's Office of Future Mobility and Electrification (OFME) is working actively to accelerate electric vehicle adoption in the state.

Rising to meet the trend and realizing the benefits of reduced greenhouse gas emissions that come with electrification will require significant cross-sector investments in electric charging infrastructure across Michigan. Special emphasis on underserved and remote communities will be necessary to ensure that everyone can access and share in the benefits of electrification.

Funding and Revenue Gap

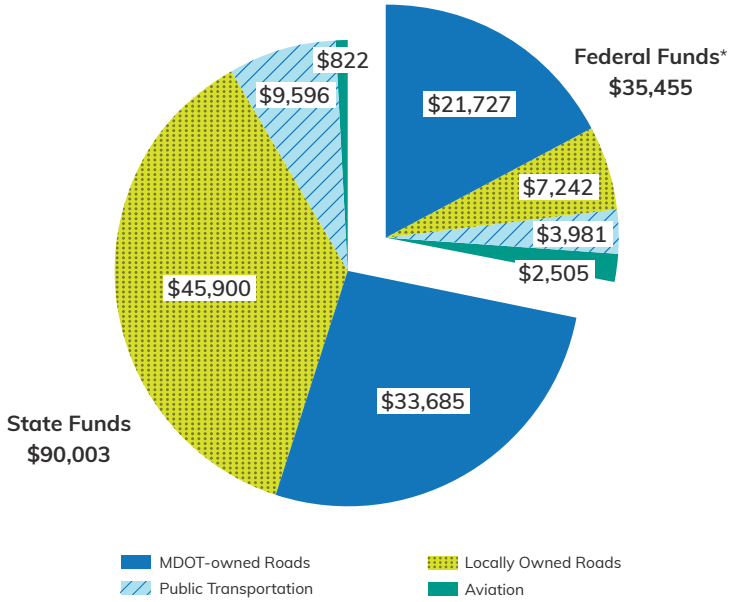
Do we have enough resources to get where we need to go?

Michigan's transportation system will require significant additional investment to meet the present and long-term needs of residents and businesses. Without additional, sustainable funding, Michigan's transportation infrastructure will continue to deteriorate, exacerbating delay and safety issues, increasing disruptions, and inhibiting access to jobs, schools, and medicine. Investing in transportation infrastructure and mobility services can unlock Michigan's economic potential, advance the state's equity and livability goals, and set the state on the path to proactively anticipate the challenges and opportunities to come.

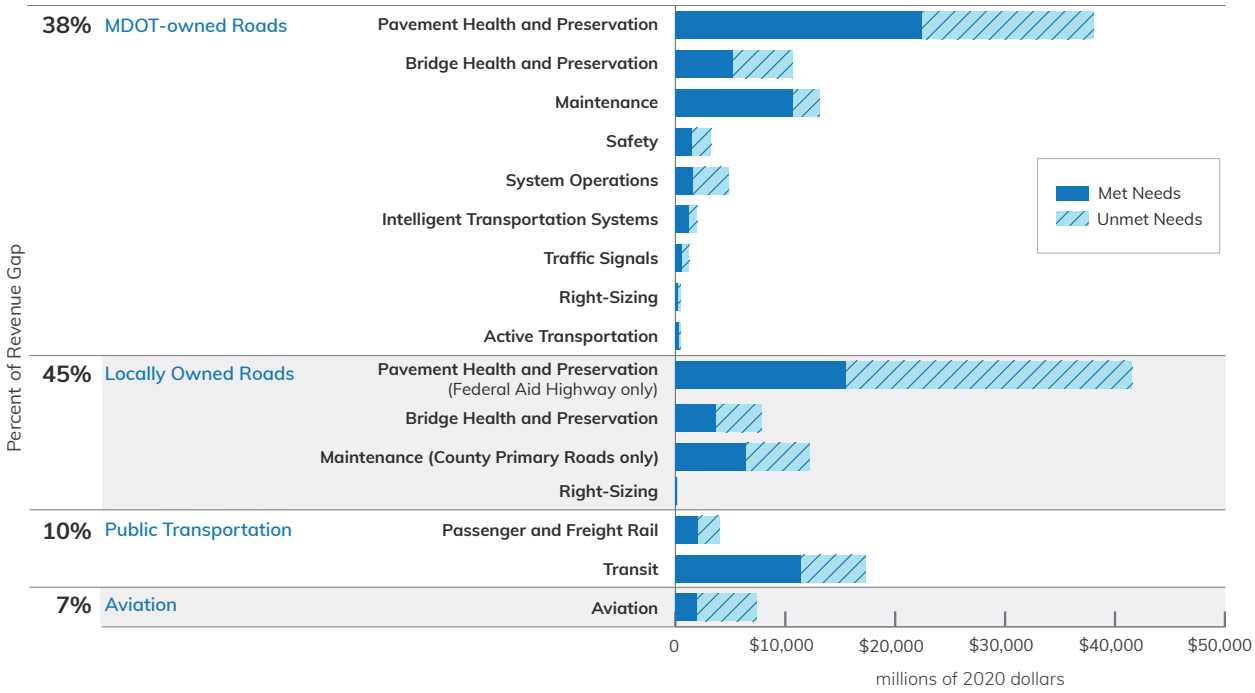
Over the next 25 years, state and federal funding for transportation is projected to equal $125 billion in 2020 dollars, of which $85 billion is directed to transportation system needs that could be quantified as part of MM2045 (the remainder is allocated to administration and local programs whose total needs could not be quantified).

Based on available data, Michigan's transportation needs are estimated to total $164.6 billion from Fiscal Year (FY) 2021 to 2045, with met and unmet needs as follows:

Total State and Federal Funding Forecast, FY 2021 to 2045 (millions of 2020 dollars)



* The MM2045 federal revenue forecast does not account for any changes to federal formula funds, discretionary grant programs, or one-time spending associated with the Infrastructure Investment and Jobs Act or the Infrastructure Expansion Act of 2021.



In total, 53 percent of Michigan's total transportation needs are anticipated to be met over the next 25 years, leaving a gap of approximately $79.6 billion.

The Costs of Underfunding

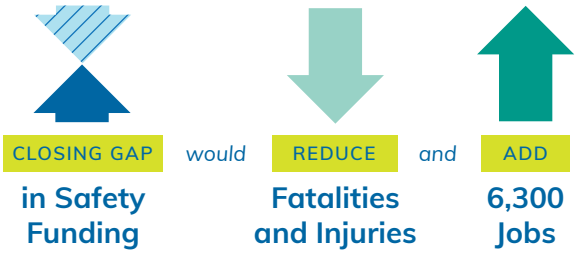
Failing to close the revenue gap will negatively impact the state's infrastructure and economy. Underfunding today costs more in the long run. Climate change will produce more severe and more frequent weather events, increasing the risk that deteriorating infrastructure may fail. Even before reaching the point of failure, aging infrastructure can lead to higher crash rates, increase congestion, and disrupt travel.

Without infrastructure investment, workers have access to fewer jobs and fewer options to get to school or medical appointments, and businesses cannot reach all potential customers. Lack of investment in Michigan's transportation assets and services may cause people and companies to look to other states, making Michigan less economically competitive.

Economic Benefits Analysis

MM2045 incorporated an economic benefit analysis (EBA) to evaluate the expected societal and economic impacts of closing the revenue gap. The EBA demonstrates the substantial benefits lost through underinvestment.

Increasing available safety funding by approximately $33 million annually over the next 10 years could help the state avoid 362 fatalities and 2,188 severe injuries annually and add 6,300 jobs to the Michigan economy by 2031.



Closing the $2 billion per year gap in road and bridge funding would result in more than $2.8 billion in annual societal benefits and the Michigan economy could grow by nearly 5,000 jobs by 2045.

Bridging the Revenue Gap

Although the revenue gap is large, several avenues are available to reduce it beyond periodic increases in tax and fee rates. The State of Michigan could consider legislation to allow for the following innovative funding solutions:

- Innovative Funding Sources
  - Road User Charging (also known as mileage-based user fees)
  - Toll Lanes/Roads
  - Value Capture
- Public-Private Partnerships
- Federal Discretionary Grants

MM2045 Strategies and Implementation

What will we do?

Adopted MM2045 Strategies

During the development of MM2045, MDOT conducted in-person and virtual meetings with statewide stakeholders to develop the Vision, Guiding Principles, Goals, and Objectives, which together form the MM2045 strategic direction. Input from stakeholders along with peer state best practices were refined, expanded, and validated through meetings with internal MDOT staff and partner experts.

The MM2045 Strategies were shaped by stakeholders at all levels of Michigan's transportation system. The strategies correspond to multiple Goals and Objectives and are cut through by the four MM2045 Guiding Principles.

1. Prioritizing Safety

1.1. Promote safe behaviors.

1.2. Prioritize infrastructure and facilities improvements with proven safety benefits.

1.3. Support and implement state-of-the-art safety technology solutions.

1.4. Collaborate with transportation partners and emergency medical and trauma services.

2. Managing Resources Responsibly

2.1. Advance transportation asset management to optimize transportation investments.

2.2. Streamline and improve data, data management systems, and processes.

2.3. Right-size Michigan's transportation network and systems.

3. Providing Accessibility and Mobility for All

3.1. Improve the reliability of the transportation network and systems.

3.2. Enhance the mobility of Michigan's residents and non-residents.

3.3. Pursue a statewide Mobility as a Service (MaaS) platform.

3.4. Support the increased use of the passenger transportation system.

3.5. Define, measure, and improve equitable access.

3.6. Develop projects that equitably meet community mobility needs.

4. Supporting Michigan's Health

4.1. Participate in and contribute to initiatives to improve air quality and reduce emissions.

4.2. Support and implement approaches that preserve Michigan's natural resources.

4.3. Foster collaboration between local transportation providers and public health interests.

4.4. Encourage healthy lifestyles.

5. Building Resilience

5.1. Identify and address risks to Michigan's transportation network.

5.2. Promote and research an implementation plan for transportation infrastructure protection, security, and emergency management.

5.3. Improve organizational resiliency.

6. Working Together

6.1. Expand public sector partnerships and collaboration.

6.2. Improve and expand relationships with private and nonprofit partners.

6.3. Ensure decision-makers and stakeholder groups reflect Michigan's character and integrity.

7. Technology

7.1. Prepare for and enable widespread CAV adoption.

7.2. Regularly evaluate new transportation technology and adopt those that best support Michigan's goals.

7.3. Promote standards-based approaches to network technology and deployment.

8. Economic Vitality

8.1. Promote freight service, infrastructure improvements, and intermodal connectivity.

8.2. Continue to partner in transit-oriented development projects.

8.3. Continue to be a leader in innovative transportation technology and education partnerships.

Implementation

The implementation plan will advance MM2045 policies through near-, mid-, and long-term strategies, focusing first on the most critical to meeting MM2045 goals and objectives. Implementation actions fall under:

- Resource Allocation
- Program Structure
- Organizational Structure
- Funding Strategies
- Project Prioritization and Decision-making
- Performance Management
- Partnerships
- Processes

Stakeholders will play significant roles in executing the plan for Michigan's transportation vision of the future. MDOT will continue to lead collaborative strategic efforts where appropriate, serve as a supporting partner when needed, and develop and commit to MDOT-specific actions and investments.

> **Developing an MDOT implementation plan is the first step in executing the strategic framework provided by MM2045.**

MM2045 serves as a 25-year plan that will be maintained and updated on a five-year time frame. Michigan will continue to integrate the strategies and principles developed in MM2045 into program and project decision-making processes, including parallel statewide and regional efforts, as the state's transportation stakeholders invest in Michigan's future.

Example Process:

MDOT has identified a new process to develop a complete, up-to-date statewide dataset for bicycle and pedestrian facilities in order to implement the MM2045 strategy to "invest in data, data collection, analytics, and information systems to advance data-informed decisions."

Rail Service Investment Plan

MM2045 is the first plan to integrate the federally required Rail Service Investment Plan (RSIP) and Freight Investment Plan (FIP), typically created through a separate process, which are critical to the MM2045 Vision. The RSIP consists of 120 projects, with a total cost of $2.1 billion. Of the 120 projects, 101 are freight railroad projects. Fourteen of these projects also benefit Amtrak operations. The total cost of the 101 freight railroad projects is $1.3 billion. The state's short-line railroads account for 80 of the 101 freight railroad projects, with a combined cost of $306 million. There are 19 projects identified as passenger rail-only. Costs have been developed for nine of those projects, which total $880.8 million. The complete list of RSIP details the selected projects.

Freight Investment Plan

For the years 2022-2026, Michigan is anticipated to be eligible for $39.9 million annually in federal National Highway Freight Program (NHFP) funds, for a total of $199.6 million over the five-year period. This amount is based on Michigan's FY 2021 NHFP apportionment under the current national surface transportation bill. A review of highway freight performance issues, including bottlenecks and truck crash locations, was completed during the development of MM2045.

Projects that addressed these top performance issues were determined to merit NHFP funds and a subset of such projects was selected for each of the five years through 2026, subject to annual fiscal constraints. The Freight Investment Plan lists the selected projects by year.

The FIP addresses projects where NHFP funds will be employed but it does not reflect the full range of Michigan's investments responding to freight needs, nor the full scope of Michigan's need for freight investment.

Michigan Department of Transportation

Michigan Mobility 2045

A transportation plan for a connected future #MM45

MM2045 Executive Summary

Draft for State Transportation Commission, Nov. 4, 2021