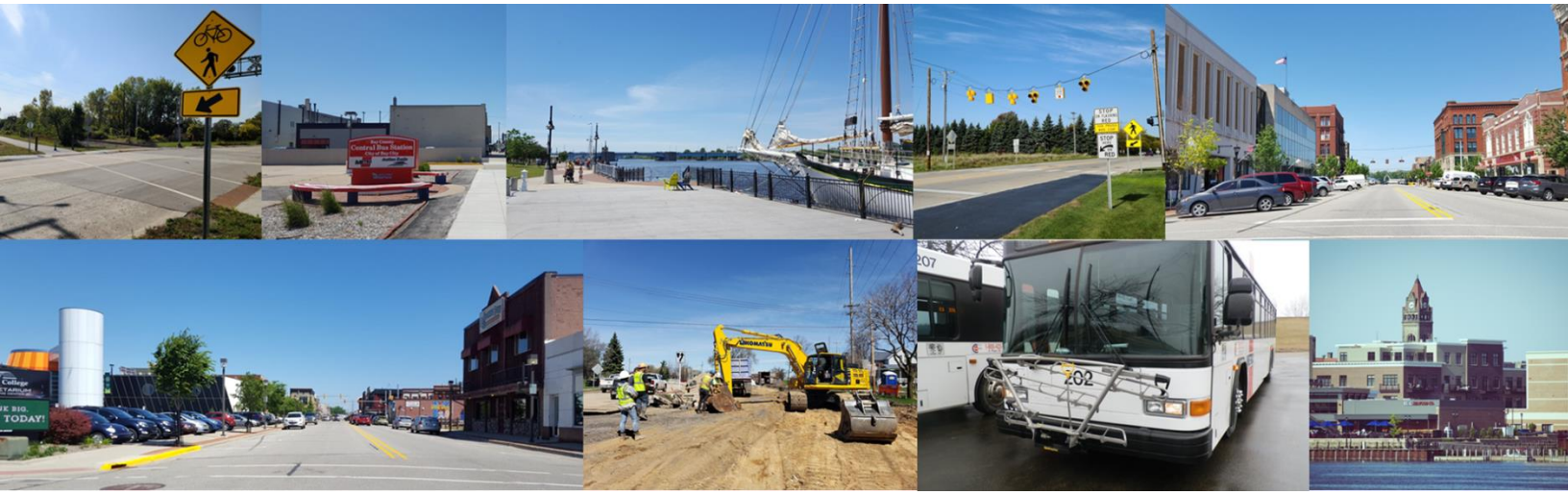
Bay City, Michigan
Metropolitan Area

BCATS
2045 METROPOLITAN TRANSPORTATION PLAN UPDATE



DRAFT REPORT
BCATS Approved July 3, 2022

The Bay City Area Transportation Study

Preparation of this document was financed in part from the U.S. Department of Transportation, Federal Transit Administration and the Federal Highway Administration through the Michigan Department of Transportation, and local contributions.

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Forward

Coordination of the 2045 Metropolitan Transportation Plan with the FAST Act

On December 4, 2015, President Obama signed into law PL 114-94, The Fixing America's Surface Transportation Act (FAST Act). This new transportation bill authorizes and funds federal surface transportation programs.

The information in this section is provided to acknowledge the existence of the FAST Act and to note its implications for transportation planning. It is also important to note that the emergence of the FAST Act does not represent an abandonment of the programs and planning requirements established under MAP-21, the previous federal transportation bill. The FAST Act establishes a cooperative, continuous, and comprehensive framework for making transportation investment decisions in metropolitan areas. In fact, many of the same programs and metropolitan planning requirements are continued under the FAST Act. However, the FAST Act establishes new requirements for transportation planning. The most significant changes are summarized below:

Metropolitan Transportation Planning
Policy initiatives include:

- Support for intercity bus and commuter vanpools. (23 U.S.C. 134(c)(2) & (i)(2))
- Selection criteria of MPO officials:
  - Grant a representative of a transit provider authority equal to that of other MPO officials and;
  - Allow a representative of a transit provider to also represent a local community. (23 U.S.C. 134(d)(3))
- Consultation with other planning officials. (23 U.S.C. 134(g)(3)(A))
- Scope of the planning process:
  - Improving transportation system resiliency and reliability;
  - Reducing (or mitigating) the storm water impacts of surface transportation and;
  - Enhancing travel and tourism. (23 U.S.C. 134(h)(1)(I) & (J))
- Capital investment and other strategies. (23 U.S.C. 134(i)(2)(G))

Performance Measures

- MAP-21 established national goals in seven areas and was continued under the FAST Act: Safety; Infrastructure Condition; Congestion Reduction; System Reliability; Freight Movement and Economic Vitality; Environmental Sustainability; Reduced Project Delivery Delays.
- USDOT is responsible for establishing performance measures, in consultation with the states, MPOs, transit agencies, and stakeholders for the following:
  - NHPP – NHS highway and bridge performance and condition;
  - Highway safety – Serious injuries and fatalities;
  - CMAQ – Traffic congestion and on-road mobile source emissions;

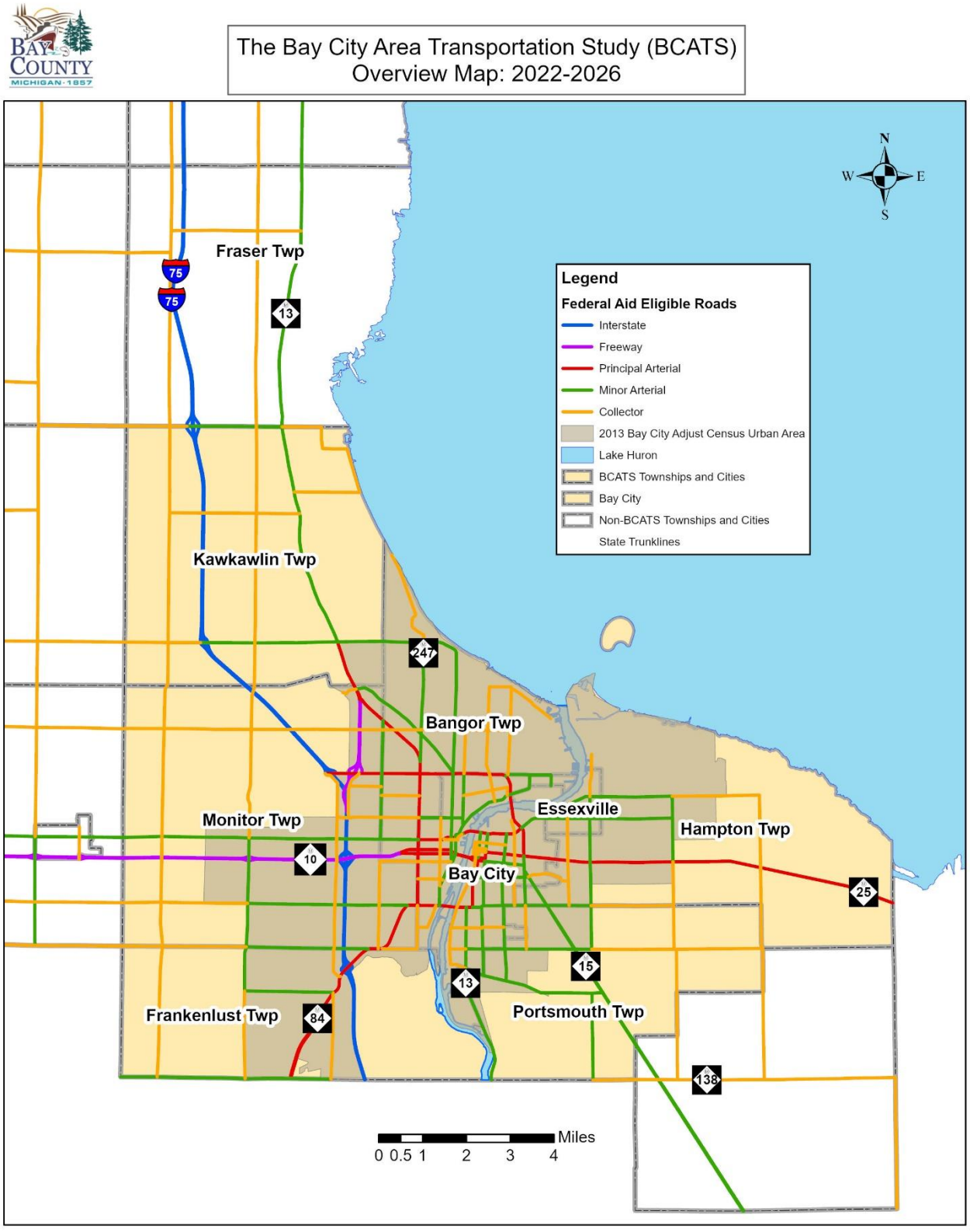
  - Freight movement-related measures and;
  - Transit safety and state of good repair.
- States are required to establish performance targets in coordination with the various MPOs and transit operators for the measures (including transit-related measures) within one year after the final rule establishing the performance measures.
- MPOs are required to establish performance targets in coordination with the state and transit operators within 180 days after adoption of targets by the state or transit operator.
- Performance measures and targets must be incorporated into long-range planning and short-term programming processes.

  - Long-range plans, TIPs, and STIPs must show the progress that is expected to be achieved by planned decisions and investments.
  - USDOT will evaluate the appropriateness of state targets and the progress that the state is making in achieving performance targets.
  - States and MPO long-range plans will include System Performance Reports that describe the progress made toward achieving performance targets.
  - USDOT will establish minimum condition levels for all highways on the interstate system and bridges on the NHS.

From the preceding summary, it is apparent that ***performance measures and targets*** are major items that need to be addressed throughout the transportation planning process. Performance measures are discussed in greater within Chapter 2.

The MAP-21 language requires a collaborative process to establish the performance targets that involves the state, the MPO's, and the transit operator. Therefore, BCATS fully participates in this process with MDOT, the other Michigan MPO's, and the transit operators to establish appropriate performance targets. If this process results in changes that are required in the 2045 MTP, the appropriate additions and changes will be incorporated as a plan amendment in the future.

On November 15, 2021, Congress passed President Biden's Infrastructure Investment and Jobs Act (IIJA) that allows for additional federal and state infrastructural funding. Michigan will be receiving $1,393,893,363 in the fiscal year of 2022 with limited obligation authority for at least one full year. The Bay County urbanized area will be receiving $1,369,101 in Small MPO allotted funds, $84,639 in STP-Flex funds, and $230,395 for PL and 5303 Consolidated Funds.


The Bay City Area Transportation Study (BCATS)
Overview Map: 2022-2026
N
W
E
S
Legend
Federal Aid Eligible Roads
Interstate
Freeway
Principal Arterial
Minor Arterial
Collector
2013 Bay City Adjust Census Urban Area
Lake Huron
BCATS Townships and Cities
Bay City
Non-BCATS Townships and Cities
State Trunklines
Fraser Twp
Kawkawlin Twp
Bangor Twp
Monitor Twp
Essexville
Hampton Twp
Bay City
Portsmouth Twp
Frankenlust Twp
75
13
247
10
84
15
25
138
Miles
0 0.5 1 2 3 4

Map 1: BCATS Overview Map

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Chapter One

Overview of the Bay City Area Transportation Study

BCATS and Transportation Planning

The Bay City area, as well as our state and nation, is held together by an extensive transportation network. The transportation system connects people to jobs, hospitals, schools, cultural and sporting events, parks, shopping centers, and family and friends. It also provides a vital link in economic development and national defense by connecting seaports, airports, and railroads.

Therefore, legislation contained in Section 134 (a) of title 23, United States Code indicates that it is in the national interest to encourage and promote the safe and efficient management, operation, and development of surface transportation systems. This system will serve the mobility needs of people and freight and foster economic growth and development within and through urbanized areas, while minimizing transportation related fuel consumption and air pollution.

The Bay City Area Transportation Study (BCATS) is the principal public agency, as per Section 134 (a), conducting regional transportation studies for the Bay City Urbanized Area. Urbanized areas are designated by census data from 2010 and will be adjusted once the appropriate 2020 Census data has been made available. BCATS, through an agreement with the Bay County Board of Commissioners, provides management and policy functions for the transportation planning programs as required by the **Fixing America's Surface Transportation Act (FAST Act)**. BCATS provides transportation planning services on behalf of the metropolitan planning organization (MPO) for the cities of Bay City and Essexville and the townships of Bangor, Monitor, Hampton, Portsmouth, Kawkawlin, and Frankenlust (see map, page 15). The MPO is established by federal law in all urbanized areas of the nation to carry out the "3C" (continuing, cooperative and comprehensive) transportation planning process. This process is required for the area to continue to receive U.S. Department of Transportation (USDOT) funding. Extensive USDOT funds are spent annually in the Bay City area for highway, bridge, transit, transportation enhancement, and safety projects and improvements.

One major function of BCATS under federal law is to produce a transportation plan for the area. The transportation plan is used as a basis to guide the decision of where federal transportation funds should be spent. The transportation plan identifies the area's transportation needs through the year 2045 as well as projects, both funded and unfunded, and policies to meet those needs. The plan shall include both long-term and short-term strategies/actions, including but not limited to, operations and management activities that lead to the systematic development of an integrated intermodal transportation system that facilitates the safe and efficient movement of people and goods in addressing current and future transportation demands. The transportation plan shall be reviewed and updated every five years in air quality attainment areas and at least every four years in non-attainment areas. This update cycle is in place to confirm the transportation plan's validity and consistency with current and forecasted transportation and land use conditions and trends as well as extending the forecast period when needed. In updating a plan, BCATS shall base the update on the latest estimates and assumptions for population, land use, travel, employment, congestion, and economic activity.
The BCATS is governed by a policy committee that includes various elected and appointed officials

from the transportation planning area plus other members from the Michigan Department of Transportation (MDOT) and the U.S. Department of Transportation. The Policy Committee generally meets on the third Wednesday of every other month and the meetings are open to the public.

The BCATS Policy Committee generally acts under the advisement of the BCATS Technical Committee. The Technical Committee reviews, in greater detail, the activities of BCATS and provides recommendations to the Policy Committee. The Technical Committee is composed of technically oriented representatives that presently include various transportation planning, engineering, and other interests in the area. The Technical Committee generally meets the same month as the Policy Committee on the second Tuesday of every other month and is open to the public. The Policy and Technical Committee members are listed below.

BCATS Policy Committee Voting Members	
Glenn Rowley Supervisor	Bangor Township
Ernie Krygier Chairman	Bay County Commission
Vaughn Begick Commissioner	Bay County Commission
James Barcia Executive	Bay County Executive
William E. Shumaker Chairman	Bay County Road Commission
Robert Redmond Supervisor	Bay Metro Transit Authority
Kathleen Newsham Mayor	City of Bay City
Jesse Dockett Commission President	City of Bay City
Scott Wittbrodt Mayor	City of Essexville
Sue Fortune Executive Director	East Michigan Council of Governments
Ronald Campbell Supervisor	Frankenlust Township
Terri Close Supervisor	Hampton Township
Samuel Davidson Supervisor	Kawkawlin Township
Anita Boughner, PE Statewide Planning Supervisor	Michigan Department of Transportation
Terry M. Spencer Supervisor	Monitor Township
Robert Pawlak Supervisor	Portsmouth Township

Table 1: BCATS Policy Committee Voting Members

BCATS Technical Committee Members	
Dominic Pavone BCATS Director	Bay County Transportation Planning
Jim Lillo, PE Engineer-Manager	Bay County Road Commission
Eric Sprague General Manager	Bay Metro Transit
Rachel Phillips, PE Municipal Engineering Manager	City of Bay City
Terry Moultane, AICP Planning & Zoning Manager	City of Bay City
Daniel Hansford City Manager	City of Essexville
Cody Bodrie Planner	East Michigan Council of Governments
Andy Pickard, PE AICP Senior Transportation Planner	Federal Highway Administration
Jack Hofweber, PE Engineer/Manager	MDOT / Bay Transportation Service Center
Donald Matula, Traffic & Safety Engineer	MDOT / Bay Transportation Service Center
Jay Reithel Regional Planner	MDOT / Bay Region
Lindsey Dowswell Planner	MDOT / Statewide Planning Section

Table 2: BCATS Technical Committee Members

Map 2: BCATS Overview Map

Introduction to the BCATS Transportation Plan

The adoption of a long-range plan for transportation is not a new concept for the Bay City area. BCATS has adopted long range plans since 1965. However, the Clean Air Act Amendments of 1990 (CAAA), SAFETEA-LU, MAP-21, the FAST Act and the prior transportation bills: ISTEA, and TEA-21, have significantly changed what the long-range plan must look like and the issues to be addressed.

In the past, transportation planning and funding was segmented between highways and transit. It emphasized new construction over maintenance, and largely ignored funding availability. There was little related to non-transportation issues and was advisory at the local level. Under MAP-21, the process links highways and transit, emphasizes maintenance of existing infrastructure, requires that plans and programs be fiscally responsible, requires attention to improving air quality in urban areas, examines land use impacts of transportation decisions and moves much of the decision-making responsibility from the federal and state levels to the local level. Fundamental changes have been made to the way the transportation system is planned, how federal funds can be used for improvements and, most importantly, how and by whom decisions are made.

The IIJA Act, FAST Act, MAP-21, SAFETEA-LU, and the CAAA are five pieces of federal legislation that directly impact the transportation planning process. The CAAA calls for a greater integration of transportation and air quality planning processes. It requires that transportation plans, programs and projects conform to state air quality plans, and it mandates a reduction of vehicle miles traveled and congestion levels in some areas not meeting air quality standards.

The goal of the transportation planning process is to improve the entire regional transportation system by emphasizing the preservation of the existing system. Projects and strategies for the transportation system will look to improve:

- The accessibility and mobility for people and goods.
- Creating/enhancing connectivity between modes of transportation.
- Increase the safety and security along the system for all users.
- Promote an efficient manner of management and operation.
- Encourage energy conservation.
- Support economic vitality of the region and provide for consistency between transportation projects and the growth and development patterns.

Motorized and non-motorized safety improvement projects have been done, to a large extent, by individual implementing agencies as problems are identified. Efforts have also been made on the transit system to increase efficiency and safety. Protection of the environment and the social and economic well-being of the citizens concerning transportation projects are achieved through reducing transportation system costs, reducing environmental pollution and energy consumption, and

coordinating land use and transportation.

The Bay City area which has a good highway is experiencing congestion in some areas and moderate congestion in many other parts of the region. Roadway improvements are not being built fast enough, and the prospects for the congestion problem are only that it will get worse. The Bay City area does not face the same severity of the congestion problem as some larger cities, but the relative deterioration of conditions here is comparable to many of those larger cities.

The 2025 Transportation Plan report was developed from May 2001 to April 2002. The final version of the report was approved in June, 2002. The 2027 Transportation Plan was a minor update to extend the 2025 plan for a two-year period, while a new Travel Demand Model was under development to synchronize the Bay City Area Transportation Study (BCATS) Metropolitan Transportation Plan with the Saginaw Metropolitan Area Transportation Study (SMATS) Metropolitan Transportation Plan. This happened after the 2035 Metropolitan Transportation Plan, also known as the Long-Range Transportation Plan, was developed between January 2006 and July 2007 to include information from the Tri-Cities Travel Demand Model and to include all aspects of the Transportation Bill, SAFETEA-LU signed by President Bush on August 10, 2005. The 2040 Metropolitan Transportation Plan was developed from January 2011 to June 2012 and incorporated the updated Great Lakes Bay Region Travel Demand Model which identifies peak period deficiencies as well as the incorporation of transit travel. The 2045 Metropolitan Transportation Plan was developed from August 2015 to March 2017 to take in to account information from the updated Great Lakes Bay Region Travel Demand Model that now includes the Midland Area Transportation Study (MATS) and aspects of the FAST Act.

The FAST Act builds on the program structure and reforms of MAP-21 with the transition to a performance and outcome-based program. The United States Transportation Secretary, in consultation with state DOTs, MPOs, and other stakeholders, establishes performance measures for pavement conditions and performance for the Interstate and National Highway System (NHS), bridge conditions, injuries and fatalities, traffic congestion, on-road mobile source emissions, and freight movement on the Interstate System. State DOTs along with MPOs set performance targets in support of these measures, and state and metropolitan plans describe how program and project selection will help achieve the targets.

Metropolitan Planning Organizations (MPOs) such as the Bay City Area Transportation Study, in cooperation with state and local transit authorities, have been required to produce long range transportation plans since 1965. Under the FAST Act, BCATS is required to develop both a Metropolitan Transportation Plan (MTP) and a Transportation Improvement Program (TIP) which encompass a broader spectrum of issues, including intermodal facilities and fiscal constraints. As a result, BCATS has developed this 2045 Metropolitan Transportation Plan Update.

The 2045 Planning Process

Previous transportation legislation provided broad guidelines for the process used in developing long range transportation plans. The FAST Act continues the tradition of allowing as much flexibility as possible. However, it does specify certain issues that the plan must address. Addressing these issues will result in a plan that significantly improves transportation decisions in the Bay City area including:

- The projected transportation demand of persons and goods in the metropolitan planning area over the period of the transportation plan.

- Existing and proposed transportation facilities (including major roadways, transit, multimodal and intermodal facilities, pedestrian walkways and bicycle facilities, and intermodal corridors) that should function as an integrated metropolitan transportation system, giving emphasis to those facilities that serve important national and regional transportation functions over the period of the transportation plan. In addition, the locally preferred alternative selected from an Alternatives Analysis under the FTA's Capital Investment Grant program (49 U.S.C. 5309 and 49 CFR part 611) needs to be adopted as part of the metropolitan transportation plan as a condition for funding under 49 U.S.C. 5309 when required as a major capital investment project.

- Operational and management strategies to improve the performance of existing transportation facilities to relieve vehicular deficiencies and maximize the safety and mobility of people and goods.

- Assessment of capital investment and other strategies to preserve the existing and projected future metropolitan transportation infrastructure and provide for multimodal capacity changes based on regional priorities and needs. The metropolitan transportation plan may consider projects and strategies that address areas or corridors where current or projected deficiencies threaten the effective functioning of key elements of the metropolitan area's transportation system.

- Design concept and design scope descriptions of all existing and proposed transportation facilities in sufficient detail, regardless of funding source, in non-attainment and maintenance areas for conformity 53 determinations under the EPA's transportation conformity rule (40 CFR part 93). In all areas (regardless of air quality designation), all proposed improvements shall be described in sufficient detail to develop cost estimates.

- A discussion of types of potential environmental mitigation activities and potential areas to carry out these activities, including activities that may have the greatest potential to restore and maintain the environmental functions affected by the metropolitan transportation plan. The

discussion may focus on policies, programs, or strategies, rather than at the project level. The discussion shall be developed in consultation with Federal, State, and Tribal land management, wildlife, and regulatory agencies. The MPO may establish reasonable timeframes for performing this consultation.

- Identify pedestrian walkway and bicycle transportation facilities in accordance with 23 U.S.C. 217(g).

- Transportation and transit enhancement activities, as appropriate.

- A financial plan that demonstrates how the adopted transportation plan can be implemented.
    - For purposes of transportation system operations and maintenance, the financial plan shall contain system-level estimates of costs and revenue sources that are reasonably expected to be available to adequately operate and maintain Federal-aid highways (as defined by 23 U.S.C. 101(a)(5)) and public transportation (as defined by title 49 U.S.C. Chapter 53).
    - For the purpose of developing the metropolitan transportation plan, the MPO, public transportation operator(s), and State shall cooperatively develop estimates of funds that will be available to support metropolitan transportation plan implementation, as required under Sec. 450.314(a)(1). All necessary financial resources from public and private sources that are reasonably expected to be made available to carry out the transportation plan shall be identified.
    - The financial plan shall include recommendations on any additional financing strategies to fund projects and programs included in the metropolitan transportation plan. In the case of new funding sources, strategies for ensuring their availability shall be identified. In developing the financial plan, the MPO shall consider all projects and strategies proposed for funding under title 23, U.S.C., title 49 U.S.C. Chapter 53 or with other Federal funds; State assistance; local sources; and private participation. Starting December 11, 2007, revenue and cost estimates that support the metropolitan transportation plan must use an inflation rate(s) to reflect "year of expenditure dollars,'' based on reasonable financial principles and information, developed cooperatively by the MPO, State(s), and public transportation operator(s).
    - For the outer years of the metropolitan transportation plan (i.e., beyond the first 10 years) the financial plan may reflect aggregate cost ranges/cost bands, as long as the future funding source(s) is reasonably expected to be available to support the projected cost ranges/cost bands.
    - For illustrative purposes, the financial plan may (but is not required to) include additional projects that would be included in the adopted transportation plan if additional resources beyond those identified in the financial plan were to become available.
    - In cases that the FHWA and the FTA find a metropolitan transportation plan to be fiscally

constrained and a revenue source is subsequently removed or substantially reduced (i.e., by legislative or administrative actions) the FHWA and the FTA will not withdraw the original determination of fiscal constraint; however, in such cases, the FHWA and the FTA will not act on an updated or amended metropolitan transportation plan that does not reflect the changed revenue situation.

Participation Plan

There must be adequate opportunity for public officials (including elected officials) and citizen involvement in the development of the transportation plan before it is approved by BCATS, in accordance with the requirements of FAST Act 23 USC 134 (g)(3)(A) and 23 USC 134 (i)(6)(A). Such procedures shall include opportunities for interested parties to be involved in the early stages of the plan development/update process. The procedures shall include publication of the proposed plan or other methods to make it readily available for public review and comment. The procedures also shall include publication of the approved plan or other methods to make it readily available for information purposes. The BCATS Participation Plan is included in Chapter 8 of this document and is also available as a stand-alone document on the BCATS home page http://www.baycounty-mi.gov/Transportation/ adopted on October 23, 2014.

Conformity Determination

In non-attainment areas for transportation related pollutants, the FHWA and the FTA, as well as BCATS, must make a conformity determination on any new/revised plan in accordance with the Clean Air Act and the EPA conformity regulations (40 CFR parts 51 and 93). Bay County was an attainment/maintenance area operating under limited maintenance requirements under EPA's 1-hour Ozone Standard. Since EPA has revoked the 1-hour Ozone Standard and replaced it with a newer standard, the former minimal maintenance requirements for the County under the 1-hour Ozone Standard have been removed with that action.

Bay County is in attainment for Ozone under USEPA's recently implemented 8-hour Ozone Standard. There is no requirement to conduct a conformity analysis for the County under this designation.

Projects not currently included in the Plan

Although BCATS compiled the list of local projects with the aid of MDOT, local road agencies, transit operation agencies and the local communities, there will ultimately be projects that will arise that were not included in the Plan. There are two methods through which these projects will be able to receive federal funds provided by the IIJA Act or the FAST Act.

First, a project may be eligible to be part of the Plan if it is determined to be consistent with the policies of the Plan and meets IIJA or FAST Act requirements, such as fiscal feasibility.

Second, the Plan may be formally amended to include a specific project through the BCATS committee process.

Chapter Two:
Planning Factors and Performance Measures

FAST Act Planning Factors

The development of goals and objectives for any planning effort reflect the values and principles of the people of an area. They are also a means of measuring the relative success of implementing the proposed plan. When applying these goals and objectives to any effort, the decision makers will need to make tradeoffs between different goals and objectives.

The planning factors provide the ability of BCATS to improve the livability of residents and access areas needing improvement. Livability is the ability of transportation to provide a higher quality of life for citizens by providing access to a better road system, enhance local economy, provide a safe system to navigate, and provide multiple modes of travel. BCATS will try and incorporate a result driven approach to implementing livability factors into the planning process. Projects will be considered for improving quality of life, improving economic vitality, promoting energy conservation, safety, and protecting the environment.

The following goals and objectives have been formulated by an integration of previous BCATS goals and objectives along with the FAST Act's ten planning factors that must be considered as part of the planning process for BCATS. The following factors have been explicitly considered, analyzed as appropriate, and reflected in the BCATS long range planning process.

BCATS Goal One/FAST Act Factor One

Support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency.

Objectives

- Promote general economic development
- Specifically improve or enhance tourism
- Specifically improve or enhance the movement of freight and services
- Improve or enhance the movement of workers
- Provide new access to jobs and opportunities
- Improve the value of residential or nonresidential properties
- Encourage investments from the private sector
- Improve access to terminals (sea, air, multimodal, etc.)
- Enhance the ability of the freight system to support product exports/imports

BCATS Goal Two/FAST Act Factor Two

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

Objectives

- Reduce vehicular accidents and eliminate hazardous locations
- Minimize rail/auto/transit/non-motorized conflicts
- Assist the monitoring or patrolling of the system
- Increase access to accident incidences and/or disabled vehicles
- Enhance or add to the system of bike lanes and sidewalks
- Enhance the public safety of pedestrians
- Contribute to a reduction in traffic volume
- Improve the handling of hazardous materials movement

BCATS Goal Three/FAST Act Factor Three

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

Objectives

- Reduce and eliminate hazardous locations
- Assist the monitoring or patrolling of the system
- Increase access to accident incidences and/or disabled vehicles
- Enhance the public safety of pedestrians
- Improve the handling of hazardous materials movement

BCATS Goal Four/FAST Act Factor Four

Increase the accessibility and mobility of both people and freight.

Objectives

- Provide enhanced or new capacity or mobility to the transportation system to move people
- Provide enhanced or new accessibility to the transportation system to move people
- Provide enhanced or new capacity or mobility to the transportation system to move freight
- Provide enhanced or new accessibility to the transportation system to move freight
- Enhance the range of freight service options available to local business
- Provide appropriate access to and from major land uses

- Minimize barriers to disadvantaged mobility-limited persons

BCATS Goal Five/FAST Act Factor Five

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

Objectives

- Reduce vehicle emissions
- Reduce vehicle noise
- Decrease fuel consumption
- Add to the convenience or efficiency of the system
- Specifically protect wetlands or other natural habitats
- Decrease air or water pollution
- Promote non-motorized travel
- Promote traffic calming measures
- Support cultural and/or historic property retention or development
- Support community cohesion and design
- Promote environmental equity
- Enhance development of brownfields
- Conserve prime agricultural resources and open spaces
- Planning consistent with local township and city land use plans

BCATS Goal Six/FAST Act Factor Six

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

Objectives

- Improve intermodal connectivity for people
- Improve the integration/connectivity within people serving modes
- Improve intermodal connectivity for freight
- Improve the integration/connectivity within freight serving modes
- Enhance the information/telecommunication networks that integrate freight and people-serving modes

BCATS Goal Seven/FAST Act Factor Seven

Promote efficient system management and operation.

Objectives

- Use Intelligent Transportation Systems (ITS) technology
- Reduce transportation system cost
- Contribute to better vehicle and commercial traffic counts
- Enhance administrative productivity/efficiency
- Enhance electronic processing of vehicle information
- Provide technologies to alert traffic to road conditions/alternate routing

BCATS Goal Eight/FAST Act Factor Eight

Emphasize the preservation of the existing transportation system.

Objectives

- Contribute to better system maintenance
- Emphasize system rehabilitation rather than expansion
- Incorporate new technologies
- Maximize existing capacity
- Optimize use of existing infrastructure to enhance service

BCATS Goal Nine/FAST Act Factor Nine

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

Objectives

- Improve infrastructure to mitigate stormwater impacts
- Emphasize system rehabilitation rather than expansion
- Incorporate new technologies
- Maximize and implement green infrastructure to manage stormwater runoff
- Optimize use of infiltration-based approaches to reduce runoff such as porous pavement, bio-swales, basins, and trenches.

BCATS Goal Ten/FAST Act Factor Ten

Enhance travel and tourism.

Objectives

- Contribute to a better infrastructure to facilitate increased foot traffic and safety for non-motorized transportation options throughout BCATS area
- Emphasize system and connectivity to the BCATS area social and natural attractions
- Connect current trail system
- Maximize existing tourism features currently in place such as the Saginaw Bay Water Trail and Bay City recreation area
- Optimize use of existing infrastructure to enhance service

Performance Measures

Performance Measures (PMs) are ways of determining whether implementation of the Metropolitan Transportation Plan (MTP) will bring BCATS closer to the adopted goals and objectives. PMs can be either quantitative or qualitative. Examples of quantitative PMs include: change in average speed, change in air quality emissions and change in congested Vehicle Miles Traveled (VMT).

The U.S. DOT has issued Notices of Proposed Rulemaking or Final Rules for the performance areas. Within one year after rules are finalized, MDOT will be required to set performance targets. BCATS will be required to establish performance targets within six months of the statewide targets. The performance measures will be phased in three rules proposed by the USDOT in the following years. The Safety Performance Measure final rule was the first and became effective on April 14, 2016. Within one year of the USDOT final rule on performance measures, requires States to set performance targets in support of those measures. States may set different performance targets for urbanized and rural areas. Within 180 days of States or providers of public transportation setting performance targets, MPOs are required to set performance targets in relation to the performance measures (where applicable).

Performance targets will be measured by USDOT to assess whether states meet their goals. There is no rule to enforce penalties on the consequence of not meeting targets on MPO's. The proposed rule could allow the USDOT to require MDOT and MPOs to develop documents to describe the actions the State and MPOS will undertake to achieve all related NHPP targets. Additionally, MDOT could be penalized up to 10 percent of the amount of the State's previous fiscal year transportation budget. Below are the National Transportation Performance Measures and targets.

Area	Measures	Target Setting Status
Safety Performance	• Number of fatalities; • Rate of fatalities; • Number of serious injuries; • Rate of serious injuries; • Number of non-motorized fatalities and non-motorized serious injuries	Approved adoption of statewide targets (February 2019)
Pavement and Bridge Asset Management	• Percent NHS Bridges in good and poor condition; • Percent Interstate pavement in good and poor condition; • Percent Non-Interstate NHS pavement in good and poor condition	Approved adoption of statewide targets (October 2018)
System Performance and Freight	• Interstate travel time reliability; • Non-Interstate travel time reliability; • Truck travel time reliability	Approved adoption of statewide targets (October 2018)
Congestion Mitigation and Air Quality	• Peak hour excessive delay per capita; • Percent of non-single occupancy vehicle travel; • Total emissions reduction	Not Applicable to BCATS
Public Transportation	Transit Asset Management (TAM) Plans; Public Transportation Agency Safety Plan • Fatalities • Injuries • Safety events • System reliability	Approved State of Good Repair Targets (December 2018); TAM Plans Received October 2018; Safety Plans have no regulations adopted at this time.

Figure 1: National Transportation Performance Measures

The following performance measures have been formulated by an integration of previous measures set by MAP-21 and FAST Act. The following factors have been explicitly considered, analyzed as appropriate, and reflected in the BCATS long range planning process. Once Targets are set by MDOT, BCATS policy members have 180 days to vote on whether to accept MDOT targets or develop BCATS regional targets. On November 18, 2021, the BCATS Policy Committee signed a resolution supporting the MDOT 4-year targets.

BCATS Performance Measures

BCATS Performance Measure One: Safety Measures

The Safety PM Final Rule supports the data-driven performance focus of the HSIP. The Safety PM Final Rule establishes five performance measures to carry out the HSIP: the five-year rolling averages for: (1) Number of Fatalities, (2) Rate of Fatalities per 100 million VMT, (3) Number of Serious Injuries, (4) Rate of Serious Injuries per 100 million VMT, and (5) Number of Non-motorized Fatalities and Non-motorized Serious Injuries. The safety performance measures will be used to assess traffic fatalities and serious injuries on all public roads regardless of jurisdiction. The intent is to improve national safety data by providing greater consistency in reporting, improve transparency through use of a public reporting system, and enable targets and progress to be aggregated at the national level. The regulation will provide the Federal Highway Administration (FHWA) and the National Highway Traffic Safety Administration (NHTSA) the ability to better communicate a national safety performance story.

Performance Measures:

- Reduce the number of fatalities
- Decrease the rate of percent of fatalities compared to total crashes
- Reduce the number of serious injuries
- Rate of Serious injuries percent of fatalities compared to total crashes
- Reduce the average number of non-motorized fatalities and non-motorized serious injuries.

Performance Targets:

- The BCATS Policy Committee took action to support the updated state safety targets for 2022 on November 18, 2021.

Safety Performance Measure	Baseline Condition (2016-2020)	Calendar Year 2022 State Safety Targets
Fatalities	1,028.20	1,065.2
Fatality Rate (Per 100 million VMT)	1.051	1.098
Serious Injuries	5,673.2	5,733.2
Serious Injury Rate (Per 100 million VMT)	5.778	5.892
Non-motorized Fatalities & Serious Injuries	762.8	791.6

Figure 2: Michigan State Safety Targets for Calendar Year 2022

BCATS Performance Measure Two: System Performance/Freight/CMAQ

The purpose of this final rule is to establish measures for State departments of transportation (State DOT) to use to carry out the National Highway Performance Program (NHPP) and to assess the condition of the following: Pavements on the National Highway System (NHS) (excluding the Interstate System), bridges carrying the NHS which includes on- and off-ramps connected to the NHS, and pavements on the Interstate System.

Performance Measures:

- Percentage of reliable person-miles traveled on the Interstate
- Percentage of reliable person-miles traveled on the non-Interstate NHS
- Percent change in CO2 emissions from 2017, generated by on-road mobile sources on the NHS.
- Truck Travel Time Reliability Index (Sum of max TTTR for each segment/total Interstate system miles)
- Total emission reductions for applicable criteria pollutants, for non-attainment and maintenance areas
- Two measures to assess traffic congestion:
    - Peak Hour Excessive Delay (PHED) Per Capita
    - Modal share: specifically, the percent of non-single occupancy vehicle travel,

including travel avoided by telecommuting.

- The last three measures (PHED per Capita, SOV Travel, and Total Emissions Reduction) apply to urbanized areas containing NHS mileage and having a population over 200,000 (Phase 1 population over 1 million). The Bay City urbanized area does not meet the criteria for these last three performance measures.

Performance Targets:

- Calculate residents in BCATS area without a vehicle and residents' access to Bay Metro Services
- Measure the transit routes near businesses (percentage) and increased target to improve the ability for people to access jobs

Measure	Baseline Condition 2017	2-Year Targets	4-Year Targets
Interstate Travel Time Reliability	85.1%	75.0%	75.0%
Non-Interstate NHS Travel Time Reliability	85.8%	-	70.0%
Freight Reliability	1.38	1.75	1.75

Figure 3: Michigan State Performance Targets for Calendar Year 2022

BCATS Performance Measure Three: Pavement and Bridge Condition

The measures in this third rule will be used by State DOTs and MPOs to assess the performance of the Interstate and non-Interstate National Highway System (NHS) for the purpose of carrying out the National Highway Performance Program (NHPP); to assess freight movement on the Interstate System; and to assess traffic congestion and on-road mobile source emissions for the purpose of carrying out the Congestion Mitigation and Air Quality Improvement (CMAQ) Program. This third performance measure final rule also includes a discussion that summarizes all three of the national performance management measures rules and the comprehensive regulatory impact analysis (RIA) to include all three final rules.

Performance Measures Pavement:

- percentage of pavements on the Interstate System in Good condition
- percentage of pavements on the Interstate System in Poor condition

- percentage of pavements on the NHS (excluding the Interstate System) in Good condition
- percentage of pavements on the NHS (excluding the Interstate System) in Poor condition

Performance Measures Bridge:

- percentage of NHS bridges in Good condition
- percentage of NHS bridges in Poor condition

Performance Targets:

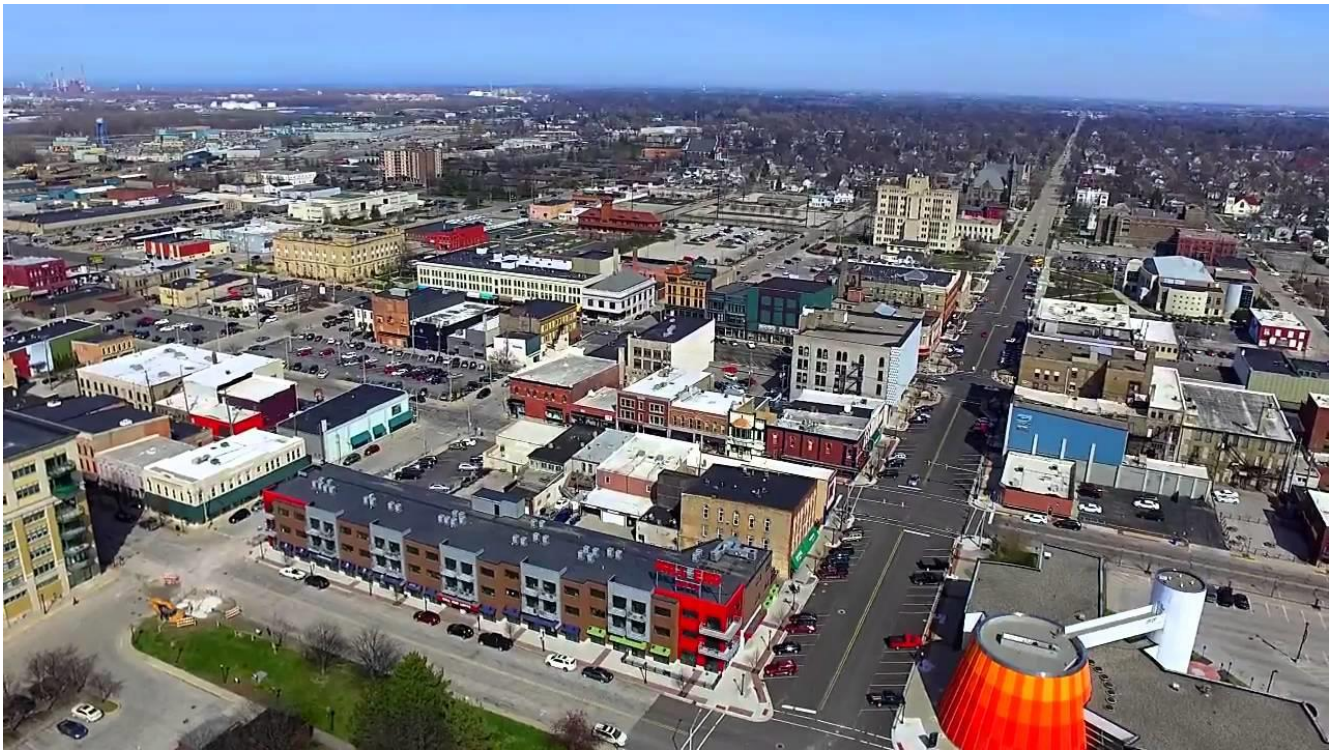
- The BCATS Policy Committee took action to support the state safety targets in October 2018 after they were finalized by MDOT on May 20, 2018.

Performance Area	Measure	Baseline Condition (2017)	2- Year Targets (ended 10/1/2020	4- Year Targets
Bridge	Percent National Highway System Deck Area in Good Condition	32.70%	27.00%	23.0% (adjusted from the previous 4-year target of 26%)
	Percent National Highway System Deck Area in Poor Condition	9.80%	7.00%	8% (adjusted from the previous 4-year target of 7%)
Pavement	Percent of Interstate Pavement in Good Condition	56.80%	N/A	47.80%
	Percent of Interstate Pavement in Poor Condition	5.20%	N/A	10.00%
	Percent of Non-Interstate NHS Percent in Good Condition	49.70%	46.70%	43.70%
	Percent of Non-Interstate NHS Percent in Poor Condition	18.60%	21.60%	24.60%

Table 3: BCATS Performance Numbers

Chapter Three

Socio-Economic Data



Socio-Economic Data

The following represents a brief description of the methodology used when developing the socio-economic data (SE Data) for the Great Lakes Bay Region (GLBR) 2045 Metropolitan Transportation Plan (MTP) Travel Demand Model. The SE Data represents the model base year 2013 and forecasted years 2025, 2035, and 2045 conditions for the GLBR travel demand model area (i.e., entire Counties of Bay, Midland, & Saginaw) in terms of population, occupied housing units, and employment.

The Traffic Analysis Zone (TAZ) is the primary geographical unit of analysis of the travel demand model – a TAZ represents the origins and destinations of the travel activity within the model area. The socio-economic data, represented by each TAZ, will be used to calculate the number of trips produced by each zone (using household characteristics) and the "attractiveness" of each zone (using employment data). The process of calculating the trips produced by, and attracted to, each TAZ is the first step (called trip generation) in the GLBR four step modeling process.

Model Base Year (2017) Data Development

Development of Population and Occupied Housing Units;

- The current decennial 2010 Census and 2012 5 year ACS are the source of the population and household data (among other SE Data items). This data as made readily available to the public and was electronically downloaded from the Census FTP site. The newest 2020 Census data will be released in December of 2022.
- The data was obtained at the block level of geography (where available) and aggregated to the model TAZ level based upon the geographical TAZ-Census block equivalency using GIS software. TAZs are developed based upon Census geography for compatibility.
- Growth factors were calculated from the University of Michigan / REMI data forecasts to adjust the population and occupied housing units to 2013 values.

Development of Total Employment;

- A list of businesses (employers) for the GLBR travel demand model area was developed from a "master" list of business data purchased from two database sources; Claritas (a Nielson Company) and Hoovers (a Dunn-Bradstreet Company).
- The data from each of these two sources includes general business information, industry type, geographic location, and employee count.
- The Final Business List and Employee Counts were developed from a combination of these two data sources, as well as historical data from previous LRPs;

- The Nielson / Claritas Business-Facts Database was used as the primary source of business data, and the Hoovers Database was used for supplemental information.
- Each of the databases (independently) underwent several quality checks for: duplicate records (based on business ID, name, and address); whether a business was still in existence; accurate employee count; accurate geographical location.
- Additional sources of business information were used in the quality control process; MI LARA (DLEG), Manta, Cortera, MacRae's Blue Book, and Google Maps, among others.
- All school district employee counts (and enrollment figures) were checked with information available through the MI Center for Educational Performance & Information (CEPI).
- The Claritas and Hoovers "cleaned" business lists were then combined and quality checked for duplicate records (based on business ID, name, and address, etc.).
- This was the business list presented to the MPO & local agencies for further review. Any amendments were incorporated into the final business list.
- The businesses were sorted into retail, service, and other Categories by North American Industry Classification System (NAICS) code.
- Finally, the employee count for each category in each TAZ was developed by aggregating the businesses located within each TAZ using GIS software.

Model Forecast Years (2025, 2035, and 2045) Data Development

Growth factor and projection calculations are developed using the following methodology.

- MDOT contracts with the University of Michigan (U of M), every four to five years, to develop economic and demographic (population, household, and employment) forecasts through a specified forecast period (currently 2040)
- U of M employs a version of the Regional Economic Models Incorporated (REMI) TranSight Model, and methodology developed in a joint effort between U of M and MDOT, to develop the economic and demographic forecasts
- Garth Banninga (MDOT Demographic Specialist) utilizes these economic and demographic data forecasts to calculate population, household, and employment projections (in 5-year increments) for the Michigan Statewide Travel Demand Model
- The Michigan Statewide Travel Demand Model forecasts were amended and applied to the GLBR travel demand model base year SE-Data – trend analysis was utilized to forecast data for the year 2045

- Amendments to the forecast calculations were made based upon input from the MPO & local agencies (i.e., cities, villages, townships)

It is important to remember that socio-economic forecasting is essentially a matter of judgment. Judgment is required in selecting the type of forecast to be implemented; in determining the procedures for making the forecast; and the process used in reviewing the effects of the factors that induce changes in population and employment. The establishment of a large new industry or the loss of a similar size industry can lead to considerable impact on an area's development.

Therefore, although socio-economic projections are a useful and required tool in the planning of an area's future growth and development, it is important to note that the projections are not infallible and should be modified as time progresses to better reflect development impacts occurring in the BCATS planning area.

Listed below are the BCATS portion of the GLBR model, which includes Bay County except for Williams Township and Auburn as they are part of the Midland urban area, 2013, 2025, 2035, and 2045 totals for socio-economic data as approved by the BCATS Policy Committee for use in the trip generation step of the GLBR travel demand model.

BCATS Study Area Socio-Economic Data

Year	Population	Occupied Households	Total Employment	Retail Employment	Service Employment	Other Employment
2013	100996	42211	8090	22476	17978	100996
2025	98135	40503	7087	24799	17668	98135
2035	96427	40403	6665	25721	16945	96427
2045	94773	40440	6288	26759	16399	94773

Table 4: BCATS Socio-Economic Data

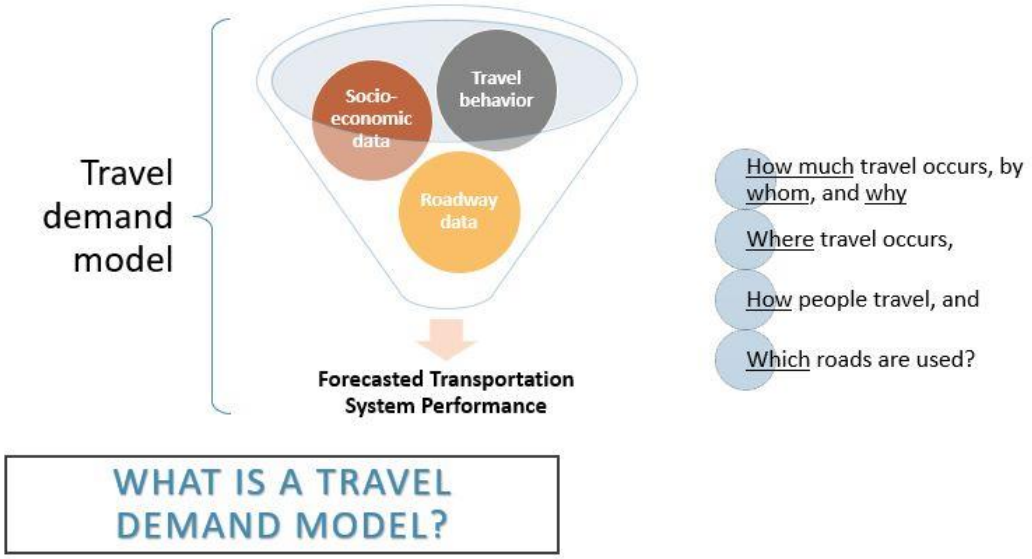
Chapter Four
Urban Area Travel Demand Modeling Process

Urban Area Travel Demand Modeling Process

Because of the interaction of traffic between Bay City, Saginaw, and Midland it was decided that the travel patterns of the area could be better modeled if a regional model was built. The travel demand model used for the BCATS 2045 Long Range Transportation Plan is a regional model, referred to as the Great Lakes Bay Region (GLBR) Model that includes Saginaw, Bay and Midland Counties. Because of the interaction between these three areas, travel patterns can be better modeled as a regional model instead of modeling each area separately. This effort required coordination between Saginaw Area Transportation Agency (SATA) and Midland Area Transportation Study (MATS).

The urban area travel demand modeling process for the BCATS portion of the GLBR Model was a cooperative effort between BCATS, being the Metropolitan Planning Organization (MPO), and the Michigan Department of Transportation, Statewide and Urban Travel Analysis Section (MDOT SUTA). MDOT provided the lead role in the process and assumed responsibility for modeling activities with both entities reaching consensus on selective process decisions. The local transportation planning agency is the MPO, comprised of representatives of local governmental units and is the umbrella organization responsible for carrying out transportation planning in cooperation with MDOT and the Federal Highway Administration. This is typically accomplished by full coordination of the local agencies with the MPO.

The modeling effort results in an important decision-making tool for the MPO Long Range Transportation Plan development as well as any transportation related studies. The modeling process is a systems-level effort. Although individual links of a highway network can be analyzed, the results are intended for determination of system-wide impacts. At the systems level, impacts are assessed on a broader scale than the project level.

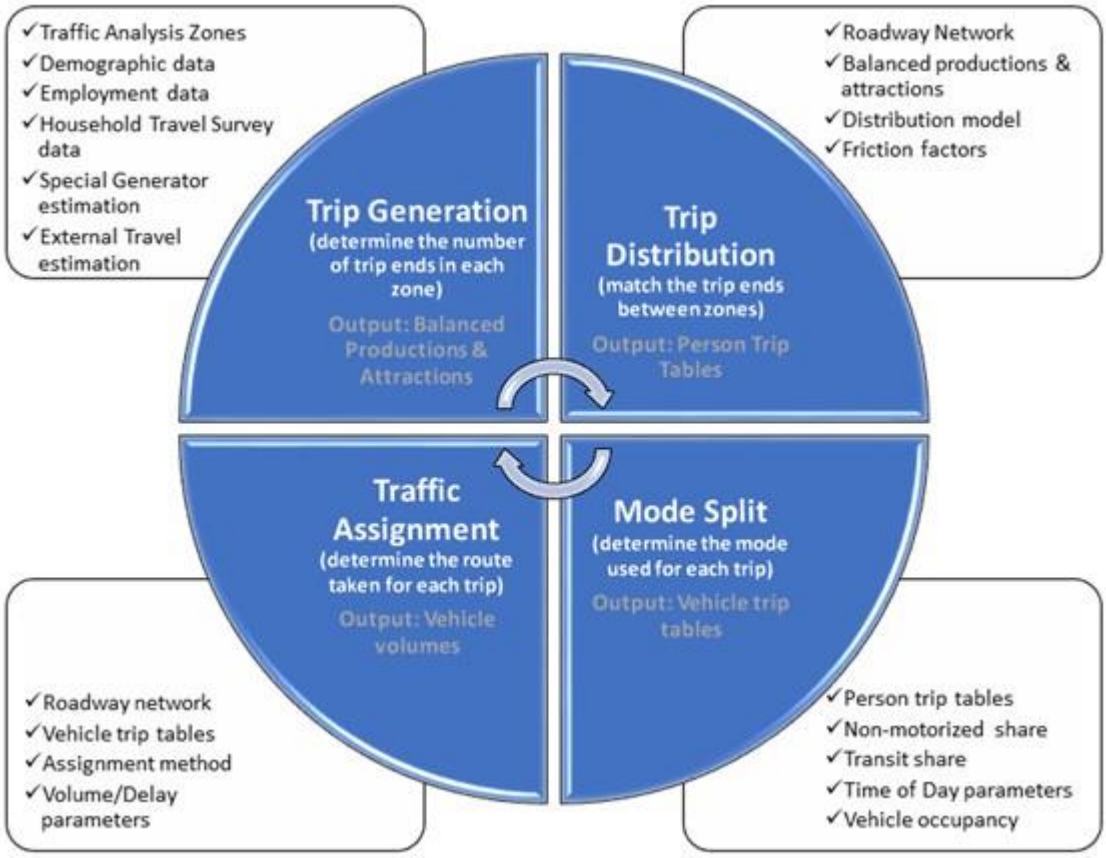


Travel demand forecasting models (TDMs) are a major analysis tool for the development of long-range transportation plans. These mathematical models are designed to calculate the number of trips, connect their origins and destinations, forecast the mode of travel, and identify the roadways or transit routes most likely to be used in completing a trip. Models are used to determine where future transportation problems are likely to occur, as indicated by modeled roadway congestion. Once identified, the model can test the ability of roadway and transit system improvements to address those problems. The model is a computer estimation of current and future traffic conditions and is built and ran through TransCAD software.

How the Model Works:

1. The model generates a synthetic population of households based on the aggregate characteristics of the population encoded in the traffic analysis zones (TAZ).
2. The level of vehicle ownership is applied to the household.
3. The number of trips of various purposes (work, school, other, etc.) are predicted for each household.
4. The dominant mode of travel (private automobile, bus, walking/biking) is modeled for the household's trip of each purpose.
5. Probable destinations of each trip type are chosen.
6. Finally, the trips are assigned to the roadway network and routes are chosen such that travelers minimize their travel time and costs.

Components of the Model



Traffic Analysis Zone (TAZ)

The Traffic Analysis Zone (TAZ) is the primary geographical unit of analysis of the travel demand model and it represents the origins and destinations of the travel activity within the model area. TAZ's are determined based upon several criteria including similarity of land use, compatibility with jurisdictional boundaries, presence of physical boundaries, and compatibility with the road system. Streets and natural features such as rivers are generally utilized as zone boundary edges. TAZ's vary in size depending on population, employment, and road network density. Each TAZ includes population and employment data (aggregated from census blocks) which is fed into the Travel Demand Model.

Road Network

Using the TransCAD software, a traffic network is built to represent the existing road system. The Model network is based on the Michigan Geographic Framework and includes most roads within the study area classified as a minor collector or higher by the national functional classification system. Other roads are added to provide continuity and/or allow interchange between these facilities.

Transportation system information or network attributes required for each link include facility type, area type, lane width, number of through lanes, parking availability, national functional classification, and traffic counts (based on availability). The network attributes were provided by MDOT staff and reviewed by the MPO. Link capacities and free flow speeds are determined based on network attributes such as national functional classification, facility type, and area type. These features of the road network are used in the traffic assignment process and in determining traffic conditions.

Socio-Economic (SE) Data & Population Synthesis

Travel demand models are driven, in part, by the relationship of land use activities and characteristics of the transportation network. Inputs to the modeling process include the number of households, population-in households, vehicles, and employment located in each TAZ. These characteristics are generally referred to as socioeconomic data (SE-Data). The collection and verification of the SE-Data was a collaborative effort between the MPO, MPO committee members, and MDOT.

For the base year of the model, household, population, and employment data from the 2010 U.S. Census, the American Community Survey, and the Nielson employment databases were presented to the MPO and Technical Advisory and Policy Committees. Committee members were asked to provide detailed information about new development and where employers or population had been reduced. For the future years of the model, multiple sources were utilized including the Regional Economic Models Incorporated (REMI) TranSight Model, the MDOT Statewide Travel Demand Model, and input from the MPO & local agencies.

The travel demand model generates a synthetic population of households based on the demographic information associated with the traffic analysis zones. For each zone, individual households are created. Each household has a total number of persons, workers, and students. Each household also has an income variable that indicates whether the household belongs to the lower, middle, or upper-income category. The number of vehicles available to each household is modeled separately, after the

population synthesis, based on these variables and other variables describing the zone in which the household is located.

Trip Generation

The trip generation process calculates the number of person-trips produced from or attracted to a zone, based on the socio-economic characteristics of that zone. The relationship between person-trip making and land activity are expressed in equations for use in the modeling process. The formulas were derived from MI Travel Counts Michigan travel survey data and other research throughout the United States. Productions were generated with a cross-classification look-up process based on household demographics. Attractions were generated with a regression approach based on employment and household demographics. To develop a trip table, productions and attractions must be balanced. Walk/bike trips are calculated using a factor for each trip purpose derived from the MI Travel Counts travel survey data. The walk/bike trips are removed from the production/attraction table before trip distribution is performed. The travel demand model also has a simple truck model that estimates commercial and heavy truck traffic based on production and attraction relationships developed from the Quick Response Freight Manual. The QRFM uses the employment data from the TAZ layer in calculating the percentage of trucks.

Trips that begin or end beyond the study area boundary are called "External trips." These trips are made up of two components: external to internal (EI) or internal to external (IE) trips and through-trips (EE). EI trips are those trips which start outside the study area and end in the study area. IE trips start inside the study area and end outside the study area. EE trips are those trips that pass through the study area without stopping; this matrix is referred to as the through-trip table.

Trip Distribution

Trip distribution involves the use of mathematical formula which determines how many of the trips produced in a TAZ will be attracted to each of the other TAZs. It connects the ends of trips produced in one zone to the ends of trips attracted to other TAZs. The equations are based on travel time between TAZs and the relative level of activity in each zone. Trip purpose is an important factor in development of these relationships. The trip relationship formula developed in this process is based on principals and algorithms commonly referred to as the Gravity Model.

The process which connects productions to attractions is called trip distribution. The most widely used and documented technique is the "gravity model" which was originally derived from Newton's Law of Gravity. Newton's Law states that the attractive force between any two bodies is directly related to the masses of the bodies and inversely related to the distance between them. Analogously, in the trip distribution model, the number of trips between two areas is directly related to the level of activity in an area (represented by its trip generation) and inversely related to the distance between the areas (represented as a function of travel time).

Research has determined that the pure gravity model equation does not adequately predict the distribution of trips between zones. The value of time for each purpose is modified by an exponentially determined "travel time factor" or "F factor" also known as a "Friction Factor." "F factors" represent the average area-wide effect that various levels of travel time have on travel between zones. The "F factors" used were developed using an exponential function described in the Travel Estimation Techniques for Urban Planning, NCHRP 716 and calibrated to observed trip lengths by trip purpose derived from the MI Travel Counts travel survey data. The F factor matrix is generated in TransCAD during the gravity model process.

The primary inputs to the gravity model are the normalized productions (P's) and attractions (A's) by trip purpose developed in the trip generation phase. The second data input is a measure of the temporal separation between TAZs. This measure is an estimate of travel time over the transportation network from TAZ to TAZ, referred to as "skims". In order to more closely approximate actual times between TAZs and also to account for the travel time for intra-zonal trips, the skims were updated to include terminal and intra-zonal times. Terminal times account for the non-driving portion of each end of the trip and were generated from a look-up table based on area type. They represent that portion of the total travel time used for parking and walking to the actual destination. Intra-zonal travel time is the time of trips that begin and end within the same zone. Intra-zonal travel times were calculated utilizing a nearest neighbor routine.

The Gravity Model utilizes the by trip purpose P's & A's, the by trip purpose "F factors", and the travel times, including terminal and intra-zonal. The output is a TAZ to TAZ matrix of trips for each trip purpose.

Mode Choice

The number of person trips and their trip starting and ending point have been determined in the trip generation and trip distribution steps. The mode choice step determines how each person trip will travel. The GLBR travel demand model uses a simplified mode choice to predict mode choice.

The process uses a qualitative measure of transit network service at the zonal level to estimate transit mode shares. The transit trips are accounted for but not assigned to a specific route. The split between single occupancy vehicles (SOV) and shared ride trips (SR2 & SR3+) is based on the average auto occupancy for the applicable trip purpose. The output to this step is a vehicle trip matrix by trip purpose. The external trips and the truck trips, which are originally developed as vehicle trips which eliminates the need of the mode choice step for these trip purposes, are added to the vehicle trip matrix.

Assignment

Traffic assignment is the final step in the traditional four step TDM process. In this step, trips are assigned to a "route" (or path) on the roadway network between each trip origin and destination. The basic premise of trip assignment is that trip makers will choose the "best" path between each origin and destination. The determination of the "best" path is based upon selecting the route with the least "impedance". Impedance, in this application, is based upon travel time – calculated as a function of link distance and speed (and later as a function of link volume and capacity). Essentially, trip makers on the roadway network will choose the route, between each trip origin and destination, which minimizes travel time.

The "User Equilibrium" algorithm (a commonly used algorithm) is employed in the traffic assignment component. User equilibrium is based on the principle that while selecting the "best" route, trip makers will use "all" possible paths between an origin and destination that have equal travel time – so that altering paths will not save travel time. This algorithm attempts to optimize the travel time between all possible paths, reflecting the effects of system congestion.

Thus, the product of the traffic assignment component is a series of vehicle-trip (volume) tables, by mode, for each link in the model roadway network. These "assigned" link volumes are then compared to "observed" traffic data as part of the model calibration, validation and reasonability checking phase of the overall modeling process.

The GBLR model has 4 time periods that were developed to match the peak periods observed in traffic counts. The following period were used: AM Peak (7am - 9am), Mid-Day (9am - 3pm), PM Peak (3pm - 6pm), Nighttime (6pm - 7am).

Travel Demand Model Calibration/Validation

The outputs of each of the four main steps, Trip Generation, Trip distribution, Mode Choice, and Assignment, are checked for reasonableness against national standards. Modifications can be made at each step before moving on to the next.

The final model calibration/validation verifies that the assigned volumes simulate actual traffic counts on the street system. When significant differences occur, additional analysis is conducted to determine the reason. At this time additional modifications may be made to the network speeds and configurations (hence paths), trip generation (special generators), trip distribution (F factors), socio-economic data, or traffic counts.

The purpose of this model calibration phase is to verify that the base year assigned volumes from the traffic assignment model simulate actual base year traffic counts. When this step is completed, the systems model is considered statistically acceptable. This means that future socio-economic data or future network capacity changes can be substituted for base (existing) data. The trip generation, trip distribution, mode choice and traffic assignment steps can be repeated, and future trips can be estimated for systems analysis. It is assumed that the quantifiable relationships modeled in the base year will remain reasonably stable over time.

Applications of the Validated Travel Demand Model

Generally, three distinct alternative scenarios are developed for a LRTP:

1. Simulated Base Year (2017) volumes assigned to the Base Year (2017) Roadway Network; this scenario includes the assignment of 2017 model volumes, generated using 2017 SE data, onto the roadway network representing 2017 conditions. This is referred to as the "validated", existing network scenario, or "base-year" alternative, and is a prerequisite for the other two scenarios.
2. Simulated Forecast Year (e.g. 2045) volumes assigned to a Modified Base Year Roadway Network; this scenario includes the assignment of 2045 volumes, generated using 2045 SE data, onto an amended roadway network representing 2017 conditions, and including any

improvements completed since 2017 and future (near term) improvements for which funds have been "committed". This alternative characterizes future capacity and congestion problems if no further improvements to the transportation system are made. This "congestion analysis" on the "existing plus committed" (E+C) network is also called the "do nothing", or "no-build" alternative, and includes only the E+C roadway system.

3. Simulated Forecast Year (e.g. 2045) volumes on a proposed Forecast Year(e.g. 2045) Roadway Network; this scenario includes the assignment of 2045 volumes, generated using 2045 SE data, onto the roadway network as it is proposed to exist in the forecast year of 2045. This scenario is the long range transportation plan "build" alternative. It includes the E+C roadway network, plus proposed capacity improvement and expansion projects.

System Analysis

Once the base and future trips have been estimated, a number of transportation system analyses can be conducted:

- Roadway network alternatives to relieve congestion can be tested as part of the LRTP. Future traffic can be assigned to an amended, existing roadway network (i.e. “No Build” Network) to represent the future impacts to the transportation system if no improvements were made. From this, improvements and/or expansions can be planned that could help alleviate demonstrated capacity issues.
- The impact of planned roadway improvements or expansions can be assessed.
- Individual links can be analyzed to determine which TAZs are contributing to the travel on that link (i.e., the link's service area). This can be shown as a percentage breakdown of total link volume.
- The impacts of land use changes on the roadway network can be evaluated(e.g. what would be the impact of a new major retail establishment).
- Road closure/detour evaluation studies can be conducted to determine the effects of closing a roadway and detouring traffic during construction activities. This type of study is very useful for construction management.

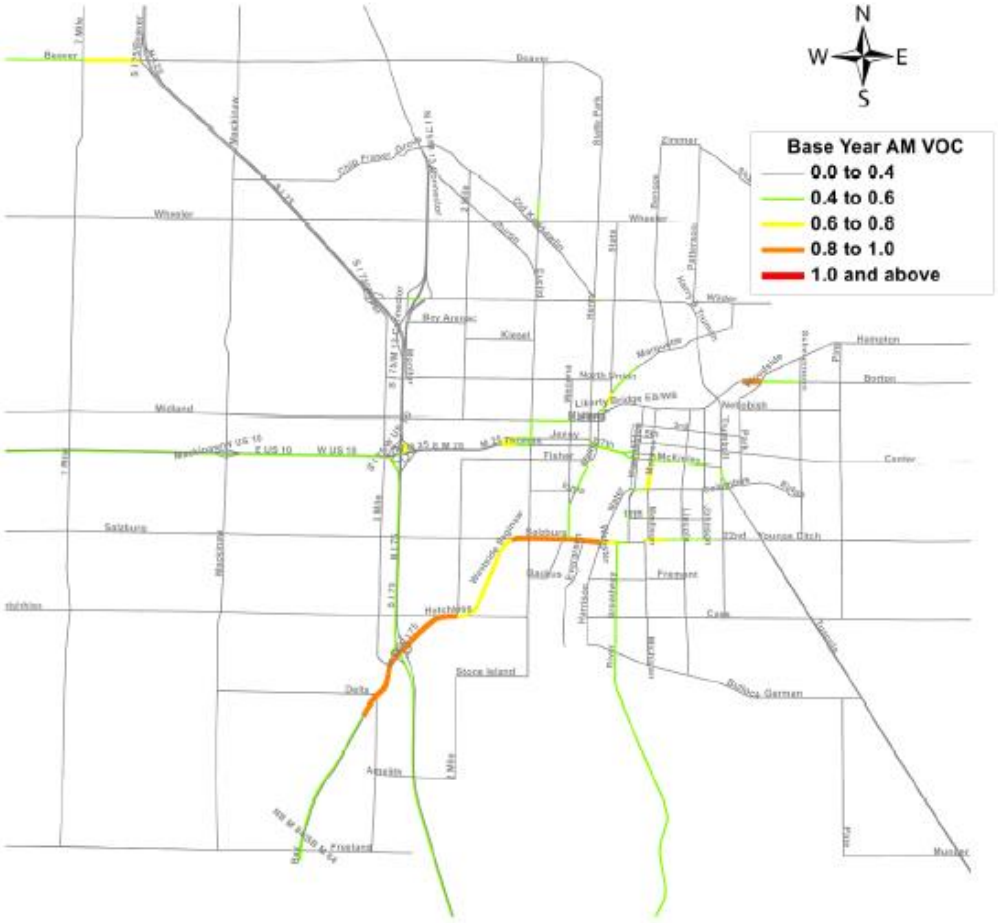
Congestion Analysis

With the completion of the travel demand model, areas of potential congestion in the roadway network were identified based on the volume to capacity ratios of the links. This means that the higher the V/C ratio, the higher the chances are that the roadway could experience congestion. The regional travel demand model identifies areas where traffic congestion is expected and highlights roadway segments that are congested or are close to capacity (in the years 2017 and 2045). It is important to understand that the modeling process is most effective for system level analysis. Although detailed volumes for individual intersection and "links" of a highway are an output of the model, additional analysis and modification of the model output may be required for project level analysis. The accuracy of the model is heavily dependent on the accuracy of the socio-economic data and network data provided by the local participating agencies, and the skill of the users in interpreting the reasonableness of the results.

2017 Base Year - Congestion

The maps below highlight the simulated 2017 base year conditions of the travel demand model.

GLBR Model Base 2017 Network - Downtown Bay City
Volume-to-Capacity - AM Time Period (7:00am-9:00am)



GLBR Model Base 2017 Network - Downtown Bay City
Volume-to-Capacity - PM Time Period (3:00pm-6:00pm)

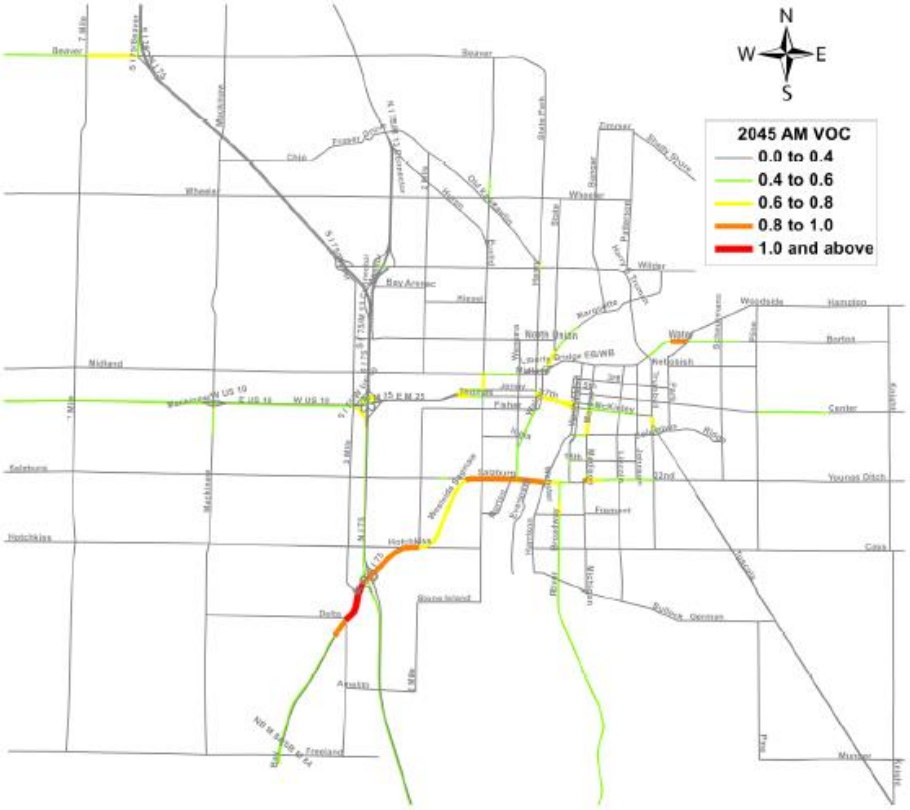
2045 Metropolitan Transportation Plan (MTP) Capacity Projects

Project #	Project Description	Year Open to Traffic
1	Midland Road (3 Mile Road to Mackinaw Road) – Add Center Turn Lane	2040
2	Kiesel Road (2 Mile Road to Euclid Road) – Add Center Turn Lane	2045

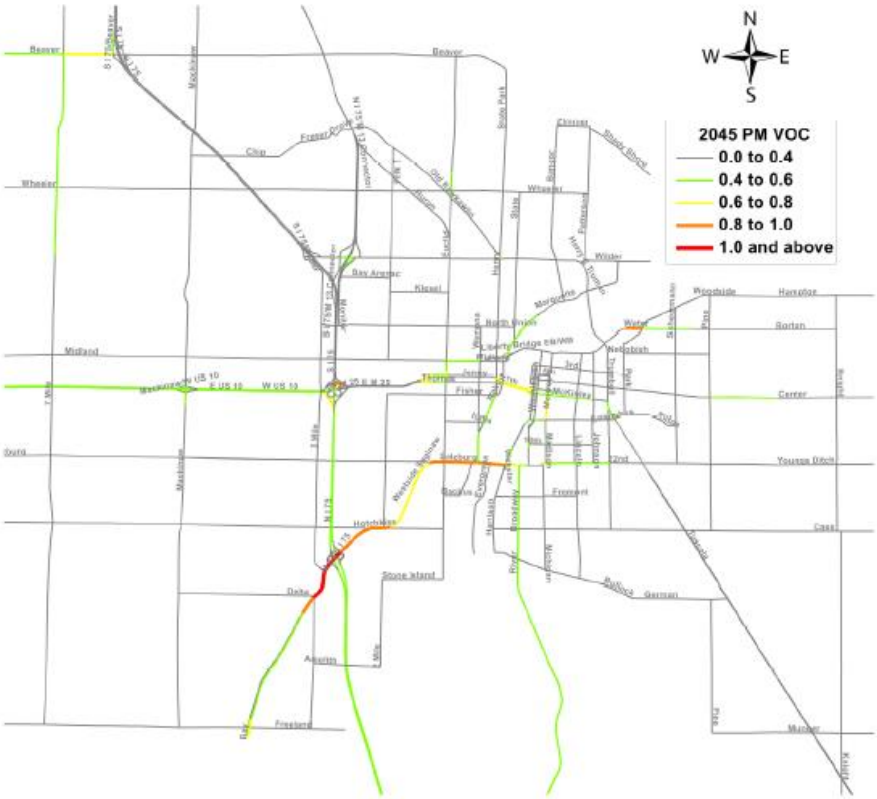
2045 Horizon Year - Potential Congestion

The map below highlights the 2045 horizon conditions of the travel demand model, including the capacity projects listed above.

GLBR Model 2045 Network - Downtown Bay City
TIP and Improve & Expand Long Range Plan Projects
Volume-to-Capacity - AM Time Period (7:00am-9:00am)



GLBR Model 2045 Network - Downtown Bay City
TIP and Improve & Expand Long Range Plan Projects
Volume-to-Capacity - PM Time Period (3:00pm-6:00pm)



Chapter Five:
Transportation Deficiencies, Issues, and Projects

Transportation Deficiencies, Issues, and Projects

The center or focus of the Metropolitan Transportation Plan is a list of specific projects, which have been developed by BCATS. Each project must meet an identified transportation need, primarily addressing capacity and maintenance deficiencies and improving safety. Under Fast Act guidelines, each project must be fundable within anticipated financial resources.

The following is a list of types of projects that may be programmed into the Transportation Improvement Program (TIP):

A. Identified capacity deficiencies from the 2017 transportation network loaded with 2017 traffic volumes (existing problem areas).

B. Identified capacity deficiencies from the 2045 transportation network loaded with 2045 traffic volumes (expected future problem areas).

C. Maintenance type deficiencies (reconstruction or resurfacing needs) identified from ongoing pavement management practices, such as PASER data collection, of the implementing agencies and BCATS.

D. Intersections identified as having existing or potential capacity or safety related issues from review of accident data or lane capacity analysis.

E. Area wide or system wide issues or potential projects needing transportation systems management solutions or further study, which may include transportation enhancement and/or other intermodal solution.

The major priority is roadway repair and preservation. There are approximately 303.4 miles of federal-aid routes within the BCATS urbanized area. About 194.3 miles are under local jurisdiction and about 109.1 miles are under state jurisdiction. BCATS, through funding from the Transportation Asset Management Council (TAMC), has rated the condition of these roadways since 2003. Working closely with the road agencies, pavement management practices are reviewed. As of December 2020, approximately 14% of BCATS federal aid eligible roads are in Good to Excellent condition, 37% in Fair condition and 49% are in Poor condition.

If the goal is to upgrade the pavement condition of these roadways so that 75% are rated good or excellent by 2022, then funding levels for all agencies would need to be at least double what is currently being spent annually on capital improvement to reach that goal.

BCATS Area Volume to Capacity Ratios from the GLBR Travel Demand Model: 2045

Road Name	Extent	2013 V/C with TIP Projects	2045 V/C without MTP Projects	2045 V/C with MTP Projects
AM Peak (7a-9a)				
Lafayette	Wenona To Broadway	0.92-1.04	0.96-1.06	0.96-1.06
Trummbull	Center to Nebobish	0.85-0.92	0.76-0.83	0.76-0.83
N. Water	McEwan to Woodside	0.85-0.87	0.79-0.82	0.79-0.82
PM Peak (3p-6p)				
Lafayette	Wenona To Broadway	0.90-1.03	0.94-1.05	0.94-1.05
Trummbull	Center to Nebobish	0.83-0.90	0.75-0.81	0.75-0.81
N. Water	McEwan to Woodside	0.84-0.86	0.78-0.80	0.78-0.80
Daily				
Lafayette	Wenona To Broadway	0.87-1.01	0.91-1.03	0.91-1.03
Trummbull	Center to Nebobish	0.81-0.88	Not Deficient	Not Deficient
N. Water	McEwan to Woodside	0.82-0.84	Not Deficient	Not Deficient

Table 5: Volume to Capacity Ratios (GLBR Travel Demand Model)

Because many of the capacity improvements affect connectivity and accessibility rather than direct expansion of deficient corridors the following results summary is included below.

GLBR model results Summary for BCATS Area 2045 Metropolitan Transportation Plan (MTP) Capacity Projects

- Kiesel Road - add a center turn lane in front of Christa McAuliffe and John Glenn schools to relieve traffic congestion during school morning start and afternoon end times. This project

adds capacity to the road segment which reduces the volume over capacity (V/C) ratio which is a positive result for the immediate area. The travel demand model is not sensitive to turning movements so any more specific results are not possible.

- Midland Road - add a center turn lane between 3 Mile and Mackinaw Road. This project adds capacity to the road segment which reduces the volume over capacity (V/C) ratio which is a positive result for the immediate area. The road segment is not currently deficient because there was no specific development identified at this time in the estimated future SE-Data for the surrounding TAZs, However, there are large tracts of farmland and access to US-10 that make this a prime spot for development.
- Pine Road - add a center turn lane between Young's Ditch Road and Ridge Road. This project adds capacity to the road segment which reduces the volume over capacity (V/C) ratio which is a positive result for the immediate area. The travel demand model is not sensitive to turning movements so any more specific results are not possible.
- Due to the overall forecasted decline in population and employment of the BCATS area the overall model volumes are decreasing except for certain areas where housing or business developments are underway or expected. This has caused a reduction of V/C on Trumbull and N. Water deficient corridors. While the Lafayette deficient corridor V/C stayed constant or increased slightly. This is due to the proximity of the Uptown development.

Transportation Deficiencies by Agency in the BCATS Area

Bay County Road Commission

Maintenance Deficiencies (Based on PASER collection rating of Poor)

Road Segments

Bangor Rd: Wheeler Rd to Donahue Beach Drive
Beaver Rd: 8 Mile to Fraser Rd (I-75), S I-75 to 2 Mile
Cass Ave: Michigan to Lincoln, Stanley to Tuscola
E North Boutell Rd: Huron to Linwood Beach Drive
E Cody Estey Rd: Huron to Shore
E Coggins Rd: S I-75 to Huron
E Erickson Rd: 7 Mile Rd to 8 Mile Rd
E Hampton Rd: Finn Rd to Farley

E Hotchkiss Rd: S 4 Mile Rd to 4 Mile North Leg
E Linwood Rd: 8 Mile Rd to 7 Mile Rd
E Midland Rd: 7 Mile Rd to 8 Mile Rd
E Parish Rd: 7 Mile to Huron
E Pinconning Rd: S I-75 to N I-75 & South Twp Line to North Twp Line
E North Union Rd: 2 Mile Rd to 3 Mile Rd
E Salzburg Rd: 8 Mile Rd to Mackinaw Rd
E Wheeler Rd: AADT Change to AADT Change (Fraser to Mackinaw)
E Whitefeather Rd: 7 Mile Rd to Huron Rd
E Wilder Rd: Transit St to Marquette Ave, & N-I75/Wilder to 3 Mile Rd
Freeland Rd: Mackinaw Rd to 3 Mile Rd
Grim Rd: Bay Gladwin Line to Standish Rd
Killarney Beach Rd: North of Euclid Ave
Monitor Rd: North Union to Wilder Rd
N 11 Mile Rd: Cody Estey to Saganing Rd
N 7 Mile Rd: Linwood to Pinconning
N Euclid Ave: M-247 to Killarney Beach Rd, Midland St to W Ohio St
N Farley Rd: Center to Borton
N Garfield Rd: Erickson to Pinconning Rd
N Mackinaw Rd: Bay Arenac Line to Cody Estey, & Linwood to just before Townline 16
N Pine Rd: Ridge to Center
N Scheurmann Rd: Youngs Ditch to Ridge Rd, & Ridge to Nebobish
N Shore Rd: Bay Arenac Line to Cody Estey
Old Beaver Rd: Russell to Grove St
Patterson Rd: Wilder Rd to Zimmer
Pine St: By Consumers Entrance by Weadock
S 2 Mile Rd: .9 Mile N of Wilder to Huron Rd
S 3 Mile Rd: Wilder to 3 Mile, 3 Mile to M-84, & W US-10 to Midland Rd
S 7 Mile Rd: .25 mile S of Wetters to Salzburg
S Carter Rd: Midland Rd to Salzburg
S Euclid Ave: Salzburg to White, Thomas to Ohio, & Woodland to Hotchkiss
S Garfield Rd: Wheeler to Beaver
S Knight Rd: Munger to Cass Ave
S Lincoln Rd: Bullock to Cass Ave
S Mackinaw Rd: Beaver to Schmidt, River to S of Townline 16, & Cottage Grove to Linwood

S Trumbull St: 22nd to Hampton Twp Line
Saganing Rd: 8 Mile to 11 Mile
Shady Shores Drive: Patterson Rd to Saginaw River
Standish Rd: Brown to M61
State Park Dr: Wilder to Bay City Campground
W Anderson Rd: Bay Midland Line to 11 Mile Rd, & Crump to Garfield
W Beaver Rd: Bay Midland Line to 8 Mile Rd
W Borton Rd: Wedgewood to Knight
W Cody Estey Rd: Bay Gladwin Line to 11 Mile Rd
W Erickson Rd: Bay Midland Line to N Maida Rd
W Grove St: Fraser St to Huron Rd
W Hampton Rd: Finn to Knight Rd & Jones to Hampton Twp Line
W Linwood Rd: 9 Mile to 8 Mile
W Midland Rd: Rockwell to S US-10, N US-10 to Ronald, Flajole to Southfield, Franklin to Garfield, & S Ronald Rd to Franklin
W Munger Rd: Pine Rd to SB Tuscola
W North Union Rd: Rockwell to Flajole
W Parish Rd: Bay Midland Line to Garfield
W Pinconning Rd: 9 Mile Rd to 11 Mile Rd
W Youngs Ditch Rd: Tuscola to Knight Rd
Weadock: North of Railroad Tracks along Pine

Intersections

Pine Road / Youngs Ditch (safety, capacity)
Ridge Road / Scheurmann Road (realignment)
Truman Parkway / Wilder Road (safety*, channelization)
Two Mile Road / Wilder Road (safety*)

*Safety issues were determined by crash history, alignment, local knowledge and/or design deficiencies.

Issues

Access Management
All-season roadway network (truck related)
Changing land-use impacts on transportation facilities
Closing of Monitor Road south of Wilder Rd and diverting traffic to Bay-Arenac Dr

Interconnection of traffic signals along all corridors
Railroad crossings (at grade)
Providing Paved Shoulder
County drains adjacent to County Roads

City of Bay City

Maintenance Deficiencies (Based on PASER collection rating of Poor)

Segments

18th St: Garfield to Johnson
3rd St: Madison to Boutell & Saginaw to Water
7th St: M-84 to Adams St
Backus St: Euclid to Morton
Bangor St: Marquette to Wilder
Cass Ave: Harrison to Michigan
E Fisher St: Wenona to Henry
E Ionia St: Wenona to Dewitt
E Jenny St: Wenona to S Dean St
E Midland St: Henry to Midland/Vermont
E North Union St: Dean to State & Handy to Euclid
E Smith St: State St to Patterson
E Vermont St: Dean to Walnut
Fremont St: Water to Lincoln
Garfield Ave: 15th to Divide
Harrison St: 31st St to S Water & 30th
Harry S Truman Parkway: right before bridge to before Trumbull
Kosciuszko St: Hampton to Harold
Lafayette Ave: Water to Evergreen
Marquette Ave: Patterson to Wilder, Transit to Bradley, State to before Ohio, Marquette Exit

McGraw St: Harrison St to Ingraham, Braddock to Michigan
McKinley St: N McLellan St to Johnson
Michigan Ave: Fremont to 24th St
Midland Exit: by Liberty Bridge
Morton St: Backus to Salzburg
N Henry St: Midland to Vermont
N Lincoln St: 3rd to Woodside
N Madison Ave: 1st to McKinley
N Wenona Ave: North Union to W Vermont St
Ridge Rd: Park Ave to City/Twp line
S Henry St: Randolph to Midland (excluding White to Jenny), JFK to Crump, Pearl to Henry
S Johnson St: 14th to 22nd
S Lincoln St: Cass to 22nd
S Water St: Saginaw to 14th, Lafayette to 24th, 25th to 28th, & Fremont to 31st
S Walnut St: Henry to M-25/Vets Bridge WB
S Wenona Ave: Fisher to E Midland St
State St: South to Wilder (a few excluded segments) & Pearl to Calumet
Tiernan Rd: Whole Road
W Fisher St: Euclid Ave to Wenona
W Ionia St: Euclid Ave to Wenona
W Jenny St: S Mountain St to S Alp St
W Midland St: Euclid to Wenona
W North Union St: Euclid to Handy Dr
Washington Ave: Road Divide to 15th St
Woodside Ave: Dolsen St to Harry S Truman

Intersections

Vermont / Walnut (capacity)
Henry / Vermont (capacity and timing)
State / Wilder (capacity)
Woodside/Trumbull (safety)

Issues

Railtrail crossings
Operation and maintenance of moveable bridges

Mast-arm signal replacements
Interconnection of traffic signals along various corridors
All season roadway network (truck related)
Access Management
Land-use impacts on transportation facilities
Traffic signal removal at unwarranted locations
Center Avenue Historic Heritage Route
Trumbull St/M-15/Wilder Rd Corridor Study
Establishment of Bicycle Routes on the existing roads

City of Essexville

Maintenance Deficiencies (Based on PASER collection rating of Poor)

Segments
Pine Street: RR Tracks to Hampton Township Line (Rating: 1)

Intersections
Woodside Ave & Scheurmann St
Woodside Ave & Main St

Issues
Streetscaping along all federal-aid routes
Intermodal connection to port facilities
Access Management
Transportation facilities needed because of changing land-uses
Transportation Enhancement and local Safety projects
All-season roadway network (truck related)
Railroad crossing at Woodside and 'Y' junction
Establishment of Bicycle Routes on the existing roads

Michigan Department of Transportation

Maintenance Deficiencies (Based on PASER collection rating of Poor)

Segments
M-25 (Veteran's Memorial Bridge): Over Saginaw River

M-25 (Center Ave): Madison Ave to N Vanburen St; N Lincoln St to N Birney St
M-25 (Thomas St & Jenny St): M-25 to S Henry St
M-13/M-84 (Lafayette Bridge): Over Saginaw River (Reconstruction planned for 2020)
M-84: Garfield Ave to McKinley St
M-25: Veteran's Memorial Bridge to Saginaw St
M-25 (N Madison Ave): Mckinley Ave to 6th St

Intersections
US-10 and Mackinaw Rd Interchange
M-84 and Lafayette / Garfield
M-13/M-84 and Lafayette / Broadway
M-13 (Euclid Ave) / M-84 Salzburg (safety, capacity)
M-13/I-75 Connector at Wilder Rd and Monitor Rd (capacity, safety)
Signal progression at intersections along M-25 and M-13 corridors

Issues
US-10 & Mackinaw Rd interchange (operational/capacity)
US-10 & Garfield Rd interchange (relocation of Fisher Rd and safety-line of sight)
- Outside of the BCATS area but has significant impact to the transportation network as the route to the regional Airport

See State Long Range Transportation Plan Strategies, Appendix A. regarding highway, bridge, truck, carpool, access management, ridesharing, non-motorized, public transportation, regional rail, intercity bus, air, marine and intercity rail issues.

Transportation Projects

The following transportation projects are specifically identified as part of this BCATS 2045 Plan. These projects have an identified source of funding, thus ensuring a financially constrained plan. Additional funding that is available after these projects are constructed is currently appropriated for operations and maintenance of the transportation network.

Project Number	Project	Location	Project Type	Length (mi.)	Year of Cost	Cost (x1000)
22	South Euclid Avenue	Hotchkiss Road to	Reconstruction	1	2022	$5,100

		Salzburg Road				
23	Three Mile Road	M-84 to Midland Road	Rehabilitation Concrete Repair	3.25	2023	$5,300
24	Youngs Ditch Road	M-15 to Pine Road	Rehabilitation Concrete Repair	1	2024	$1,000
25	State Park Drive	Wilder Road to the State Park Entrance	Rehabilitate & Partial Widening	3.5	2024	$9,600
26	Midland Road	Seven Mile Road to the Auburn City Limits	Resurface (PM)	1.75	2024	$500
27	Pine Road	Young's Ditch Road to M-25 (Center Avenue)	Rehabilitation Concrete Repair Capacity Project (Complete center-turn lane at Meijer	1	2025	$1,000
29	Three Mile Road	North Union to Wilder Road	Resurface (PM)	1.1	2025	$370
30	North Union Road	Three Mile Road to Two Mile Road	Resurface (PM)	1	2025	$350
31	Monitor Road	North Union to Wilder Road	Resurface (PM)	1	2025	$350
32	Midland Road	Mackinaw to Auburn City Limits	Reconstruction	3.5	2025	$5,250
33	Two Mile Road	Wilder Road to M-13	Resurface (PM)	1.25	2026	$525
34	Three Mile Road	M-84 to Midland Road	Restore & rehabilitate	3.25	2026	$4,875
35	McKinley	Johnson to Park	Reconstruction	0.6	2026	$2,340
2022-2026 Totals						**$36,560**

Table 6: BCATS Transportation Projects

The following transportation projects are specifically identified as part of this BCATS 2045 Plan. However, these projects have yet to have a specific funding source identified or year of construction. Revenue estimates for this Plan indicates funding for these would be available in future years. Any additional funding that is available after these projects are constructed would be appropriated for operations and maintenance of the transportation network.

Project Number	Project	Location	Project Type	Length (mi.)	Year of Cost Estimate	Cost (x1000)
36	Cass Avenue	Harrison to Michigan	Reconstruction	0.8	2027	$3,500
37	Marquette	Ohio to State	Reconstruction	0.3	2027	$1,080
38	Nebobish	Trumbull to East City Limits	Reconstruction	0.5	2028	$1,580
39	Knight Road	M-25 to Borton Road	Restore & rehabilitate	1.5	2028	$4,650
40	Midland Road	Euclid Avenue to Four Mile Road	Restore & rehabilitate	3	2028	$2,000
41	Kiesel Road	2 Mile Road to Euclid Road	Capacity Project (Add center turn lane)	1	2029	$1,500
42	State Street	Hart to Wilder	Reconstruction	0.8	2030	$3,120
43	Fisher	Euclid to Henry	Reconstruction	0.8	2030	$3,120
44	Midland Road	Seven Mile Road to the Auburn City Limits	Reconstruction	1.75	2030	$4,100
45	Green (NB)	Ridge to Groveland	Reconstruction	0.5	2030	$1,800
46	Green (SB)	Ridge to Groveland	Reconstruction	0.5	2030	$1,800

47	Midland Road	Four Mile Road to Mackinaw Road	Capacity Project, Reconstruction (Add center turn lane)	1	2031	$3,500
48	West Hampton Road	Essexville City Limits to Knight Road	Restore & rehabilitate	2	2031	$8,000
49	West Borton Road	Essexville City Limits to Knight Road	Restore & rehabilitate	2	2032	$8,000
50	Knight Road	M-25 to Borton Road	Restore & rehabilitate	1.5	2035	$6,000
51	Wilder Road	I-75/M-13 Connector to Euclid Avenue	Rehabilitation	1.75	2035	$1,500
52	Midland Road	3 Mile Road to Four Mile Road	Capacity Project, Reconstruction (Add remainder of center turn lane)	1	2035	$1,700
53	Midland Road	Euclid Avenue to Four Mile Road	Restore & rehabilitate	3	2036	$6,000
54	Midland Road	3 Mile Road to Mackinaw Road	Capacity Project (Add center turn lane)	2	2037	$2,000
55	Midland Road	Four Mile Road to Mackinaw Road	Restore & Widen	1	2040	$2,500
56	Wilder Road	Euclid Avenue to Patterson Road	Rehabilitate Concrete Repair	2	2040	$5,500
57	Two Mile Road	Midland Road to M-13	Rehabilitate	2.75	2041	$19,250

58	Kiesel Road	2 Mile Road to Euclid Road	Capacity Project (Add center turn lane)	1	2042	$1,500
59	Pine Road	Cass Avenue to Nebobish	Rehabilitate & Partial Widening	2.5	2043	$16,250
60	Pine Road	Young's Ditch Road to Ridge Road	Capacity Project (Add center turn lane)	0.5	2044	$1,000
61	State Park Drive	Wilder Road to the State Park Entrance	Rehabilitate & Partial Widening	3.5	2045	$31,500
62	Wilder Road	Patterson Road to Tiernan Road	Reconstruct	1	2045	$4,100
					2027-2045 Totals	**$146,550**

Table 3: BCATS Future Road Projects

In summary, more than $180 million ($38 million and $147 million from project tables above) are planned to be spent on road projects from end of 2021 to 2045. Any unallocated estimated revenue will go towards general rehabilitation/resurface projects not yet identified at this time to assist in the maintenance, preservation, and efficiency of the existing BCATS transportation system.
The implementing agencies used an inflation factor of 3.3% per year in determining future cost projections.

Map 3: BCATS Identified Projects 2045 LRP

Bay Metro Transit Authority Projects

Facilities – Current facility which houses maintenance, operations and administrative functions of the transit system is 56,000 square feet and was completed in 1981 at a cost of $3.5 million. The building is presently 40 years old but is in good condition and should continue to be functional for many more years. However, it will be reasonable to consider either a major renovation or building replacement during the term of the long-range plan terminating in the year 2045. Assuming a building of similar size and function the cost estimate [for a new building] would be about $18,000,000 in 2025. Main facility replacement for the purpose of this long plan is put out at the maximum timeframe, 2045. However, larger facility infrastructure improvements are programmed in order to make the 2045 replacement reasonable given the age of the facility.

The intermodal central bus station, located in downtown Bay City, serves both the local transit system and intercity carriers. It was completed in 1991. Constant bus traffic, especially by the much heavier intercity coaches, takes a significant toll on the pavement. Concrete drives on the site have already been replaced one time at a cost of about $250,000. It is expected that these replacements will need to be done every 15 years, so there should be two more large concrete replacement jobs during the long range plan. The terminal, itself, is relatively small, about 2,500 square feet, most of which is a glass enclosed lobby. A major renovation occurred in the year 2014 at a cost of $100,000. The next renovation will likely need to be done in 2025 at an estimated cost of $400,000. Central bus station replacement for the purpose of this long plan is put out at the maximum timeframe, 2045. However, larger facility infrastructure improvements are programmed to make the 2045 replacement reasonable given the age of the facility.

Vehicle Replacement – Bay Metro currently operates 23 medium duty buses, 17 cutaway buses, and 18 vans. Bay Metro vehicles have a useful life; the point when vehicles are eligible for replacement; and a useful life benchmark; the point at which Bay Metro can, in general, keep the vehicles in operation in at least a moderate, operational condition. Typically, Bay Metro can maintain vehicles 3-7 years past its useful life depending on the type of vehicle. As of 2022, 14 medium buses will exceed their useful life, with 10 exceeding their useful life benchmark. The cutaway buses were added to the fleet in 2020. The vans, which have a cost which allows for annual programming for replacement, have seen consistent replacement at some point between their useful life and their useful life benchmark.

Another factor in the replacement of vehicles is the transition to alternative fuels. The availability of and the feasibility of the use of new alternative fuel technologies is quickly coming to the point where a decision on investment must be made. New funding sources to assist with making a transition are becoming more common place, though the feasibility of the application is still in question, particularly in the case of electric vehicles. The decision could be made for Bay Metro, if vehicle manufactures transition away from fuel-types such as diesel which comprises 60% of our current fleet. When looking at a long-range plan, this has to be considered. However, it is purely speculation as to how and when this will impact future procurements.

Transit Projects (Vehicles Eligible for Replacement as of 2022)

Year	Vehicle to be Replaced	Number of Vehicles	Estimated Replacement Cost	Total
2022	2001 Medium Duty Gillig	10	$500,000	$5,000,000
2022	2011 Medium Duty Gillig	4	$500,000	$2,000,000
2022	2015 Lift Vans	7	$55,000	$385,000
2022	2016 Lift Vans	3	$55,000	$165,000
2022	2017 Ford Van	3	$55,000	$165,000
Total		27		$7,715,000

Table 8: Transit Projects (Currently Eligible for Replacement)

Transit Projects (To be received/programmed in 2022-2045)

Year	Vehicle to be Replaced	Number of Vehicles	Estimated Replacement Cost	Total
2022	2015 Lift Vans	4	$500,000	$5,000,000

2022	Main Facility HVAC System Replacement	1	$580,000	$580,000
2023	2015 Lift Vans	3	$500,000	$1,500,000
2023	Main Facility Plumbing Network Replacement	1	$380,000	$380,000
2024	2016 Lift Vans	2	$55,000	$110,000
2024	Concrete Drive Replacement-Central Bus Station	1	$155,000	$155,000
2025	2016 Lift Van	1	$55,000	$55,000
2025	2017 Lift Van	1	$55,000	$55,000
2025	Central Bus Station Canopy Replacement	1	$250,000	$250,000
2026	2018 Lift Van	1	$60,000	$60,000
2026	2019 Lift Van	1	$60,000	$60,000
2027	2019 Lift Vans	2	$61,250	$122,500
2027	2002 Medium Buses	5	$310,000	$1,550,000
2027	Security Camera System-Main Facility and Central Bus Station	1	$150,000	$150,000
2028	2022 Lift Vans	4	$62,000	$248,000
2029	2002 Medium Buses	5	$310,000	$1,550,000
2029	2023 Lift Vans	3	$62,000	$186,000
2029	Main Facility Concrete Drive and Parking Area Replacement	1	$400,000	$400,000

2029	Security Card Reader System-Main Facility and Central Bus Station	1	$100,000	$100,000
2030	Electronic Vehicle Infrastructure	1	$1,500,000	$1,500,000
2030	2024 Lift Vans/Replace with EV Vans	2	$150,000	$300,000
2031	2011 Medium Buses/ Replace with EV Buses	4	$450,000	$1,800,000
2031	2025 Lift Vans/ Replace with EV Vans	2	$150,000	$300,000
2031	2020 Cutaway Bus/Replace with EV Cutaway Buses	5	$200,000	$1,000,000
2031	Service Storage Garage Replacement	1	$200,000	$200,000
2032	2015 Medium Buses/Replace with EV Buses	4	$450,000	$1,800,000
2032	2026 Lift Vans/ Replace with EV Vans	2	$155,000	$310,000
2032	2020 Cutaway Buses/Replace with EV Cutaway Buses	5	$225,000	$450,000
2032	Maintenance Storage Building Replacement	1	$150,000	$150,000
2033	2015 Medium Buses/ Replace with EV Buses	5	$450,000	$2,250,000
2033	2027 Lift Vans/Replace with EV Vans	2	$156,000	$312,000
2033	2020 Cutaway Buses/Replace with EV Cutaway Buses	4	$230,000	$920,000

2034	2028 Lift Vans/Replace with EV Vans	4	$156,000	$624,000
2034	2020 Cutaway Buses/Replace with EV Cutaway Buses	3	$220,000	$660,000
2035	2029 Lift Vans/Replace with EV Vans	3	$157,000	$471,000
2036	2030 EV Lift Vans	2	$150,000	$300,000
2037	2031 EV Lift Vans	2	$150,000	$300,000
2038	2032 EV Lift Vans	2	$145,000	$290,000
2039	2033 EV Lift Vans	2	$140,000	$280,000
2039	Concrete Drive Replacement-Central Bus Station	1	$200,000	$200,000
2040	2034 EV Lift Vans	4	$140,000	$560,000
2041	2035 EV Lift Vans	3	$140,000	$420,000
2042	2036 EV Lift Vans	2	$130,000	$260,000
2043	2037 EV Lift Vans	2	$130,000	$260,000
2044	2038 EV Lift Vans	2	$125,000	$250,000
2045	2039 EV Lift Vans	2	$125,000	$250,000
2045	Main Facility and Central Bus Station Replacement	1	$230,000	$23,000,000
Total				$51,928,500

Table 9: Transit Projects (To be received/programmed in 2022-2045)

Environmental Mitigation

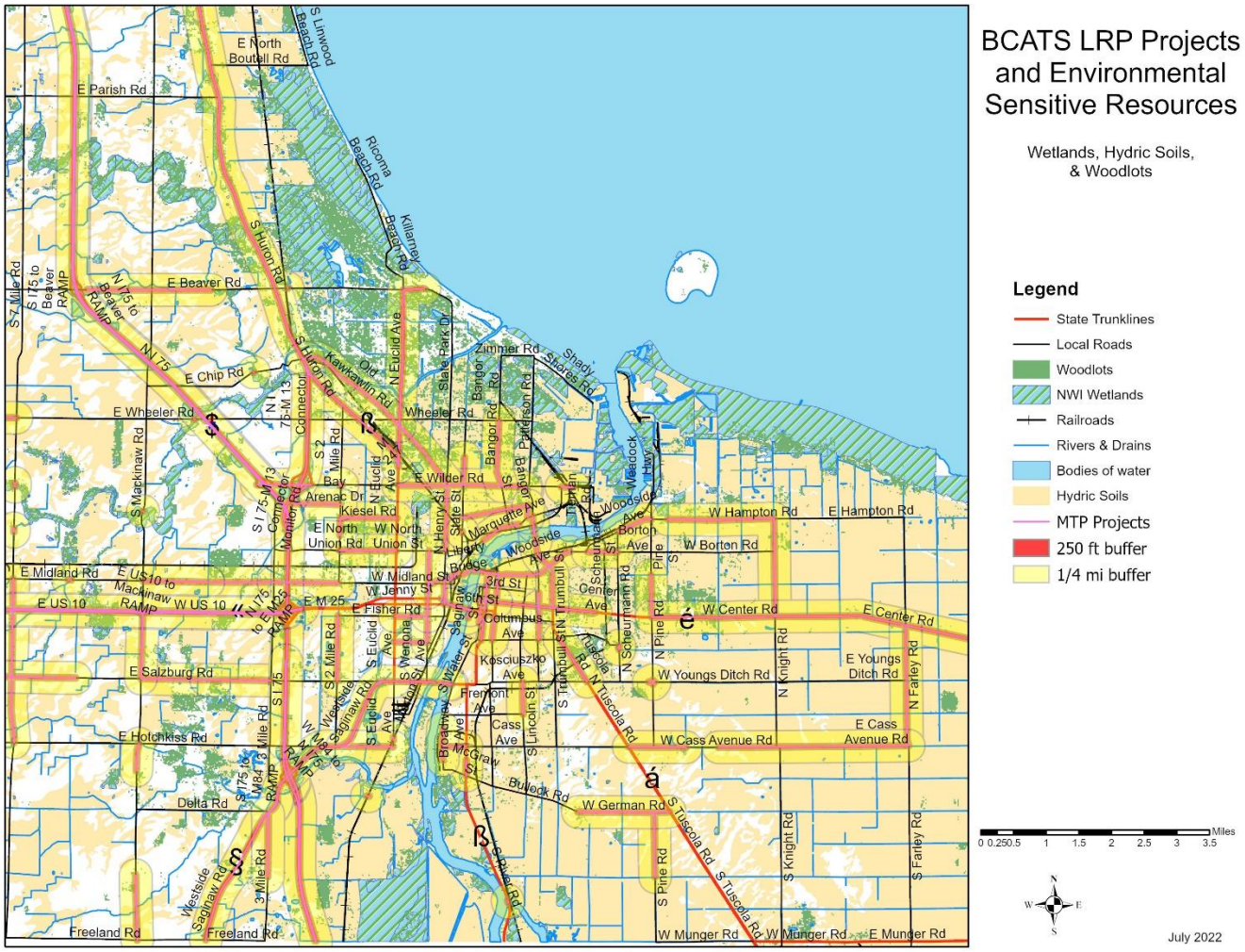
BCATS has inventoried the following Environmental Sensitive Resources in the BCATS area using Geographic Information System (GIS) technology along with local knowledge. Maps of these resources and the related Metropolitan Transportation Plan Projects.

GIS Data Layers	Source
Flood prone areas	FEMA
Historic Sites	Bay County GIS, Nat. Register of Historic Places & Michigan Department of History, Arts and Libraries
Heritage routes	Bay County GIS & MDOT
Wetlands	Michigan Center for Shared Solutions
Cemeteries	Bay County GIS
Parks and Recreation Areas	Bay County GIS & Recreation Dept.
Lakes and Streams	Michigan Center for Shared Solutions
Woodland	Michigan Center for Shared Solutions - IFMAP/GAP
Non-motorized Trails	Bay County GIS & Saginaw Bay Greenways
Hydric Soils	Michigan Center for Shared Solutions & Bay County Soil Survey Manual

The 41 transportation improvement projects are pavement reconstruction or resurfacing projects that would not expand the current roadway. Following is a list of the number of possible projects that may impact environmental sensitive resources within BCATS.

The analysis of possible impacts from planned transportation projects on environmental sensitive resources should not be used to infer that simply because an impact is possible, the transportation project is not justified. It is simply designed to draw attention to the range of possible impacts and to elevate the consideration of environmental resources in all phases of project planning, design, construction, and maintenance.

BCATS and the implementing agencies in the area shall take appropriate measures to minimize the impact on these environmental sensitive resources for these and future project by using the guidelines set forth by the American Association of State Highway and Transportation Officials (AASHTO) Center for Environmental Excellence located on the Internet at http://www.environment.transportation.org/.



Map 4: LRP Projects and Environmental Sensitive Resources

Chapter Six:

Intermodal Inventory and Other Issues

Public Transit
Air Transportation
Rail Transportation
Water and Port Transportation
Regional Intermodal Study
Non-Motorized Transportation
Intelligent Transportation Systems (ITS)

Intermodal Inventory

The Bay City Urban Area is currently served by many forms of transportation. This provides accessibility which extends to connections both inside and outside the Metropolitan Area Boundary. The state trunkline highway network includes two freeways and five state highways, the county and municipal arterials and collectors that have been discussed previously in this report. Although the street and highway system is a very high priority with transportation planners, so are the other modes of transportation in the Bay City area. We are truly a multi-modal community as described on the following pages.

Public Transit

Existing Conditions

The Bay Metropolitan Transportation Authority (BMTA), organized under Public Act 196 of 1986, as amended, is the sole publicly owned transportation system operating in Bay County. The BMTA is an independent local authority governed by a nine-member board of directors. Board Members are appointed by the Bay County Board of Commissioners. In fiscal year 2019, BMTA carried 523,000 riders and traveled 1.3 million miles. The COVID pandemic has impacted service in 2020 and 2021. BMTA carried 260,000 riders on 773,000 service miles in 2020 and 97,000 riders on 573,000 service miles in 2021. BMTA is back to full operations in FY-2022, however, ridership is at about 50-60%. In addition to BMTA services, four public school districts, a few private carriers and numerous social service agencies provide rides for students and agency clients in the county. BMTA had previously contracted with a private carrier to supplement the passenger capacity for its paratransit, demand response service. But, the pandemic eliminated the contracted services.

BMTA Services

In FY 2021, BMTA operated 23 medium/heavy duty buses, 17 light duty cutaway buses, and 16 vans in fixed route and demand response service. Ten traditional fixed routes operate in the Bay City area and serve non-urban locations such as Pinconning, Linwood, Kawkawlin, Auburn, and University Center (Delta College and Saginaw Valley State University). The fixed routes also allow for connections to public transit services in Arenac, Midland, and Saginaw Counties. BMTA fixed route services are operated between the hours of 6:00 am and 6:30 pm weekdays and 9:00 am and 6:30 pm on Saturday. The base fare for the fixed service is $1.00. Seniors and the disabled (including those with a valid Medicare card) pay $0.50 and full-time students of any age pay $0.75. Transfers are free. A countywide demand response system (DART) provides curb-to-curb rides for seniors and disabled residents. DART service is operated between the hours of 6:00 am and 6:30 pm weekdays and 9:00 am and 6:30 pm on Saturday. The demand response fare is $1.50 for all rides.

BMTA Improvements

Bay Metro Transit is currently engaged in an effort to identify the types of transit service that it will need to operate in the community 5 years and 10 years from today in order to determine what sort of capital investment may be needed to support the service and whether the current revenue stream will be sufficient to operate at the anticipated level. The following factors are being examined:

- Demographic make-up of the current service area population and projections of population 10 years from now are being analyzed. With the aging of the population [as baby boomers retire] it appears the need for more demand-response transit service is likely. This is a much more expensive type of service to provide and may require the elimination or reduction of other transit services currently being provided. The Bay Metro service area covers the entire

county. About 85% of the county lies outside the urbanized area and about 33% of the population lives outside the urbanized area, making demand-response service even more difficult and expensive.

- Bay Metro is researching various demand-response scheduling systems for future use as well as the type of employees who will be needed to operate the systems. Unless the efficiency of the current demand-response [paratransit] system can be significantly improved the cost to run an expanded version of that system may be unsupportable.
- Gradually diminishing, and ultimately discontinuing, some of the current transit services offered, in order to expand the demand-response system, must be handled very carefully since the transit authority receives a large share of its operating revenues [about 30%] from a local property tax that must be renewed every 5 years.

Bay Metro is also researching to possibility of upgrading the basic fixed route system, at least during peak times in the urban area. If there were to be a shift in attitude concerning local transit usage, whether in response to the cost of gasoline or concerns for the environment, etc, the current system could not accommodate much of an increase in ridership. Some buses at peak times are already standing room only. Reducing current headways of 45 minutes to something like 15 minutes would be one important response to a significant increase in transit ridership, but the question must be answered as to where the buses would come from to provide the service and how the service would be financed. Either other lower priority services would have to be discontinued or additional funds would have to be found.

Bay Metro Transit serves Bay County, Michigan, only, although it does make regular connections with transit systems in the adjacent counties of Saginaw, Midland and Arenac. Bay County is a geographic area of about 450 square miles with a population of about 107,000. In the future it is possible that the three urban counties in our region [Bay, Saginaw, Midland] will be consolidated into a single urbanized area. These three counties include about 1,800 square miles of territory with a population in excess of 400,000. The single urbanized area would overlap the service area of four local transit systems and consolidate those systems' federal funding sources into a single account to be shared based on local agreements. In anticipation of these conditions, efforts should begin to examine the possibility of either consolidating the systems or developing a coordination plan to make travel between the communities more seamless and regional; the same fares, transfer procedure, schedule formatting, etc. Without the effort to consolidate or coordinate, the four systems may find themselves in a position where the State mandates a consolidation at which point it would be too late to transition at an orderly, locally-managed pace. There are two main barriers to the near-term consolidation or coordination efforts; political, the sense of surrendering local authority of the transit system; and differences in the systems' structure and funding. One system is funded with city general funds; another is funded with a city-only property tax. One is funded with a countywide property tax controlled by the transit system, and one is funded with a countywide property tax controlled by the county government. Two of the systems are strictly demand-response and two of the systems are fixed route and demand-response.

Transportation Alternative Fuels

National efforts are on-going in the field of alternative fuel sources. Funding through earmarks is available now for moving from diesel/gasoline to electric. The technology continues to develop. BMTA has not looked to invest in this technology until there is more confidence in a successful transition. The infrastructure and the cost of electric buses is extremely high and not well tested as of yet; the risk of disrupted services is such that investment will be looked at more as a 10- year effort to let the technology move more from an experimental implementation to the industry standard as opposed to an outlay of significant funding and a possibility of failure.

Transportation Enhancement Activities

Transit service which reaches out to the non-transit dependent population becomes much more of a community asset. BMTA will seek to improve coordination with non-motorized transportation modes. Efforts will include improved bicycle racks/storage at the central bus station and other bus stop locations, adding bus-mounted bicycle racks, and designating bus stops at foot and bicycle trailheads. BMTA will also look at the possibility of designated stops at park-and-ride lots and approaching local stakeholder to establish a steady stream of park-and-ride lot users and transit passengers.

Transit Financing

BMTA's FY 2021 operating expenses were approximately $6.4 million. Fares covered less than 1% of operating expenses. Other sources of revenue include the local property tax levy (34%), State of Michigan assistance (43%), federal assistance (12%) and the balance from other federal funding sources related to COVID assistance. FY-2021, was not a typical year where expenses are closer to $8 million. The impact of COVID reduced operations and the associated expenses significantly. The operational revenues were reduced by made up for with COVID relief funds. In 2019, the voters of Bay County approved a county-wide 1 mill transportation tax good through the year 2025. This strong local support has enabled the Authority to operate smoothly in spite of decreasing support from the state and federal governments. In general, the State of Michigan is still an important player in terms of operating support, typically providing about 37 percent of operating revenues as well as the 20 percent local match for most capital improvements. The role of the Federal Transit Administration has been mostly in the area of capital acquisitions, providing 80 percent of the funds for most major items (buses, building improvements, and maintenance equipment). The federal infrastructure billed was recently passed, offering addition support through 2027.

Financial Planning

BMTA is projecting that current sources of revenue, assuming funding levels continue without being

supplemented, will not sustain the current level of service. BMTA will have to reduce the level of service or find additional funding sources. If public demand dictates maintaining or improving service, it would be possible to request an increase in the local millage rate. Having received millage funds since 1981, the staff has enough data to project tax revenues likely to result in changes in the tax rate.

While many revenue sources are beyond the control of the local transit system, expenses are under local control. How much service is operated, how many persons are employed, how much they are paid, and what type of benefits they receive, are examples of decisions made locally. BMTA must continue to project forward as any reaction to concerns about balancing the operating budget, generally, will not have an impact for at least a year. Projecting forward and taking action before a crisis allows for small measures to be implemented which may go largely un-noticed, instead of making large cuts which would only serve to antagonize loyal BMTA passengers.

Plan Recommendation

1. Replace aging bus fleet. Bus replacements are at a significant cost and almost exclusively dependent on federal and State discretionary funds. The availability of these funds is unreliable and inconsistent. BMTA must make a proactive effort in its grant preparation and be more aggressive in its approach in making FTA and MDOT aware of our community's need for safe, economical buses.

2. Improve coordination between demand-response and fixed route operations.

3. Improve coordination with transit providers in Saginaw, Midland, and Arenac counties with the goal of providing/improving regional transportation service between Bay City and these areas.

4. Adapt to the financial environment based on the projection of reduced operating and capital assistance from federal and state funding sources.

Air Transportation

The Bay City Urban Area is served by two airports, MBS International Airport and the City of Bay City owned James Clements Airport on (M-13) River Road. MBS is a class D-IV airport and James Clement is a class B-II airport.

The Michigan Airport System Plan (MASP 2008) documents the planning process that identifies the aviation role of public use airports in Michigan through the year 2030. ***MASP 2008*** presents the results of a system planning process that has been aligned with the goals and objectives of MDOT's MI Transportation Plan. The ***MASP 2008*** supports programming decisions and is useful in evaluating programming actions related to airport system and airport facility deficiencies. The MDOT Office of

Aeronautics is currently developing the MASP 2017.

Among the key functions of the ***MASP 2008*** is, from a state perspective, identifying those airports that can best respond to state goals and objectives. To this end, all airports, following a rigorous analytical process, were assigned to one of three tiers based on their contribution in each of the State's goals. Tier 1 airports respond to critical/essential state airport system goals. These airports should be developed to their full and appropriate level. Tier 2 airports complement the essential/critical state airport system and/or respond to local community needs. Focus at these airports should be on maintaining infrastructure with a lesser emphasis on facility expansion. Tier 3 airports duplicate services provided by other airports and/or respond to specific needs of individuals and/or small businesses. A series of system goals were identified as an outcome of an issue identification process related to the MDOT's MI Transportation Plan. The system goals identified were:

- Airports should serve significant population centers
- Airports should serve significant business centers
- Airports should serve significant tourism/convention centers
- Airports should provide access to the general population
- Airports should provide adequate land area coverage
- Airports should provide adequate regional capacity, and
- Airports should serve seasonally isolated areas

The ***MASP 2017*** plan establishes these same principles with the addition of those within the National Plan of Integrated Airport Systems (PIAS) can be eligible for FAA funding through the Airport Improvement Program. However, the ***MASP 2017*** does acknowledge that there is a gap between the aviation needs and funds available.

For each goal, with the exception of serving seasonal isolated areas, MBS International Airport was classified as Tier 1. James Clement Airport was classified as a Tier 1 airport for the goal of "provide adequate regional capacity," and a Tier 3 airport for all other goals.

MBS International Airport

MBS International Airport was conceived in the 1930's to serve the entire Saginaw Valley and surrounding communities. The airport is owned by the cities of Midland, Saginaw and the County of Bay. It is centrally located between these three communities in the northeastern portion of Saginaw County. The airport was, prior to 1994, known as Tri-City International Airport. The airport is operated by the MBS International Airport Commission.

The airport has two main runways with lengths of 8,002 and 6,400 feet. Both runways are 150 feet wide. The Instrument Landing System is the Category One type common at Michigan airports outside of Detroit Metro. It is adequate for most weather conditions.

Michigan Department of Transportation – Total Scheduled Passengers						
Community	**Airport Name**	**2020**	**2019**	**2018**	**2017**	**% Change 2017-2019**
Detroit	Metro Wayne	13,817,733	35,953,847	35,236,676	34,701,497	3.61%
Grand Rapids	G Ford Intl	1,758,741	3,587,767	3,263,234	2,811,622	27.6%
Flint	Bishop Intl	356,445	607,286	731,841	798,966	-23.99%
Lansing	Capital City	128,175	342,269	351,823	380,229	-9.98%
Traverse City	Cherry Capital	295,369	579,712	500,416	476,767	21.59%
Kalamazoo/BCreek	Intl	108,928	304,777	311,500	295,038	3.06%
Mid/Bay City/Sag	**M B S Intl**	**94,681**	**266,575**	**251,449**	**219,192**	21.62%
Marquette	Sawyer Intl	53,262	116,866	105,519	100,982	15.73%
Houghton/Hancock	Co. Mem.	24,137	50,224	48,433	49,731	0.99%
Pellston	Emmet Co Reg	30,978	60,098	53,652	46,934	28.05%
Sault Ste Marie	Chip Co Intl	21,085	48,344	46,343	44,061	9.72%
Muskegon	County	12,019	42,222	39,625	35,436	19.15%
Escanaba	Delta County	16,480	37,457	35,710	32,211	24.89%
I. Mtn/Kingsford	Ford	21,489	44,937	40,226	35,982	28.50%
Alpena	Alpena Co Rg	13,306	24,321	22,005	20,404	19.2%
Manistee	Co Blacker	3,156	7,848	9,065	9,674	-18.88%
Ironwood	Gogebic Co	4,910	10,223	10,564	10,391	-1.62%

Table 10: Michigan Department of Transportation – Total Scheduled Passengers

MBS has experienced a 54% decline in scheduled passengers since 1998 when the airport peaked with 589,798 down to only 266,575 for 2019. MBS has seen a slight uptick since the 2040 long range plan was adopted (262,069 in 2010), according to the Michigan Department of Transportation Measure of Michigan Air Demand. The decline in passengers can be attributed to various factors including; the post 9-11 period, the economic decline, the deterioration of aging MBS terminal and/or the growth of Flint's Bishop International Airport. This ranks MBS the 7th busiest airport in terms of passengers in Michigan, behind Kalamazoo/Battle Creek and ahead of Sawyer Airport in Marquette. Delta Air Lines and United

Airlines are currently operating daily scheduled flights in and out of MBS to Chicago, Detroit, and Minneapolis. However, all of these airports had a steep decline of scheduled passengers in 2020 due to the COVID-19 pandemic. It is currently unclear how these airports are moving forward with reduced operations during the pandemic. Because of this, the percentage change of ridership was calculated before the COVID-19 pandemic to assess operations.
In 2001 MBS added daily charter service flights, which has carried nearly 30,013 passengers in 2010. These passengers are considered Supplemental Passengers; those traveling on charter or other for hire air services, and are not included among scheduled passengers. The great majority of these supplemental passengers are part of the Dow Chemical Company, headquartered in Midland, which contract daily charter flights out of MBS to their other major operations centers in Texas and Pennsylvania.

Air cargo activity in 2015 consisted of 59,180, up from 164,219 pounds in 2015. This substantial decrease really only happened at MBS airport. MBS is served by Fed Ex which has a terminal just outside the airport property.

In 2012, MBS International Airport completed construction on their new terminal. The cost to build the terminal was approximately $55 million. This new terminal should meet the aerial needs for the region for the next 40-50 years and will improve the efficiency for air transportation for both the passengers and carriers. With this new terminal, improvement may also be on the way for Garfield Road from US-10 to MBS, the main access road to the new terminal from the north. Currently, the road is a two lane, rural route and is operating under capacity. There are several safety issues along the route including large drainage ditches and during the winter months, wind driven snow and the mix of jurisdictional snow removal timing becomes an issue. This corridor will likely be studied in the future for possibly airport related development as the new terminal comes on line. BCATS would be involved in any related study, as while MBS is outside of BCATS, MBS provides an integral transportation component to the BCATS urbanized area.

James Clements

The city of Bay City owned James Clements Airport was originally founded in 1930. Today the airport consists of two (2) asphalt runways with lengths of 2,619 ft and 3,800 ft., and three (3) seaplane runways on the Saginaw River two (2) of which are 3,500 ft. in length and the other at 2,600 ft. In Michigan, there are only seven (7) seaplane bases and only two that are available for public use, one being James Clements.

In a recently completed ten-year capital improvement plan for James Clements Airport (2012-2021), nearly $3.8 million in capital improvements are planned. These include construction of new hangers, runway repairs, improvements to maintain security at the airport entrances and property lines, installation of a flock dock for seaplanes at the new seaplane ramp on the Saginaw River, and rehabilitation of the historic hanger.

Plan Recommendations:

- Promote the new terminal construction plans at MBS to increase the market share of air transportation.
- Encourage the continued operation of James Clement Airport as long as these operations are efficient and feasible.
- Continue development of new hangers, taxi-streets, aprons and auto parking facilities.
- Design and development of James Clements Airport as a Seaplane Base in addition to the existing facilities.
- Provide for adequate access and connectivity between air and other modes of transportation.

Michigan Freight Movement

In the years since the recession, freight tonnage moved has increased for all modes. All forecasts are calling for continued growth in freight movements. The mix of commodities moving by each mode has stayed relatively the same, with manufacturing production the major driver of Michigan freight totals. The auto industry continues to play a crucial role in the overall totals of freight movements in the state. Most freight movement takes place on major freeways such as I-75, and the Bay Region is taking part in addressing bridge and pavement projects that will alleviate some concern of increasing freight movement.

The tonnage moved throughout the state has increased substantially since 2009. The total tonnage moved to, from, within, and through Michigan in 2013 was more than 505 million tons. This is about 70 million tons more than 2009, an increase of 16 percent. The modal shares remained largely the same. While all modes saw an increase in overall tonnage, water and pipeline freight movement is expected to decrease 20 percent and 45 percent by 2045. This was met by an increase in rail from 19 percent in 2009 to 20 percent in 2013. Future tonnage from 2019 to 2045 is expected to increase 13 percent and truck tonnage is expected to be 73 percent of that volume transported in 2045.

Rail Transportation

While Michigan's rail miles have decreased over the past decade, the number of carloads has grown by almost 11 percent. This has made private carriers much more stable than in previous decades and has enabled them to keep mainline railroads in better condition, at the expense of abandonment of light density lines. The abandonment of certain routes has left some areas without service or with rail links dependent on maintenance subsidies.

Twenty-one percent of Michigan's rail miles are state owned. The state owns 665 miles of right-of-way,

of which 650 are in use, with the balance preserved for possible future use. Maintenance is partially at state expense. Five private carriers under contract to the state operate state owned routes.

Two rail lines provide service to the BCATS area. Scheduling can vary but generally, the Huron & Eastern Railway operated by RailAmerica Inc. runs four trains daily on their lines, Saginaw Bay Southern operated by Lake State Railway runs one train twice daily and another three trains once a week, and the Lake State Railway runs two trains through the BCATS area. The majority of commodities shipped in, out, or through the BCATS region include chemical products, coal, stone, and other bulk material. None of the rail lines in the study area provide passenger service.

A coordinated effort to improve rail crossings by local, state and federal governments and by private business interests would enhance efforts to maximize Michigan's ability to compete for international trade.

Abandonment of railroad service is allowed by federal law which permits a railroad carrier to end its obligation to provide service over a particular line. In the Bay City area, local officials have encouraged the reuse of abandoned railway lines as non-motorized railtrails. This effort has been very successful and is scheduled to continue. Currently, abandoned railroad sections are being used to complete a regional trail linking Saginaw to Bay City. Continued use of abandoned railroad lines may be used for the Great Lakes Bay Regional Trail and the Iron Belle Trail.

In summary, the last long-range plan indicated a decline over the last two decades in rail transport. Yet, many of the State's leading manufacturing, agricultural and extraction industries still relied on the railroad as a means of efficient and economical shipment of bulk freight. Currently there has been an increasing trend in the use of rail transport. Railroads accounted for 16 percent of the total freight tonnage in 2019, mostly for coal and other miscellaneous freight. The value of these movements totaled about $161 billion, an increase of 49 percent. Forecasts for rail show a more than 50 percent growth in tonnage and 70 percent growth in value by 2030. To take advantage of these trends BCATS, following the study from EMCOG, recommends that Bay County could benefit from a regional transportation hub to facilitate the increase freight traffic in the region.

Plan Recommendations:

- Relocate rights-of-ways that will allow a blend of safety improvements, consolidation of rail traffic on fewer lines and increased operating efficiencies.
- Continue upgrading of highway/ rail crossings.
- Remove unused or abandoned rail lines.
- Promote intermodal connection and access between rail and other modes of transportation.

- Continue development and expansion of the existing rail to trail system.
- Increase security/safety of rail cars carrying hazardous material through the BCATS region.
- Indicate and perform studies on a proposed multi-model transportation hub

Map 5: Bay County Railroad and Airport Facilities

Water and Port Transportation

The number of commercial ports in Michigan is 33 active cargo ports. Michigan's important water borne commodities are stone, iron ore, coal, cement, salt petroleum, and chemicals. Tonnage handled ranged from a low of 52 million tons in 1982 to a high of 91 million tons in 1989. Traffic volumes are highly dependent on the steel and construction industries. Currently Michigan's water freight transportation volume is around 51.7 million tons of cargo per year, accounting for less than 1 percent of all freight transmission in Michigan.

In 1986, federal legislation fundamentally changed the funding of navigation projects. Waterway users now pay the entire cost of maintaining navigation channels through a harbor tax and trust-fund mechanism. Non-federal contributions are now required for several types of navigation projects, new construction, navigation studies, and disposal of dredged material.

The Saginaw River is one of Michigan's most important commercial harbors. The port ranks about fifth in the value of commodities being shipped from Michigan ports. It ranks seventh in total tonnages and second in the number of terminals and diversity of cargoes.

Approximately 20 marine terminals are located along the river from Saginaw to the mouth of the river. These terminals handled approximately three million tons of cargo in 2009 and 320 ships in 2006, and have dropped to 110 ships in 2014. Currently, port transportation trends are increasing and future projections show that port usage will increase to 250 ships in the next 10 years.

Major commodities include limestone, sand, coal, salt, fertilizers, cement, petroleum and chemicals. These products serve the manufacturing, agricultural, and construction industries throughout a large portion of the Lower Peninsula. Most water borne commerce on the Saginaw River consists of U.S. domestic and Canadian trades. A port study conducted by BCATS in 1984 concluded that the future for the port would be in terms of cargo handling.

In addition to shipping, Bay County's extensive river system is heavily utilized for recreational boating and fishing. Current and future development on the river has been benefited by recent funding from the 2.8 million dollar allocation from the federal government to dredge the Saginaw River. In November of 2018, the U.S. Army Corps of Engineers (USACE) abandoned a Saginaw River Deepening Study due to a lack of federal interest in deepening the federally authorized navigation channel. Specifically, the early stages of the study revealed that over the course of 120 different scenarios, the results indicated that, based on current tonnage levels, deepening the Saginaw River would not be economically justified and concluded the lack of federal interest. The study was originally proposed in 2017. The dredging will have major impacts on the BCATS area and will be beneficial to incorporate the results of the study into future long-range plans. Additionally, the proposed improvements are projected to increase and broaden the current material shipped, and the increased usage of the water and port transportation

could be a major part in a regional multi-model transportation hub.

Plan Recommendations:

- Promote the retention and upgrading of port facilities.
- Promote intermodal connectivity and access between the port and other forms of transportation, specifically rail and trucking.
- Assist in finding ways to keep up the maintenance on the river channel to keep shipping on the river.
- Identify ways to increase usage of BCATS ports and waterways from the Saginaw River study.

Map 6: BCATS Marine Transportation Facilities

Regional Intermodal Study

The Genesee County Metropolitan Planning Commission Regional Study (In 2040 LRP)

The Genesee County Metropolitan Planning Commission (MPO for the Flint area), in cooperation with its partners, the Flint Area Chamber of Commerce and the Michigan Department of Transportation, conducted the I-69/I-75 Intermodal Transportation Study to determine how the region of Genesee, Lapeer, Saginaw, St. Clair, and Shiawassee counties can capitalize on its location at a significant crossroads of the national and international freight network. By doing so, it is expected that economic conditions and the quality of life in the region will improve.

The study area is served by major transportation facilities such as I-69, I-75, U.S. 23, and a number of state highways, the Blue Water Bridge and double-stacked rail tunnel in Port Huron which link the United States and Canada, deep water ports in Saginaw (the study incorporates the deep water ports in Bay County), and Port Huron; airports in Saginaw County (MBS) and Flint (Bishop); and, the Canadian Nation (CN) and CSX rail lines. The current population of the five-county area is approximately 975,000 people. Major manufacturing, commercial, and agricultural entities, dominated by automobile-related businesses, form a major part of the economy, which employs 460,000 people.

The vision of this study was forwarded to each county's Study Review Committee and the public for comment and stated the following:

- A major regional intermodal freight system serving trucks, trains, planes and ships with seamless interaction among all modes.

- Overseen by an intermodal commission, the region will offer transportation assets supported by state-of-the-art intelligent transportation system (ITS) technologies.

- This intermodal system provides a competitive advantage for commodity flow; creates a new dimension in the region's economy and improves the quality of life for the region's citizens.

While Bay County is not directly included in this study, due to the inclusion of the Saginaw County (MBS) airport and the Bay County deep water ports, the unfolding of this study could impact transportation issues and ultimately the financial health of the Bay City area.

A similar study focused on the three counties of the Great Lakes Bay Region (Bay, Midland, and Saginaw) might provide insight on how to capitalized on our existing transportation infrastructure to the region's best economic advantage.

East Michigan Council of Governments Regional Economic Study (2016)

The East Michigan Council of Governments (EMCOG) in cooperation with its partners conducted a study of the three Regional Prosperity Initiative areas within the 14 county region. EMCOG produced

the report (appendix: Document References) Comprehensive Economic Development Strategy (CEDS) for the purpose to study the regional economics of the area. The CEDS is designed to provide baseline information, development strategies, and projects for Council members, the CEDS Committee, staff, local government officials, interest groups and citizens from throughout the region, while meeting the requirements set forth by the Economic Development Administration. The CEDS should be viewed as one of many tools in the economic and community development toolbox. The document is not a still life photo of a period in time but will evolve through the year into the next update.

One of the study focus areas was transportation and infrastructure and the goals are to capitalize on EMCOG's existing transportation assets, roads, rail, port and harbor facilities, airports, Aviation MRO, public and private transit, and make strategic investments in regional infrastructure (including broadband) that improve the region's economic competitiveness and resiliency.

The CEDS provided a strength, weakness, opportunity, and threat (SWOT) analysis of the regions strengths, weaknesses, opportunities, and threats. The SWOT analysis of this study incorporated the whole region, but the relevant information for Bay County is stated in the following:

Strengths:

- Region's strategic location and good interstate and highway system offers easy access to Detroit metro and northern Michigan
- Public water and sewer systems in most larger communities (Bay City is the 3rd largest municipal utility in Michigan)
- MBS Airport (new terminal) and the Oscoda-Wurtsmith Airport large aircraft maintenance facilities are major assets for the region as are the numerous other general aviation airports that are key assets for some companies
- No traffic congestion issues
- Port of Bay City is second largest port in Michigan for tonnage shipments

Weaknesses:

- No Class 1 railroads in region (nearest Class 1 railroads are to the south in Flint and Lansing) many existing rail lines are slow (10-15 mph)
- Very few transit hubs; the transit system is not connected for both residents and tourists
- Rails to trails program has reduced freight rail capacity
- The need for services for transportation, education, training, economic development and infrastructure improvements, far outstrips available funds.

Opportunities:

- Airports and Ports have capacity to expand operations
- Dow Chemical would like to use more rail to ship products/materials

- Potential for an inter-modal (truck to rail) facility in region
- Expansion of region's freight rail infrastructure would spur additional growth in agriculture & other industries
- Expand public transportation hours to include evenings to support adult education and college students
- Combine individual transit agencies to pool resources and provide improved service
- Increase collaboration among the private port operators in Saginaw Bay and Saginaw River

Threats:

- Public transportation does not adequately serve the region's workforce and adult education needs
- Transportation (to/from work & school) is also a big challenge for high school and college students
- Roads are generally in poor condition in the region (and in Michigan as a whole) and the current/expected funding for maintenance is far less than what is needed

One of the region's biggest advantages is the significant amount of underutilized capacity across all modes (roads, rail, water, air). MBS International Airport is a major asset for the entire 14-county region (and beyond) that can be leveraged for economic development. There are also several small local airports such as James Clements airport that are vital to the local economy. The region's rail network and the water-based transport facilities and harbors along the Saginaw River, the Saginaw Bay and Lake Huron can also be further capitalized on to support the growth of freight-intensive industries like agriculture, construction, manufacturing, and tourism. Many of the region's major manufacturing and agriculture companies, Dow Chemical in particular, have expressed a desire to increase their use of rail and water-based transport.

There is a wealth of transit options within the area, but they are not coordinated to the degree needed provide comprehensive transit options within the region. This is important for increasing the assets within the BCATS area. Below are some of the objectives and actions from the CEDS that incorporate transportation and infrastructure within the BCATS area:

Objective 1- Support efforts to maintain and improve the region's highways and local roadways.

- Continue working with the Michigan Transportation Asset Management Council, and regional civil engineers to re-evaluate current road maintenance standards to make the most efficient use of financial resources devoted to the repair and maintenance of local roadways.
- Continue working with the region's MPOs, local governments, and transportation planners to prioritize road improvements where they are needed most to improve
- Work with MDOT, MPOs, local road commissions and county road associations to modernize road and highway planning and infrastructure to effectively accommodate storm water runoff and infiltration needs, thereby reducing the costs and impacts of flooding.

Objective 2- Provide more comprehensive and more efficient transit services to support the region's workforce, employers, educational providers, veterans, older adults, people with disabilities, and people with lower incomes.

- Encourage the region's public transportation agencies to meet regularly and work together to serve the region more efficiently through inter-agency agreements or other cooperative efforts.
- Work with the region's higher education institutions, adult education providers, major employers, and other key constituents to identify ways to expand transit options to better serve the region's workforce. This may include extending public transportation into evening hours in some cases.
- Over the long-term, consider combining some or all the region's separate public transportation agencies into a single, region-wide transit agency.

Objective 3- Leverage and make strategic investments in the region's existing rail infrastructure to support the growth of key industries, particularly the agriculture sector.

- Prioritize rail-related investments based on the recommendations from MDOT's recent report titled "The Role of Rail Infrastructure in the Economic Development of Michigan's Northern Lower Peninsula".
- Consider investing in re-configurations and/or expansions of the rail yards in Saginaw and Bay City to make rail transport more efficient for the region's rail-dependent businesses.
- Build on the success of the Standish Grain Elevator by exploring opportunities to develop additional connections, capacity, and rail-related infrastructure (inter-modal facilities, trans-load facilities, grain elevators, etc.) to support existing companies and make the region more competitive in attracting new businesses.

Objective 4- Convene a freight mobility roundtable that meets a minimum of two times per year to share information on regional transportation issues.

- EMCOG can serve as the convening body for this group.
- The roundtable can serve as a regular forum to bring together public and private sector leaders involved in transportation and freight mobility to discuss transportation issues affecting the region, hear presentations from local/state/federal transportation planners, and learn about major transportation policy or funding efforts.

Objective 5- Explore ways to make better use of the regions harbors for economic growth in tourism and recreational opportunities.

- Collaborate with the state and other stakeholders to prioritize infrastructure needs for repair and upgrade of public recreational harbors and access.

Objective 6- Explore ways to make better use of water-based transport for goods movement, especially for the agriculture, construction, and utilities sectors.

- Support and leverage the US Army Corps of Engineers' study to widen and deepen the Saginaw River shipping channel as a way to encourage the continued and expanded use of the river for goods movement.
- Conduct an economic impact analysis of the water-based transport facilities in the Saginaw River and Saginaw Bay to demonstrate the number of jobs and amount of tax revenue that these transportation facilities provide to the region and the state, along with historical fluctuations of this impact.
- Support greater collaboration among the region's private port operators and industries that depend on water-based transport (agriculture and construction in particular).

As stated above, a similar study focused on the three counties of the Great Lakes Bay Region (Bay, Midland, and Saginaw) might provide insight on how to capitalize on our existing transportation infrastructure to the region's best economic advantage. The study does not entirely just focus on the Bay County and it does indicate how coordination with the region could benefit the BCATS area. This study does provide some insight in the current problems faced within the region and how improved transportation and infrastructure is a vital component in the overall improvement of the region's economic development, sustainability, entrepreneurship, workforce development, place making, and community resiliency.

Non-Motorized Transportation

The Fixing America's Surface Transportation Act (FAST Act) planning and funding guidelines have encouraged development of bicycle and other non-motorized transportation facilities.

Accommodating Bicycle and Pedestrian Travel: Recommended Approach is a policy statement adopted by the United States Department of Transportation. USDOT hopes that public agencies, professional associations, advocacy groups, and others adopt this approach as a way of committing themselves to integrating bicycling and walking into the transportation mainstream.

The Design Guidance incorporates three key principles:

a) A policy statement that **bicycling and walking facilities will be incorporated into all transportation projects** unless exceptional circumstances exits;

b) An approach to achieving this policy that has already worked in State and local agencies; and

c) A series of action items that a public agency, professional association, or advocacy group can take to achieve the overriding goal of improving conditions for bicycling and walking.

Existing Non-Motorized Facilities

Multi-modal transportation options, particularly in urban areas, extend beyond transit and light rail, and include walking and bicycling.

Sidewalks
In Bay City and Essexville, more than 90% of the roads have sidewalks on at least one side of the road.

In the townships, more than 90% of the roads lack sidewalks, including those in subdivisions. Of the townships in BCATS, only Bangor and Hampton Township have any ordinance requiring construction of sidewalks in new subdivisions and along strategic road corridors when an adjacent property undergoes major improvements or a new building is constructed. None of the townships in the BCATS have an ordinance pertaining to bicycle facilities and/or bicycle riders on the roadway.

Trails

In BCATS, there is more than 62 miles of non-motorized trails in eight (8) separate areas, the Hampton Township Nature Trail, the Bay County Riverwalk and Railtrail, the Great Lakes Bay Regional Trail, Delta College trail, Tobico Marsh Trail, Saginaw Bay Land Conservancy Trails (Golson and Michigan Sugar), and Bay County State Recreation trails.

The Hampton Township Nature Trail is a 2.5 mile crushed lime stone path. The last section a 0.5 mile extension of the Nature Trail was completed in 2013. The trail now runs from Finn Rd Park and Campground and winds through the woods, to the end at Jones Rd.

Riverwalk/Rail trail interconnected 17.5-mile network of pedestrian walkways provides non-motorized, handicapped-accessible pathways linking the full range of our community landscapes; from Bay City's highly popular riverfront at Veteran's Memorial Park, to the City's center, and back out again through woodlands and marshes to agricultural and residential areas of Portsmouth, Hampton and Bangor Townships. Our most recent trail extension links the Bay City loop northwesterly to the Bay City State Recreation Area. The next part of the project is a bridge connecting the trail to the middle grounds in Bay City, which will then link to the River Walk/Rail Trail that was completed in 2019.

Delta College trail has 7.5 miles of interlocking trails on the campus. The overall plan is to construct a 4 mile long trail is to linking Delta College to Saginaw Valley State University.

The Great Lakes Bay Regional Trail is currently in construction to create a trail that connects Bay City, Midland, and Saginaw. In the fall, of 2016, a section of the trail was completed linking the city of Zilwaukee in Saginaw County to the southeast part of Bay City. The overall trail linking the cities will include over a 100 miles of trails.

On Road Bicycle Facilities

A limited, unconnected network of on-road bicycle facilities exists within BCATS. Portions of the Riverwalk/Railtrail do use on-road facilities which include paved shoulders and "Share the Road" signing on low volume residential streets. There are several other roadways in the townships that provide a minimum 4 foot paved shoulder. In 2011, Michigan Department of Transportation approved a 310-mile long bike route (US Bicycle Route 20) that connects Marine City and Ludington. The US Bicycle Route 20 goes through the BCATS area from the south on North Trumbull Road through Riverwalk/Railtrail and leading to Wheeler Road where the route heads west. Bike Lanes with extended

shoulders along M-84 and Midland Street have been constructed in certain segments of the road. Continued construction of on road facilities (paved shoulders, bike lanes, sharrows (shared bike lane), and wide outside lanes) when road construction is being completed is vital in providing complete streets for both motorist and non-motorist alike. Beyond these examples, the on-road facilities consist of the existing network of low volume residential streets.

Blue Ways Trails

The Saginaw River shoreline is one of Bay County's best kept secrets. Our riverbanks and shoreline host fringe wetlands and a diverse array of wildlife, migrating birds and historic battleground areas. These are the water trails along the southern and western shores of the Saginaw Bay including river trails on the AuGres, Rifle, Kawkawlin and Saginaw Rivers. Campground areas along the shore are available for longer excursions or as a base for day use. The Saginaw Bay Blue Way Trail was created in 2014. Future use of this trail could see increased traffic along river bringing people to local business.

Future Non-Motorized Projects

Planning efforts are ongoing to connect this non-motorized trail system to others trails in the region, such as a proposed connection between Delta Community College and Saginaw Valley State University along the M-84 Corridor. There are also proposed connections to trail systems developing in both Saginaw and Midland Counties. The following trail planning efforts portray the level of effort being expended in the BCATS study area, as well as, the greater Bay County area in regards to non-motorized transportation efforts. The following projects are listed in order of priority from first to last. The BCATS staff prioritized the projects based on promoting livability within the BCATS area such as promoting a healthier living, non-motorized safety, and access to amenities and jobs. BCATS also looked at feasibility and cost such as if the project is partially completed or currently has funding in place.

Bay City sidewalks replacement program is currently in process of replacing the sidewalks throughout the entire city.

Great Lakes Bay Regional Trial has completed the segment linking Saginaw to Bay City in 2016. Future development of the trail will link Bay City to Midland and Midland to Saginaw.

The Iron-Belle Trail is a set of hiking and biking routes, is being developed by the Michigan Department of Natural Resources (MDNR), with MDOT as a partner. The Iron Belle Trail is the longest designated state trail in the nation and includes a route for hiking and a route for biking between Belle Isle Park in Detroit and Ironwood in the Upper Peninsula. The 1,273-mile hiking route incorporates a large portion of the existing North Country National Scenic Trail. It traverses the west side of the Lower Peninsula and borders Lake Superior in the Upper Peninsula. The east part of that runs through Bay County will traverse through the City of Bay City, Bay City Recreation Area, City of Linwood, and Pinconning. Most of the trail will follow the existing segment of the Riverwalk/Rail trail. An interactive map can be found on the MDNR website by following the link

(http://www.midnr.com/Publications/pdfs/ArcGISOnline/ironBelleWebApp/index.html).

The current connection of the Bay City State Recreation Area (BCSRA) to downtown Bay City by non-motorized modes of transportation is currently inconvenient for bicyclists and pedestrians. The current route does not provide a direct link between downtown Bay City and the BCSRA and may prevent visitors to the BCSRA from taking bike trips to downtown Bay City or vice versa. Providing signage and infrastructure along Henry Street and State Park Drive would help highlight a direct link between the two destinations for bicyclists and pedestrians alike.

Conduct and prioritize a non-motorized corridor study on connecting current paths, trails, and on-road paths. Additionally, an overall assessment of current conditions of the non-motorized system will be needed with assessment management plan to continue to manage the system.

Non-Motorized Plan

BCATS adopted a Non-Motorized Transportation Plan in 2021. This plan identifies recommended routes for on-road bicycle facilities and is intended to be a guide for the communities within and surrounding the BCATS area on ways to provide for non-motorized transportation within their boundaries and to make bicycling a viable transportation alternative.

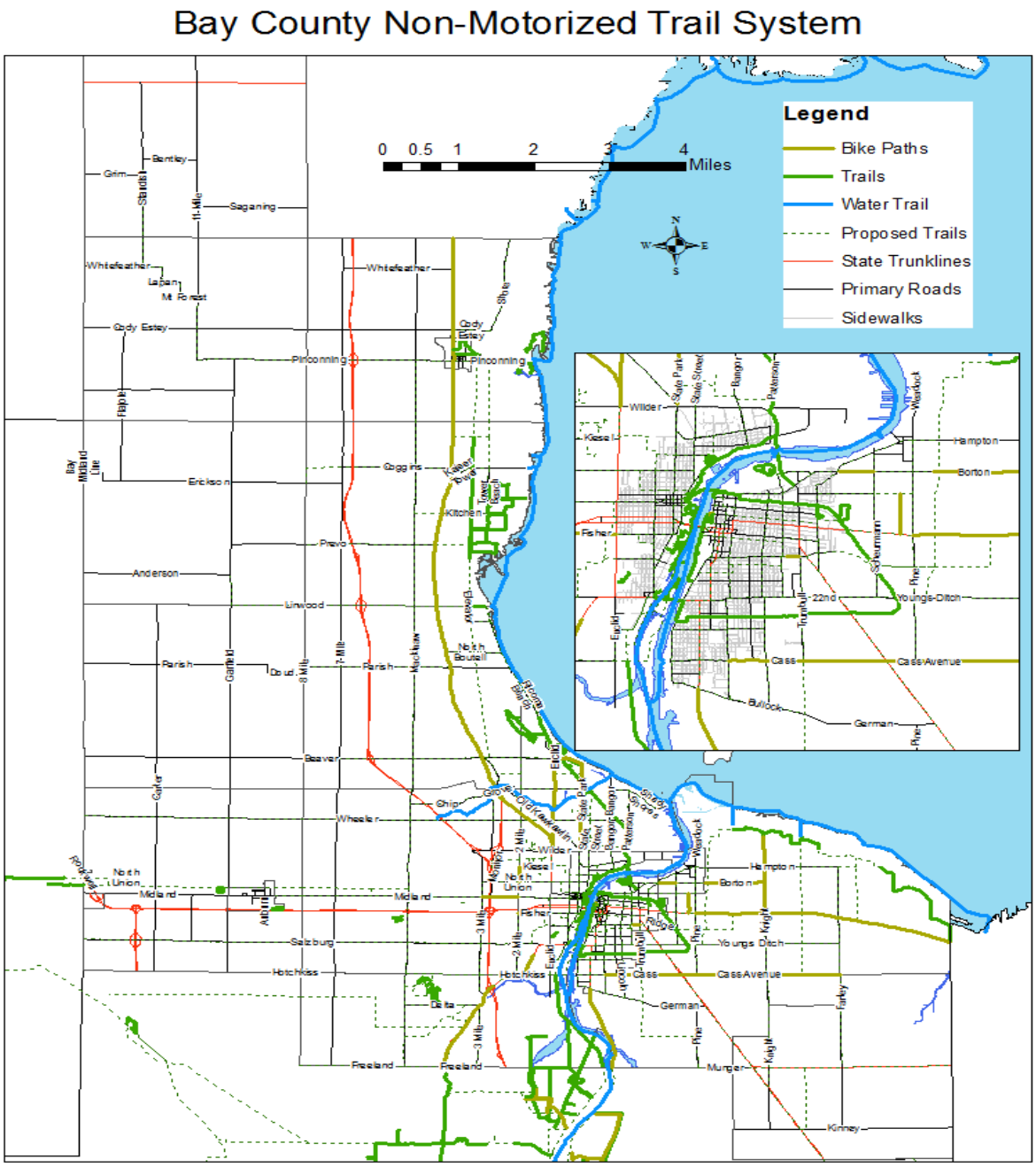
One essential for creating a network of non-motorized transportation facilities is connectivity. To create the network, the routes that will provide non-motorized facilities must be defined prior to developing the system. They should connect non-motorized users between their homes and destinations throughout the area. To make these routes possible, they must incorporate more than just the low volume residential/local roads and the separated trail system. The arterial and collector roads are needed to provide non-motorized transportation system connectors to the user's destination(s). Once a network of non-motorized facilities is established, it also needs to be maintained as any roadway. Proper maintenance on the network including on-road bicycle facilities and separated non-motorized facilities (shared use paths, sidewalks, etc.) is essential to providing a connected network of non-motorized transportation facilities.

The creation of a connected network of non-motorized routes could be a vital component in the Fast Act performance measure and EMCOG study on enhancing travel and tourism. MDOT is currently conducting case studies throughout Michigan on the benefits of bicycling in the community and the economy in a city. Key results from the study showed that throughout the state of Michigan total benefits of bicycling is approximately $668 million including $38 million in event and tourism spending[1]. The BCATS area with the existing and future development of regional trails could become a destination for bicycling, running, and kayaking events and a stop for long distance riders. Bicycle tourist seek scenic

trails, support and service facilities (bike maintenance area and good maps) and nearby attractions which are provided or can be provided in the BCATS area.

Plan Recommendations:

- Incorporate non-motorized interests into the design of projects to ensure that as many streets and highways as possible can be safely shared by motorists and bicyclists, and identify specific routes that would act as connectors between existing non-motorized trails.
- Improve bicycle facilities including: storage, shelters, comfort stations and automobile parking at trip ends for minor/major generators and transit hubs. Develop the width of paths, grading, drainage, barriers, fixed lighting, landscaping, and structures where appropriate to accommodate users of the facilities.
- Improve safety issues such as drainage grate replacement, improving rail crossings, re-striping and alternate routing.
- Encourage police agencies to provide stricter enforcement of bicyclists who disregard the Uniform Vehicle Code.
- Acquire rights-of-way for independent bikeway and walkway construction.
- Install curb ramps on new or existing facilities.
- Provide traffic control devices, including signs, pavement markings, signals, and signal actuation devices.
- Promote access between non-motorized and other modes of transportation.
- Improve connectivity to transit routes.
- Promote regional trail use through BCATS area to increase tourism and bring in new business.
- Conduct a gap analysis and corridor study of the non-motorized network



Map 7: Non-Motorized Transportation Route

Chapter Seven

Financial Analysis and Constraint

Financial Analysis

The BCATS 2045 Metropolitan Transportation Plan is a composition of the significant transportation system improvements scheduled for implementation in the urbanized area during the next 29 years and updated every five years. The purpose of the Plan is defined by the rules put forth in 23 CFR Part 450:

- Which require state and local governments develop a Plan that is financially constrained and includes a financial plan
- That demonstrates which projects can be implemented using current revenue sources
- Which projects are to be implemented using proposed revenue sources
- While the existing transportation system is being adequately operated and maintained.

A financially constrained Plan will be more meaningful for elected officials and citizens. Once the Plan is financially constrained, it will remove all wishful or unbuildable projects from the documents, thus removing false hope. In other words, Federally-funded expenditures are required by federal law to be consistent with the Metropolitan Transportation Plan and to be constrained to include only projects that we anticipate having enough revenue to complete.

Available Highway and Transit Funding

The majority of federal highway and transit funding is derived from federal motor fuel taxes and vehicle registration fees. On the federal and state levels, motor fuel is taxed at 18.4 cents per gallon on gasoline and 24.4 cents per gallon on diesel. The State of Michigan has a tax of 27.2 cents on both gasoline and diesel fuel. Michigan also charges sales tax on motor fuel, but this funding is not applied to transportation. These funds are deposited in the Highway Trust Fund (HTF). A portion of these funds is retained in the Mass Transit Account of the HTF for distribution to public transit agencies and states. The current law governing these apportionments is the Infrastructure Investment and Jobs Act (IIJA). Through this law, Michigan receives approximately $1.4 billion in federal-aid highway funding annually. This funding is apportioned in the form of several programs designed to accomplish different objectives, such as road repair, bridge repair, safety, and congestion mitigation. A brief description of the major funding sources follows:

There are a number of federal highway programs serving different purposes. Appendix C contains a list of these programs. Federal highway funds are apportioned to the states (apportionment means distribution of funds according to formulas established by law) and then a portion is allocated to local agencies based on the population in each region.

Within the urban area of Bay City there are four (4) bascule (lift) bridges that cross the Saginaw River; two of the bridges are owned by the State and two are owned by the City of Bay City. As in many older

cities with declining population and increased maintenance costs, public infrastructure needs have outpaced available revenues and the City has struggled to adequately fund maintenance of the bascule bridges. In 2020 the City of Bay City, City Commission voted to sell the bridges to United and the company will take over maintenance and require tolls on both bridges. Local residents frequently crossing the river will have the option of a scanner for monthly billing of the tolls. Rehabilitation and construction will begin in 2022 on both the Liberty and Independence bridges and will last approximately two summers with both projects finalizing in 2023. The bridge's toll systems will be compatible with other popular toll systems (i.e. – EZ-Pass, MacPass etc.) and rates are expected to be set based off of Bay City residency. Residents of Bay City with a transponder will be charged 50 cents per crossing. Non-Bay City residents with a transponder will be charged $2 per crossing and both groups have the option of paying a flat rate of $15 per month for unlimited crossings. Additionally, you can walk and cycle across the bridge for free. While the bridges are located in the City of Bay City these projects are regionally significant as they impact the east –west corridor of federal highways M-25 and M-84 and the broader regional traffic flow.

Like the highway programs, there are a number of federal transit programs, the list of which can also be found in Appendix C. Transit funds are distributed according to a complex set of distribution formulas. BMTA receives approximately $2.4 million in federal-aid transit funding each year.

State funding for transportation comes from vehicle registration fees and motor fuel taxes. The state also levies a six percent sales tax on the wholesale and federal tax portion of each gallon of motor fuel. Virtually none of this sales tax revenue goes to transportation. Funding from motor fuel taxes and registration fees (but not the sales tax) is deposited in the Michigan Transportation Fund (MTF), which is analogous to the federal HTF. The current gross receipts to the MTF are approximately $2 billion annually. The Comprehensive Transportation Fund (CTF) within the MTF is used for transit. Currently, a little under $172 million is deposited by the state into the CTF each year. MTF funding, after set-asides, is distributed to the State Trunkline fund (I-, US-, and M-designated roads) and to counties, cities, and villages throughout the state.

Local funding is much more difficult to predict. There is a patchwork of transportation millages, special assessment districts, downtown development authorities, and other funding mechanisms throughout the BCATS Planning Area. Therefore, this Financial Plan does not attempt to quantify current non-federal funding or forecast future non-federal funding revenues, except for MTF and CTF.

Local Agencies Revenue Estimates

Table 9: Local Agencies Revenue Estimates

Estimates as of	BCATS Federal Funds (STUL, STP CRP)	BCRC Urban Area (Bay City) Act 51 - Primary	Bay City Act 51 - Major	Essexville Act 51 - Major	Total $ for Local Federal Aid Eligible Roads	Total Funds for Capital Improvement Projects*
2022 Funding	$2,081,139	$1,992,000	$3,780,000	$319,628	$8,172,767	$3,908,627
Lane miles	298	196	93	9	298	298
2022	$2,081,139	$1,992,000	$3,780,000	$319,628	$8,172,767	$3,608,627
2023	$1,448,000	$2,029,848	$3,851,820	$325,701	$7,655,369	$3,010,211
2024	$1,477,000	$2,068,415	$3,925,005	$331,889	$7,802,309	$3,074,593
2025	$1,508,000	$2,107,715	$3,999,580	$338,195	$7,953,490	$3,141,647
2026	$1,537,000	$2,147,762	$4,075,572	$344,621	$8,104,954	$3,207,386
2027	$1,399,087	$2,188,569	$4,153,008	$351,169	$8,091,832	$3,106,911
2028	$1,425,670	$2,230,152	$4,231,915	$357,841	$8,245,577	$3,171,642
2029	$1,452,757	$2,272,525	$4,312,321	$364,640	$8,402,243	$3,237,603
2030	$1,480,360	$2,315,703	$4,394,255	$371,568	$8,561,886	$3,304,818
2031	$1,511,447	$2,359,701	$4,477,746	$378,628	$8,727,522	$3,376,270
2032	$1,543,188	$2,409,255	$4,571,779	$386,579	$8,910,800	$3,453,471
2033	$1,575,595	$2,459,849	$4,667,786	$394,697	$9,097,927	$3,532,294
2034	$1,608,682	$2,511,506	$4,765,810	$402,986	$9,288,983	$3,612,773
2035	$1,642,464	$2,564,248	$4,865,892	$411,448	$9,484,052	$3,694,941
2036	$1,676,956	$2,618,097	$4,968,075	$420,089	$9,683,217	$3,778,835
2037	$1,712,172	$2,673,077	$5,072,405	$428,911	$9,886,565	$3,864,490
2038	$1,748,128	$2,729,211	$5,178,925	$437,918	$10,094,183	$3,951,944
2039	$1,784,839	$2,786,525	$5,287,683	$447,114	$10,306,160	$4,041,235
2040	$1,822,320	$2,845,042	$5,398,724	$456,504	$10,522,590	$4,132,401
2041	$1,860,589	$2,904,788	$5,512,097	$466,090	$10,743,564	$4,225,482
2042	$1,899,661	$2,965,788	$5,627,851	$475,878	$10,969,179	$4,320,517
2043	$1,939,554	$3,028,070	$5,746,036	$485,871	$11,199,532	$4,417,547
2044	$1,980,285	$3,091,659	$5,866,703	$496,075	$11,434,722	$4,516,616
2045	$2,021,871	$3,156,584	$5,989,904	$506,492	$11,674,851	$4,617,765
Total	**$40,136,765**	**$60,456,088**	**$114,720,890**	**$9,700,531**	**$225,014,274**	**$88,400,017**

**Includes 30% of total Act 51 funds less $1,000,000 for two Bay City Bascule Bridges*
Estimates are based on 2022 and increased annually for first 10 years by 1.9%, and remaining years by 2.1%

Table 11: Local Agencies Revenue Estimates

Table Nine shows the yearly estimates of future revenue for the BCATS road agencies, excluding MDOT, for Act 51 funds dedicated for urban areas and the Surface Transportation Funds received by BCATS for local agency transportation projects, the two primary sources of revenue for road projects within the BCATS. Future estimates are based on the 2022 funding levels. Growth in revenues is

expected for 2022 through the next 10 years. Starting in 2022, a 1.9% increase is estimated through 2027. After 2030, the estimated yearly increase is 2.1%.

MDOT & BCATS Revenue Estimates

Table Eleven (right), shows the 5-year estimates of future revenue for the MDOT expenditure within the entire BCATS urban area. Future estimates are based on the 2022 funding levels. Starting in 2023, a 1.9% increase is estimated through 2030. After 2030, the estimated yearly increase is 2.1%, bringing the 23-year total for MDOT to $529.5 million.

Although the plan is fiscally constrained, numerous transportation projects, mainly preservation and maintenance in nature, not currently identified by the BCATS implementing agencies will fully utilize all existing dollars to maintain the existing BCATS transportation system. The implementing agencies, with tighter and tighter budgets, find it difficult to match existing federal and state road construction funding. Without additional funding sources or increases to the existing funding sources improvements to the BCATS transportation network sufficient to maintain the system at its existing maintenance level will become impossible to achieve.

MDOT Revenue Estimates

	BCATS STUL Funds (Federal $)	MDOT Trunkline Fund for BCATS
Lane Miles	298	338
Year		
2022-2026	$8,051,139	$147,450,807
2027-2031	$7,269,321	$72,100,000
2032-2036	$8,046,885	$90,900,000
2037-2040	$7,067,459	$90,400,000
2041-2045	$9,701,960	$128,600,000
Total	$40,136,765	$529,450,807

Table 12: MDOT & BCATS Revenue Estimates

MDOT 2045 MPO Long Range Revenue Forecast Methodology

Revenue Forecast and Fiscal Constrint

MDOT Statewide Transportation Planning Division analyzed historical state highway revenue and historical federal obligations. State revenue and federal obligation growth rates were calculated. The revenue growth used in the long-range revenue forecast for the near term has virtually flat rates to reflect the current economic conditions.

The table below identifies the funding estimates for certain BCATS programs over the next 23 years.

2022-2045 Total Revenues for BCATS area (Federal, State & Local Funding)				
BCATS MTP Funding	**2022-2025**	**2026-2035**	**2036-2045**	**Total**
Local STP Urban Program	$ 14,296,792	$ 14,296,792	$ 14,296,792	**$ 42,890,376**
Local STP Rural and EDD Program	$ 2,074,986	$ 2,835,688	$ 3,497,009	**$ 8,407,683**
Local Safety Program	$ 1,000,017	$ 854,362	$ 1,155,480	**$ 3,009,859**
Local Bridge Program	$ 397,000	$ 4,423,234	$ 5,435,071	**$ 10,255,305**
Trunkline Capital Program	$ 54,900,000	$ 158,000,000	$ 237,100,000	**$ 450,000,000**
Urban Transit Program	$ 11,012,519	$ 31,212,047	$ 37,998,550	**$ 80,223,116**
Rural Transit Program	$ 11,258,074	$ 32,141,733	$ 38,942,957	**$ 82,342,764**
Total:	**$ 94,939,388**	**$ 243,763,857**	**$ 338,425,858**	**$ 677,129,102**

Table 13: Funding Estimate Revenue Forecast

Transit Revenue Estimates

Year	Federal Transit Funding	State Operating Funds	Locally Raise Revenue (millage, fare box, etc)	Total
2022 Base	$2,050,503	$123,000	$5,517,564	$7,715,564
2023	$2,138,910	$126,788	$5,551,913	$7,817,611
2024	$2,204,788	$130,693	$5,551,913	$7,887,395
2025	$2,272,696	$134,719	$5,593,552	$8,000,967
2026	$2,342,695	$138,868	$5,614,248	$8,095,812
2027	$2,414,850	$143,145	$5,635,021	$8,193,016
2028	$2,489,227	$147,554	$5,655,871	$8,292,652
2029	$2,565,896	$152,099	$5,692,068	$8,410,063
2030	$2,644,925	$156,784	$5,728,498	$8,530,206
2031	$2,726,389	$161,612	$5,765,160	$8,653,161
2032	$2,810,362	$166,590	$5,802,057	$8,779,009
2033	$2,896,921	$171,721	$5,839,190	$8,907,832

2034	$2,986,146	$177,010	$5,876,561	$9,039,717
2035	$3,078,119	$182,462	$5,914,171	$9,174,752
2036	$3,172,925	$188,082	$5,952,022	$9,313,029
2037	$3,270,651	$193,875	$5,990,115	$9,454,641
2038	$3,371,387	$199,846	$6,028,451	$9,599,685
2039	$3,475,226	$206,001	$6,067,033	$9,748,261
2040	$3,582,263	$212,346	$6,105,862	$9,900,472
2041	$3,692,597	$218,886	$6,144,940	$10,056,423
2042	$3,806,329	$225,628	$6,184,268	$10,216,225
2043	$3,923,564	$232,578	$6,223,847	$10,379,988
2044	$4,044,409	$239,741	$6,263,680	$10,547,830
2045	$4,168,977	$247,125	$6,303,767	$10,719,869
TOTAL	$72,130,755	$4,277,153	$141,001,772	$217,434,180

Table 14: Transit Revenue Estimates

The other piece of the transportation funding pie is the funds to transit related activities including operation, capital improvement, and bus and van replacement. Table Twelve (above) includes the estimated funds expected to be available for the Bay Metro Transit Authority (BMTA). The majority of these funds (State operating, and local revenue) go towards day-to-day operations of the bus routes and dial-a-ride service. The remainder is what is available for capital improvement including bus replacement, central bus station repairs and improvements, and life van replacement.

Transit Fiscal Constraint Demonstration		Dollars (x1000)
Total Transit Available Funds		$277,893
Operations and Maintenance Cost (5339)	-	$179,959
Funds Available for Capital Projects		$97,933
Metropolitan Transportation Plan Identified Projects	-	$67,952
Available for unassigned Transit Projects		$29,981

Table 15: Transit Fiscal Constraint Demonstration

Table Thirteen compares the local agency roads projects listed in Chapter 5 with the estimated revenue from Table Eleven. The transit program is fiscally constrained with the cost of the listed projects being less than the estimated revenue for the BMTA.

Summary of PASER Data Collection

Since 2003, BCATS, Bay City, and MDOT have been collecting the PASER value on the Federal Aid Eligible roads in Bay County. The PASER value is a 1-10 scale, with 10 being a brand new road to 1 being a failed road, based on the surface condition and distresses that are visible. Distresses include

cracking, rutting, potholes, and raveling among others. From 2003 until 2007, ratings were collected on all of the federal aid eligible roads. Beginning in 2008, half of the PASER ratings were collected on half of the Federal Aid Eligible roads in Bay County.

There were no PASER ratings collected by Bay County during the corona virus pandemic in 2020; however, ratings were collected once again in 2021 and are scheduled to be collected during the summer of 2022.

PASER data collection provides data for the Transportation Asset Management Council (TAMC) to assess the changes in road conditions across the state. The data provides a metric to guide road funding by TAMC and legislators to invest in road projects wisely. PASER data allows for monitoring varying types of road projects to access which type is fiscally the appropriate method to maintain and improve current road conditions. Currently, PASER data indicates that current funding amounts only provide enough maintain or slightly decrease in road conditions.

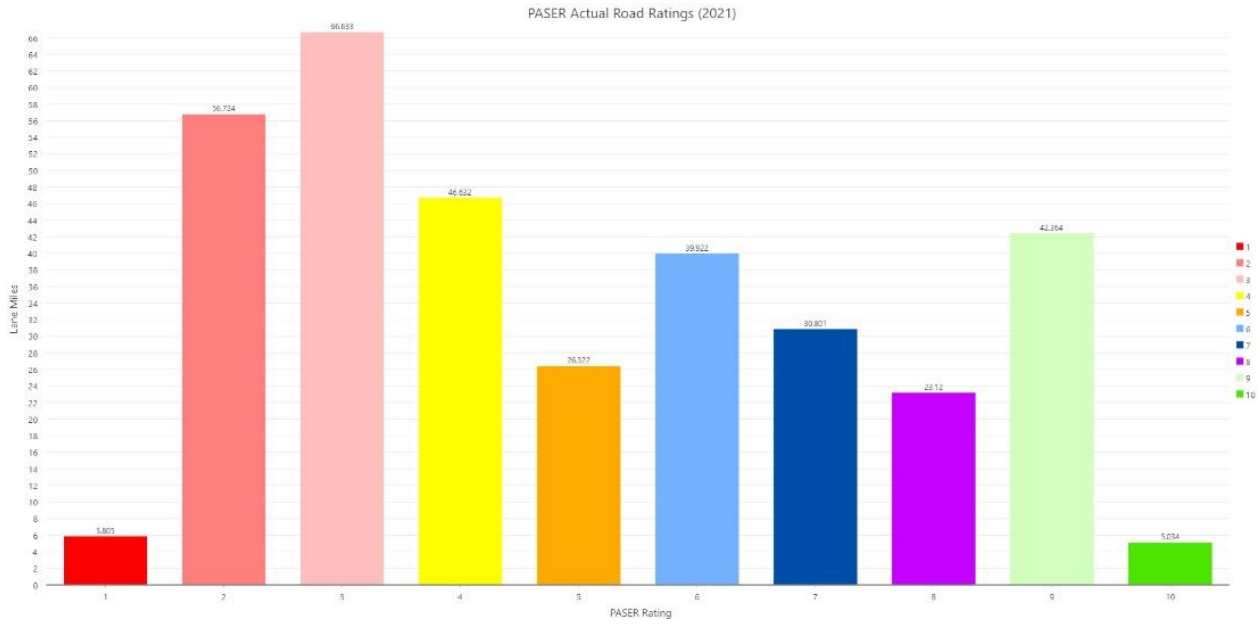


Figure 4: Road Ratings for 2021

Chapter Eight
Regional Issues

Issues/Corridors of Concern

There are many issues facing the BCATS area that have a direct or indirect impact on the transportation system. This section is intended to identify these concerns and suggest appropriate actions to be considered. Listed below are various roadway corridors that are of special concern and need to be carefully monitored. The following list is not prioritized. Specific issues or concerns are identified for many of the corridors.

CORRIDOR LIMITS

Trumbull Street/Independence Bridge/Truman Parkway/Wilder Road (M-25/Center Avenue to I-75): Map 10, project 1 update

M-15 (Trumbull Street) currently ends on the south end of the intersection with M-25 (Center Avenue) in Bay City. Trumbull Street continues north of M-25 and crosses the Saginaw River (Independence Bridge) and becomes Truman Parkway. Truman Parkway curves to the west and becomes Wilder Road which connects to M-13 in Bangor Township and I-75 in Monitor Township. This corridor functions as a trunkline and BCATS is supportive of the efforts of the City of Bay City and Bay County Road Commission to work with MDOT to extend M-15 along the corridor to I-75 and turn over ownership of this corridor to MDOT. The Bay County Road Commission has recently improved the concrete sections of Wilder Road as well as coordinated with MDOT on traffic signal timing for Wilder Road. Trumbull Street was reconstructed in 2020 to trunkline standards with the addition of a center turn lane.

Liberty Bridge & Independence Bridge: Map 10, project 2 update

Both are bascule bridges over the Saginaw River that provide crucial links to the BCATS Area. The bridges are leased to United Bridge Partners and the City of Bay City is not involved in the operation or maintenance of these bridges. Liberty Bridge is undergoing a complete rehabilitation and modernization, while Independence Bridge is undergoing a replacement that may become a rehabilitation project as it was in better condition than expected.

M-25/Thomas Street & Jenny Street (Henry Street to M-13/Euclid Avenue) : Map 10, project 3

This corridor of twin 3 lane one-way roads functions as a primary entrance to Bay City from the west and I-75. The Bay Area Chamber's Beautification Committee is continually working to improve this corridor and has proposed doing a study on carrying out a road diet along the corridor. MDOT has both Thomas and Jenny Street scheduled for full reconstruction in 2025. The projects are currently projected at $10 million per direction and $20 million for the entire project.

Mackinaw Road over US-10: Map 10, project 4

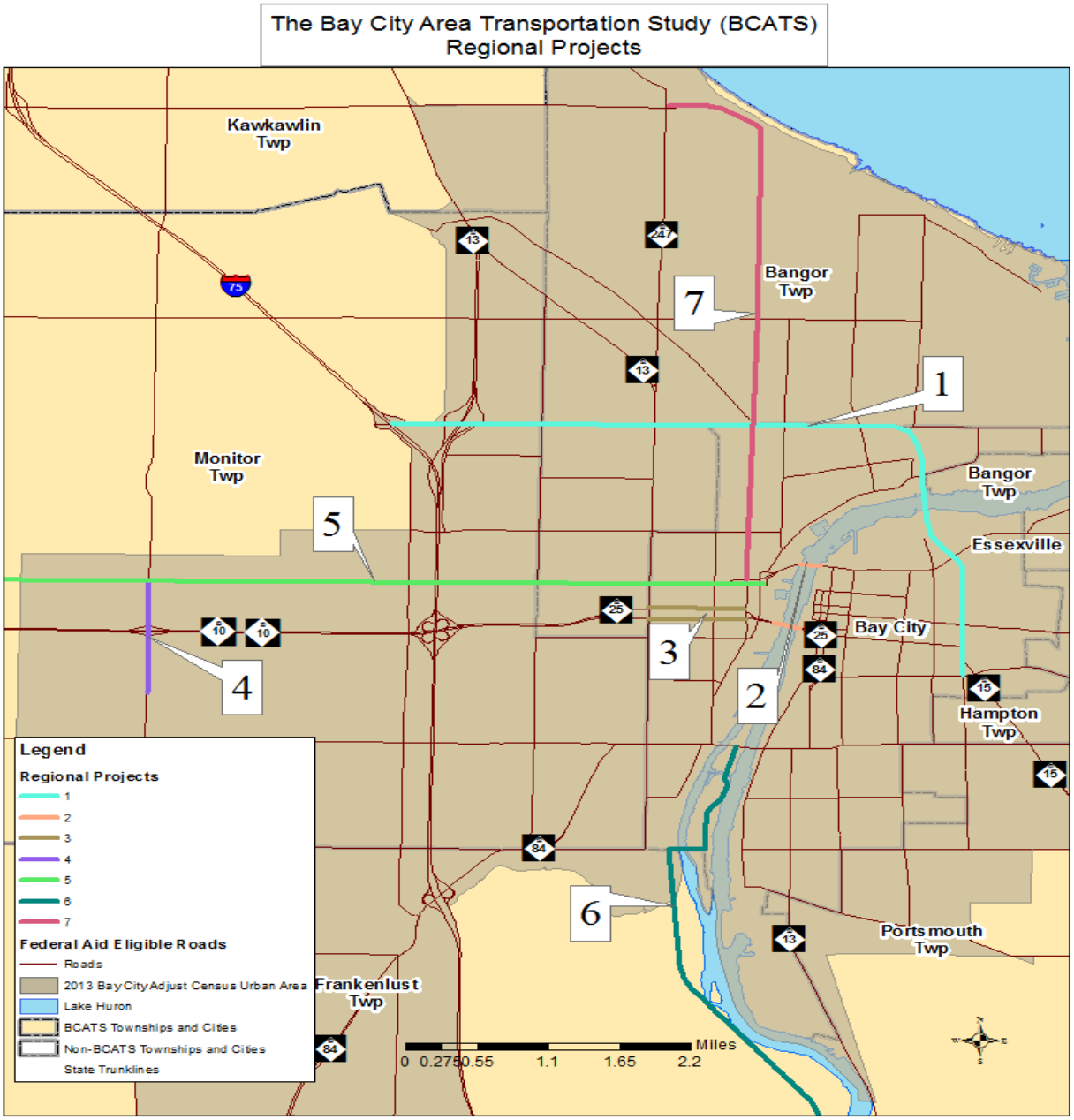
MDOT performed a series of interchange studies along US-10 in Bay County. The Mackinaw Road interchange is within the BCATS Area and the study concluded that the interchange is operating at a lower than desired level of service due to commercial growth at the adjacent industrial park and increased enrollment at Delta College that is also served by this interchange. MDOT has the Mackinaw Road overpass scheduled for a full reconstruction in 2023.

Bay City to Midland Connector Trail: Map 10, project 5

The BCRC has three miles of Midland Road US-10 to Garfield Road scheduled for reconstruction in 2023-2025. A non-motorized path in both directions is included with the reconstruction efforts. Additionally, the BCRC also plans to reconstruct Midland Road from Four Mile Road to eastern Auburn City Limit by 2030. This will complete the non-motorized facility from US-10 to Monitor Road.

Bay City to the Bay City State Recreation Area - Henry Street & State Park Drive (Midland Street to M-247): Map 10, project 7

The current connection of the Bay City State Recreation Area (BCSRA) to downtown Bay City by non-motorized modes of transportation is currently inconvenient for bicyclists and pedestrians. The current route does not provide a direct link between downtown Bay City and the BCSRA and may prevent visitors to the BCSRA from taking bike trips to downtown Bay City or vice versa. Providing signage and infrastructure along Henry Street and State Park Drive would help highlight a direct link between the two destinations for bicyclists and pedestrians alike. The BCRC is working with stakeholders and legislative representatives to secure funding for reconstruction of State Park Drive from Wilder Road to M-247 (the entrance to the Bay City State Park). As part of the reconstruction, a non-motorized facility will be installed in both directions from Wilder Road to the Bay City State Park entrance. The BCRC is diligently trying to complete the project before 2025.



Map 8: Regional Projects Map

Trends Affecting Regional Transportation

Increased Funding for Transportation

As the financial analysis chapter indicates, significant financial resources are necessary to maintain the existing system and make improvements as necessary. BCATS will continue to monitor the level of increased state funding that was approved by a series of laws in November of 2015. BCATS will also review, and endorse if deemed necessary, efforts that seek to increase funding for transportation.

Additionally, continued funding for the East Michigan Council of Governments (EMCOG) and Michigan Regional Prosperity Initiative is vital for the continued growth of the region. EMCOG is dedicated to uniting the region's elected officials, planning professionals and the public around a common vision of making a great region even greater. Since the Regional initiative was enacted by Governor Snyder, EMCOG has granted over 200,000 dollars each year for project promoting regional growth, and has provided service's to both urban and rural areas for enhancing the economy, improving transportation, protecting the environment, promoting place making, and technical and planning assistance.

Safety

BCATS's state and federal partners continue to stress the need for safety conscious planning and increased integration of safety into the transportation planning process. Efforts in this area can be increased to better understand data collected by local partners, data gaps that may exist, and how to weight safety in the project selection process. Support for local Safe Routes 2 Schools program will continue.

Regional Coordination

East Michigan Council of Governments (EMCOG) has been tasked with assisting in the implementation of the Governor's Regional Prosperity Initiative. BCATS has and will continue to participate in and support EMCOG in this initiative. This has been a great opportunity to help promote transportation needs from a regional perspective that will help drive economic prosperity. BCATS also coordinates with its neighboring MPOs, Saginaw Metropolitan Area Transportation Study and Midland Area Transportation Study, on data collection, travel demand modeling, long range planning, and regional collaboration.

Improved Access to Public Transit

Regionalization of transit service continues to be a priority. The BMTA intends on taking the lead in this effort in the Great Lakes Bay Region. With State funding on the decline, it will be important to find key stakeholders in the region that may offer support in this effort.

Livability

Livability is the ability of transportation to provide a higher quality of life for citizens by providing access to a safer and better road system, improving quality of life, enhancing the local economy, and improve all modes of travel. Addressing livability issues in transportation planning, development and implementation ensures that transportation investments support both mobility and broader community goals. BCATS goals, performance measures, projects, and the above regional concerns when implemented and constructed will have these factors considered in the planning process. A detailed transportation network that connects and functions effectively will have a relevant impact on economic prosperity and quality of life. The following are ways BCATS can implement strategies to meet livability goals in the area.

1. Continue to network with other local industries and groups to design facilities that meet the needs of all users and modes of travel.
2. Promote projects that improve sustainability and the environment (BCATS goal five).
    a. Bay County Road Commission is developing a database using GIS to collect and map all of their infrastructure, which will assist in identifying improvement needs for all the facility under their jurisdiction.
3. Implement safety performances measures (PM 1) and suggestions from the regional traffic safety plan to inform investment decisions into safety projects.
    a. Bay County has the highest percentage of senior citizens in Michigan, which will require BCATS to plan and implement senior citizen driver education classes and provide a quality transit system for those who can not drive.

Chapter Nine
Progress Since Last Plan

Projects Completed Since Last Plan

During the last six years, 77 transportation projects receiving federal aid were completed in the BCATS Area. The total amount invested in these projects was $196.5 million and involved federal, state, and local funds. The Table (Table 15) below illustrates the number of projects completed during each of the four years and total project investments. Projects included MDOT highway improvements (trunkline); resurfacing and reconstructing roads; non-motorized pathways; transit projects; bridge repair; and other transportation projects.

Close examination of the types of projects completed and the breakdown of the total transportation investments can be seen in the chart below. The proportion of investment is primarily in Public Transit (52%); local road agencies federal-aid eligible roads (16%); and MDOT trunkline (31%). The remaining 2% of funds invested in the BCATS Area were allocated for bridge repair, non-motorized pathways, and other projects.

Table 16: Past Projects Completed Funding

Fiscal Year	Number of Projects	Total Cost
FY 2016	18	$ 48,687,833
FY 2017	14	$ 56,433,956
FY 2018	16	$ 20,813,888
FY 2019	13	$ 42,540,368
FY 2020	12	$ 18,549,561
FY 2021	5	$ 9,478,277
Total	71	$ 196,503,883

Table 17: Completed Projects

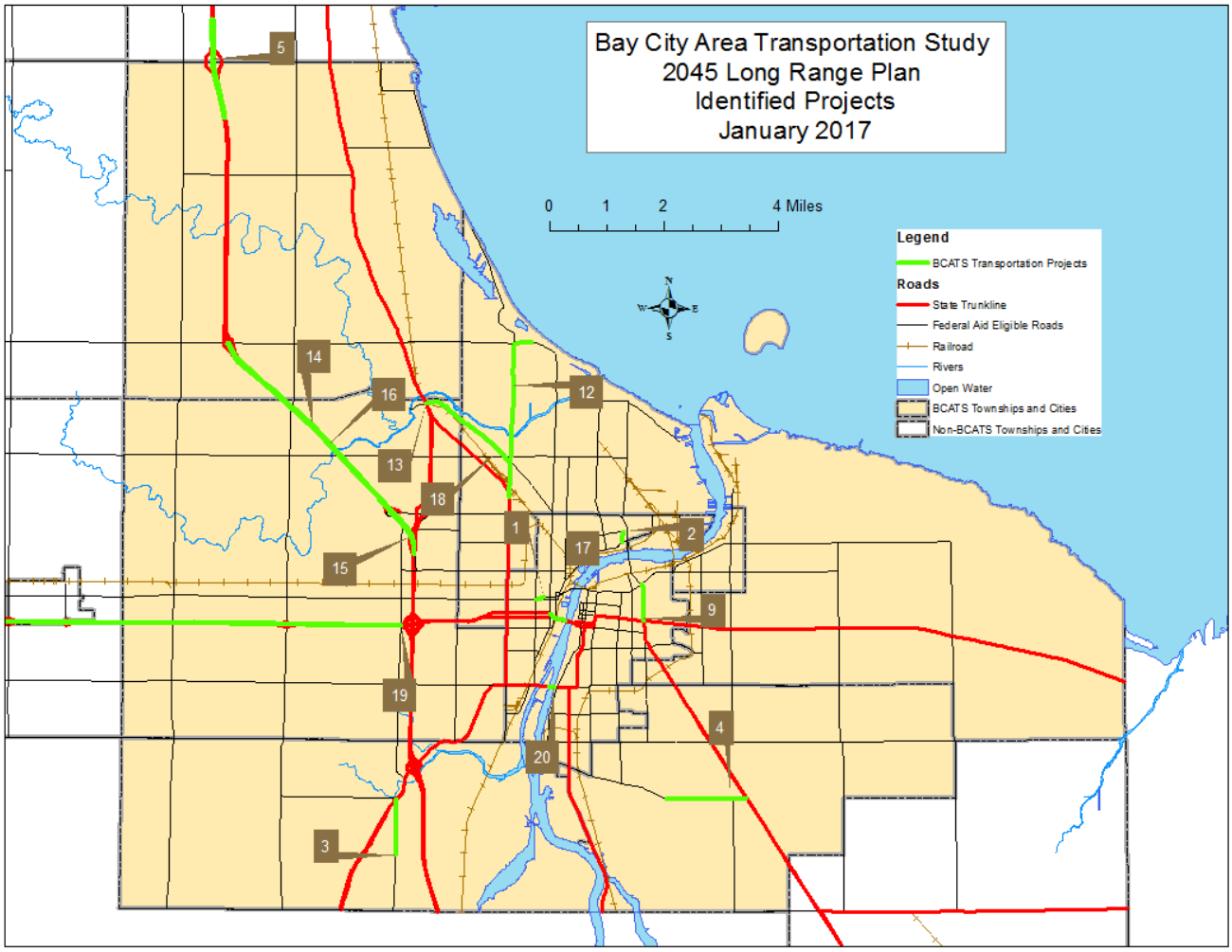
Projects in Progress Since Last Plan

The crush and shape of Cass Avenue in Portsmouth Township, from Knight Road to Finn Road and Finn Road to Farley Road, has required additional engineering work and other additional activities since the BCATS 2040 Long Range Plan was updated in 2012. Work on Cass Avenue will continue through 2017 – 2020.

The reconstruction and addition of a center turn lane for Trumbull Street in Bay City between Woodside Avenue and M-25 (Center Avenue), has been under discussion between the City of Bay City, BCATS, and MDOT staff. Originally scheduled for 2014 construction in the BCATS 2040 Long Range Plan, it is currently scheduled for 2018 – 2020. It's anticipated that with reconstructing Trumbull Street to MDOT's trunkline standards that Bay City will turnover ownership of Trumbull Street and Independence Bridge to MDOT. As mentioned in Chapter 8 this discussion with MDOT is ongoing.

Bay County Road Commission					
Completed Projects, 2018-2021					
2018					
Location	**From**	**To**	**Miles**	**Cost**	**Funding**
No projects within the BCATS area	N/A	N/A	N/A	N/A	N/A
		Total, 2018:	0.00	$ -	
2019					
Location	**From**	**To**	**Miles**	**Cost**	**Funding**
Old Kawkawlin Road	M-13 (Huron Road)	Two Mile Road	0.75	$ 910,000	BCATS Funds
Mackinaw Road	Salzburg Road	US-10	1.00	$ 300,000	BCATS Funds
Wheeler Road	M-247 (N. Euclid Avenue)	State Park Drive	1.00	$ 1,200,000	non-BCATS Funds
		Total, 2019:	2.75	$ 2,410,000	
2020					
Location	**From**	**To**	**Miles**	**Cost**	**Funding**
Old Kawkawlin Road	Two Mile Road	State Park Drive	2.30	$ 2,500,000	BCATS Funds
Wheeler Road	State Park Drive	Patterson Road	1.25	$ 300,000	non-BCATS Funds
German/Bullock Road	Trumbull Road	M-15	2.00	$ 830,000	non-BCATS Funds
		Total, 2020:	5.55	$ 3,630,000	
2021					
Location	**From**	**To**	**Miles**	**Cost**	**Funding**
Salzburg Road	Two Mile Road	M-84	0.70	$ 200,000	non-BCATS Funds
Two Mile Road	Midland Road	Wilder Road	1.50	$ 360,000	non-BCATS Funds
Midland Road	Euclid Avenue (M-13)	Three Mile Road	1.90	$ 320,000	non-BCATS Funds
Pine Road	Center Avenue	Nebobish Road	1.00	$ 120,000	non-BCATS Funds
State Road	Wilder Road	Wheeler Road	1.00	$ 170,000	non-BCATS Funds
		Total, 2021:	3.90	$ 1,170,000	

Table 18: Bay County Road Commission Completed Projects



Map 9: 2045 LRP Identified Projects (Refer to Chapter 5 for numbering of projects)

Chapter Ten

Participation Plan for Transportation Planning and Environmental Justice

Summary of Objectives

- Create a plan that will enable BCATS to improve & increase participation into the transportation planning process
- Develop measures to prevent the denial of, reduction in, or significant delay in the receipt of transportation benefits by low-income and minority population.
- Facilitate participation of non-traditional participants in the planning process.
- To provide and encourage timely and early participation to ensure the opportunity for comment (by stakeholders and the public) on transportation decisions.
- Develop transportation plans and projects that reflect BCATS communities' values.

Overview of Participation Plan Development Process

The Bay City Area Transportation Study (BCATS) is the principal public agency, as per Section 134 (a) of title 23, United States Code, conducting regional transportation studies for the Bay City Urbanized Area. BCATS, through an agreement with the Bay County Board of Commissioners, provides management and policy functions for the transportation planning programs as required by the **Fixing America's Surface Transportation Act (FAST Act) of 2015**. BCATS provides transportation planning services on behalf of the metropolitan planning organization (MPO) for the cities of Bay City and Essexville and the townships of Bangor, Monitor, Hampton, Portsmouth, Kawkawlin, and Frankenlust. The MPO is established by federal law in all urbanized areas of the nation to carry out the "3C" (continuing, cooperative and comprehensive) transportation planning process. This process is required for the area to continue to receive U.S. Department of Transportation (USDOT) funding. Extensive USDOT funds are spent annually in the Bay City area for highway, bridge, transit, transportation enhancement and safety projects and improvements.

The FAST Act continues the **Moving Ahead for Progress in the 21st Century Act (Map-21) of 2012** trends of federal legislation that moves the decision making authority away from the federal government and closer to the citizens. The federal government wants transportation decisions to be more responsive to state and local needs. The updated the requirements of MPOs to develop, advertise, and adopt participation plans from MAP-21 and SAFETEA-LU. In response, BCATS has developed this Public Participation Plan that includes provisions to ensure early and continuing involvement of the public in (a) the transportation planning process, (b) the development of transportation plans, and (c) the development of Transportation Improvement Program (TIP). Therefore, the Public Participation Plan shall reflect consultation with interested parties. At a minimum, the BCATS Organization shall

publish the Public Participation Plan to be used and allow 45 days for written public comment before the revised plan is adopted.

Citizens, public officials, affected public agencies, representatives of transportation agency employees, users of public transit, freight shippers, private providers of transportation and other interested parties shall have full access to plans and programs, their supporting materials, and an opportunity to participate in all stages of the planning process. The Public Participation Plan shall dictate the methods of the publication for the Public Participation Plan, the Transportation Plan and the TIP to make it readily available for public review and comment. The Public Participation Plan will comply with the Open Meetings Act of 1976 and the Americans with Disabilities Act of 1990. The public participation process described herein is used to satisfy the public participation process for the Program of Projects (POP), as prescribed in accordance with Chapter 53 of Title 49, United States Code (FTA requirements), and the metropolitan and statewide planning regulations under MAP-21, for the following grantees: Bay Metropolitan Transportation Authority (BMTA).

TIP and MTP Development Process

BCATS shall consult with governmental units within the MPO, local economic development organizations, freight related businesses, non-motorized transportation groups and clubs, local transportation providers, and other interested parties in the development of the Transportation Improvement Program and the Metropolitan Transportation Plan. BCATS shall also conduct outreach, public comment periods and public hearings as described in the Participation Plan.

Both the initial Transportation Improvement Program (TIP) and Metropolitan Transportation Plan (MTP) shall be published for a minimum of 30 days to receive written public comment before adoption. For any amendments that are deemed necessary for the adopted TIP and/or the MTP, BCATS shall publish at least one notice in a local news publication of general circulation within the Bay City Urbanized Area prior to the approval of the amendment.

BCATS Participation Plan

The BCATS Participation Plan consists of the following tools:

Notice of Meetings
Annual Report
Public Comment Period
Public Hearings
Radio, TV, Newspaper, Internet (Social Media)
Outreach

Visualization Techniques
Environmental Justice
Development & Analysis
Summary

Notice of Meetings

All notices of BCATS Policy Committee meetings and public hearings will be published in a local news publication of general circulation within the Bay City urbanized area and will also be listed on the Bay County Board of Commissioners official calendar of monthly meetings. Notices will also be posted on the bulletin board in the Office of the BCATS Secretary which is at the Bay County Building, 5th floor, 515 Center Avenue, Bay City, Michigan as well as the Bay County Transportation Planning Division website. Should the proposed agenda for the meeting include action on the Participation Plan, the Transportation Plan or the Transportation Improvement Program, it shall be specifically noted.

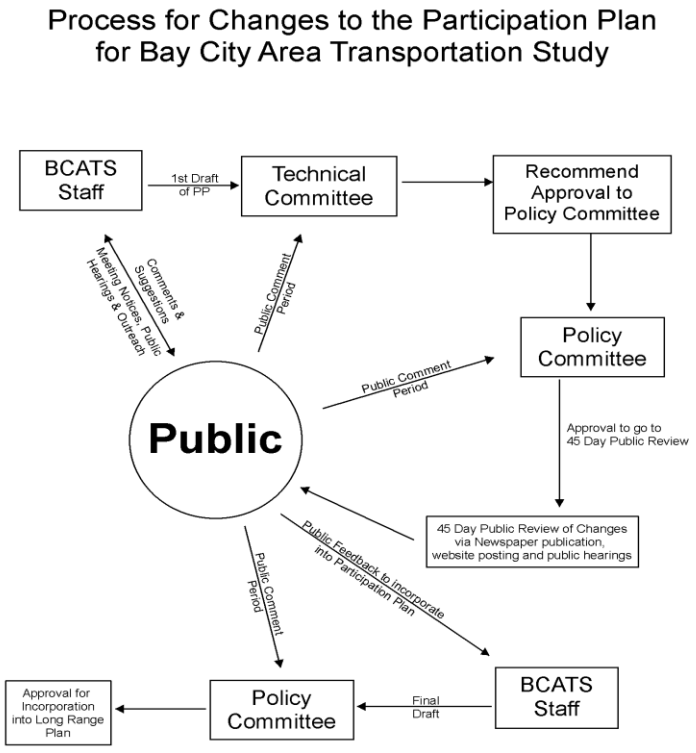


Figure 5: Public Participation Flow Chart

It is also the adopted policy of the BCATS Policy Committee to include in all public meeting notices the following paragraph:

Pursuant to the Americans with Disabilities Act, individuals with disabilities may request aids/services within a reasonable time period to participate in the meeting. Contact Amber Davis-Johnson, Director of Corporation Counsel, 515 Center Avenue, Suite 402, Bay City, MI 48708-5125; phone: 989-895-4131 or 989-895-4049 TDD.

Annual Report

Publishing of the BCATS Annual report in a local news publication of general circulation within the Bay City urbanized area occurs every December. The BCATS annual report shall also be included on the Transportation Planning website. This multi-modal report is a summary of the previous year's work in

transportation. It includes updates on planning studies, completed and upcoming roadway construction projects, transit related information and other general data concerning the activities of BCATS. The report also provides names and phone numbers the public can contact regarding transportation issues.

Public Comment Period at all BCATS Policy Committee Meetings

During each BCATS Policy Committee meeting, time shall be allocated for public comment. The public may submit comments to BCATS in person or in any other form of communication (letters, phone, e-mail, fax, etc.). All comments that are received will be read at the meeting during the public comment period. In addition, BCATS encourages citizens to go to the source, that is, the best place to influence a project is at the local level ▪ where projects begin. For example, if a citizen has a suggestion for improving a roadway or transit route, find out who has jurisdiction over the road or route (for example, is it the city of Bay City, the city of Essexville, the Bay County Road Commission, the Michigan Department of Transportation or the Bay Metro Transit Authority). Once you know who's in charge, take advantage of opportunities to voice your support or objection of a proposed project. Projects are approved at the local level (by planning commissions, township boards, city commissions, or road commissions) before they make it on to the BCATS approved project list for federal funding.

Public Hearings

Specifically, before approving any Participation Plan, Transportation Plan or Transportation Improvement Program, BCATS shall conduct a public hearing to solicit comments. Such hearings shall take place during the regularly scheduled BCATS meeting unless deemed otherwise by the BCATS Policy Committee. Notice of public hearings will be administered in the same manner as notice of meetings. To supplement the public hearing process, BCATS may also engage in hosting public information/ public open house meetings in publicly convenient and accessible locations such as, but not limited to, public libraries, schools, shopping malls, or township halls. During public hearing BCATS will utilize various visualization techniques, as described in section 7, to assist in conveying the transportation plans and programs.

Radio, TV, Newspaper, Internet

To the extent feasible, BCATS staff will utilize the opportunities provided through local radio, TV, Bay County TV, newspaper, Internet, and social media to inform the public of the development of transportation planning products such as the Metropolitan Transportation Plan or the Transportation Improvement Program. This would include news releases, bulletin board formats, public service announcements and interview opportunities that may be available. Citizens with internet access can go to the BCATS homepage at *www.baycounty-mi.gov/Transportation*.

Outreach

BCATS staff will attempt to identify and contact special interest groups in the community to assure their opportunity to have input. These would include organizations such as citizen district councils, minority populations, low-income populations, private transportation providers, etc. These groups will receive a direct mailing which describes the transportation planning process and their opportunity for input. This includes but is not limited to the organizations listed below. This list may be added to at any meeting of the BCATS Policy Committee:

Midland Salzburg Citizen District Council (CDC)
Northwest CDC
Northeast CDC
Columbus Avenue CDC
Midland Street Management Board CDC
South-End CDC
NAACP, Bay City Branch
Bay City Downtown Development Authority (DDA)
Essexville DDA
Hampton DDA
Bangor DDA
Monitor DDA
Senior Citizens Advisory Committee
Bay Future Inc.

Community Foundation Railtrail/Riverwalk Committee
James Clements Airport Advisory Committee
AAA Taxi Company
Bangor Township Public Schools Transportation Program
Bay City Public Schools Transportation Program
Essexville-Hampton Public Schools Transportation Program
Bay City Housing Commission (elderly and low income housing)

United Way of Bay County
Bay County Division on Aging
Region VII Area Agency on Aging
Tri-City Cyclist
Bicycling Awesome Riding Society (BARS)
Great Lakes Bay Region Hispanic Business Association
Bay City Riverwalk/Railtrail Committee
Bay Area Runner's Club

Visualization Techniques

BCATS will utilize various visualization techniques to inform the public and convey the message of transportation projects, plans, and programs ranging from, but not limited to, static maps, interactive GIS demonstrations, computer model simulations, photo manipulation to artist renderings. For each individual project, plan, or program, BCATS will use the most efficient visualization technique possible to best inform the public.

Public Participation Plan Process for Major Transportation Documents

BCATS shall consult with governmental units within the MPO, local economic development organizations, freight related businesses, non-motorized transportation groups and clubs, local transportation providers, and other interested parties in the development of the TIP and the Metropolitan Transportation Plan. BCATS shall also conduct outreach, public comment periods and public hearings as described in the Public Participation Plan.

Both the initial TIP and Metropolitan Transportation Plan shall be published for a minimum of 30 days to receive written public comment before adoption. When significant written and/oral comments are received on the draft Metropolitan Transportation Plan and TIP, BCATS will prepare a summary, analysis, and report on the disposition of comments as part of the final Metropolitan Transportation Plan and TIP. For any amendments that are deemed necessary for the adopted TIP and/or the Metropolitan Transportation Plan, BCATS shall publish at least one notice in a local news publication of general circulation within the Bay City Urbanized Area prior to the approval of the amendment.

Environmental Justice

In April 1997 the U.S. Department of Transportation (DOT) issued the DOT order on environmental justice to Address Environmental Justice in Minority Populations and Low-Income Populations (DOT Order 5610.2). The order generally describes the process for incorporating environmental justice principles into all DOT programs, policies, and activities as well as providing a framework for compliance with Executive Order 12898. This Order was updated in May of 2012 (DOT Order 5610.2(a)) and it further clarifies certain aspects of the original Order while maintaining its general framework.

Most recently, on January 27th, 2021, President Biden signed Executive Order (EO) 14008, Tackling the Climate Crisis at Home and Abroad, creating the government wide Justice40 initiative. The Biden administration aims to deliver 40 percent of the overall benefits of federal investments in climate and clean energy, including sustainable transportation, to disadvantaged communities (DACs).

According to the Climate and Economic Justice Screening Tool, multiple census tracts within Bay City and Hampton Township have been identified as being disadvantaged in several categories to include

sustainable housing, pollution, clean water and wastewater infrastructure, health burdens, and workforce development; however, no census tracts within Bay County have been identified as being transportation disadvantaged. BCATS will continue to monitor the screening tool to identify DACs throughout the county as the tool is updated and feedback is implemented throughout 2022. If further DACs are identified, specifically transportation related, BCATS will keep these areas of concern in mind when it comes to grant funding, planning, and implementation of transit-related projects. Bay County DACs can be visualized through the screening tool at the following link: (https://screeningtool.geoplatform.gov/en/#9.49/43.715/-83.9651).

Environmental justice is an important part of the planning process and must be considered in all phases of planning. This includes all Participation Plans and activities, the development of Regional Transportation Plans and Transportation Improvement Programs adopted by BCATS. Specifically, BCATS will consider environmental justice concerns within their established participation procedures.

There are three fundamental concepts of environmental justice:

1. To avoid, minimize, or mitigate disproportionately high and adverse human health or environmental effects, including social and economic effects, on minority populations and low-income populations.

2. To ensure the full and fair participation by all potentially affected communities in the transportation decision-making process.

3. To prevent the denial of, reduction in, or significant delay in the receipt of benefits by minority populations and low-income populations.

BCATS will continue to work to identify residential, employment, and transportation patterns of low-income and minority populations so that their needs can be identified and addressed, and the benefits and burdens of transportation investments can be fairly distributed. BCATS will also continue to evaluate and where necessary, improve the Participation Plan to eliminate barriers and engage minority and low-income populations in transportation decision making. However, BCATS cannot fully meet community needs without the active participation of well-informed, empowered individuals; community groups; and other non-governmental organizations. These individuals and groups advance the letter, spirit, and intent of environmental justice in transportation when they participate in public participation activities (meetings, hearings, advisory groups) to help BCATS understand community needs, perceptions, and goals.

Our basic message to all citizens is that the earlier you get involved, the better your chances will be to create the impact you desire. There are many situations where public participation has influenced

transportation decisions made in our community. Transportation programs and projects cannot proceed without citizen acceptance and support that come through an educated public and an open inclusive process.

At this time BCATS has identified the following groups to begin initial outreach efforts for environmental justice purposes: All Citizen District Councils, NAACP Bay City branch, the Saginaw Chippewa Indian Tribe, and the Senior Citizen Advisory Committee. This list may grow significantly as environmental justice efforts increase. Specific strategies will be developed with each group after initial contact and discussions have occurred. This will ensure that the strategies will be developed jointly and cooperatively between the MPO and community organizations representing low-income populations and minority populations.

Definition of Minority for Purposes of Environmental Justice

According to the U.S. DOT Order 5610.2 the following groups are defined as minority:

1. Black (a person having origins in any of the black racial groups of Africa).
2. Hispanic (a person of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race).
3. Asian American (a person having origins in any of the original people of the Far East, Southeast Asia, the Indian subcontinent, or the Pacific Islands).
4. American Indian and Alaskan Native (a person having origins in any of the original people of North America and who maintains cultural identification through tribal affiliation or community recognition).
5. Native Hawaiian and Other Pacific Islanders (a person having origins in any of the original people of Hawaii, Guam, Samoa, or other Pacific Islands).

Definition of Low-income for Purposes of Environmental Justice

Low-income is defined as a person whose household income is at or below the Department of Health and Human Services (HHS) poverty guidelines. HHS poverty guidelines are used as eligibility criteria for the Community Services Block Grant Program and several other federal programs. However, a state or locality may adopt a higher threshold for low-income, if the higher threshold is not selectively implemented and is inclusive of all persons at or below the HHS poverty guidelines.

Development & Analysis

BCATS has developed and will update as necessary a demographic profile of the transportation planning area that includes identification of the locations of minority populations and low-income populations as covered by the executive order on environmental justice. Maps of minority and low-income areas which

have had the proposed MTP projects overlain on them to provide a visual analysis of potential impacts are located on the following pages.

BCATS will continue to address environmental justice issues over the coming months. Coordination with the MDOT with assistance and guidance provided by the FHWA will help to refine and expand on our efforts.

Summary

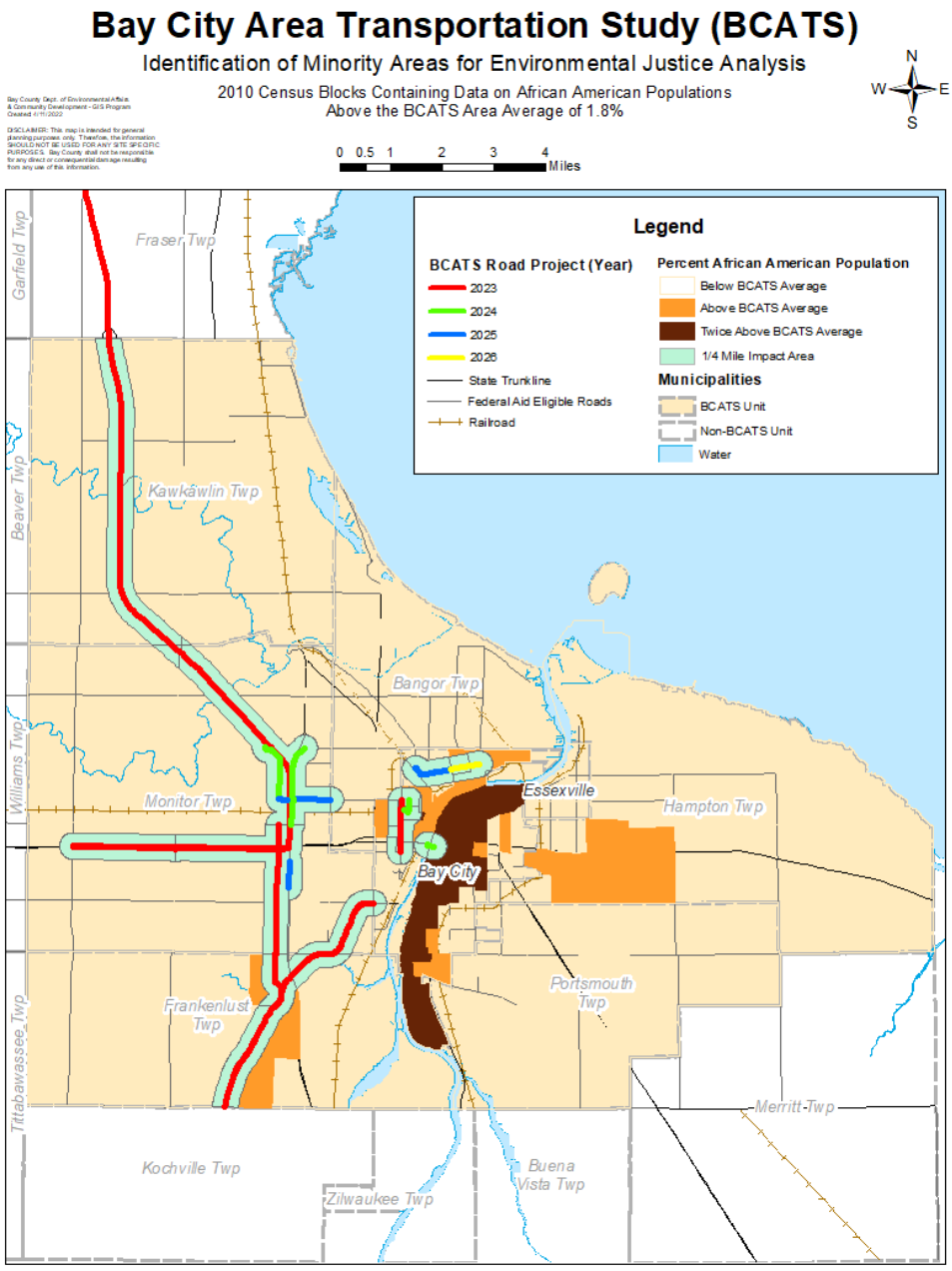
The BCATS Participation Plan described above will ensure maximum access by the public and encourage proactive public participation to all aspects of the transportation planning process. This increased access for local citizens and other groups to transportation planning will help foster the continuous improvement of BCATS plans and programs to serve the Bay City area.

Of the 31 total street and highway projects in the MTP, 5 projects are located within or adjacent to census block groups identified as having a total minority percentage higher than the overall BCATS average for all census block groups. For each identified minority population, 8 projects are located within or adjacent to African American minority areas, 16 projects are located within or adjacent to Asian minority areas, 18 projects are within or adjacent to Native American minority areas, and 6 projects are within or adjacent to Hispanic minority areas. In addition, 9 of the 31 projects are within or adjacent to block groups which have been identified to have a low-income population higher than the overall BCATS average for all block groups.

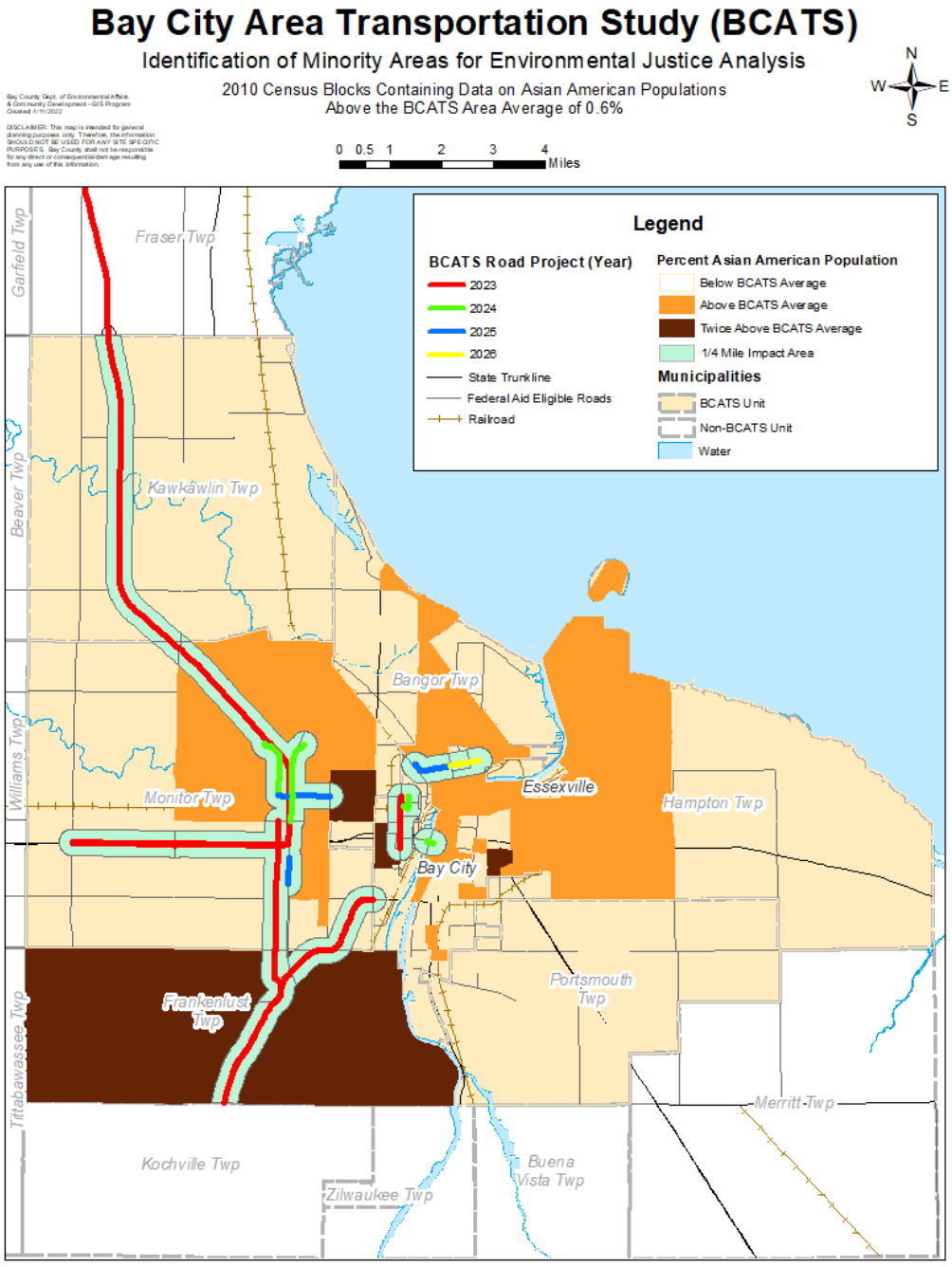
Overall, 21 of the 31 projects are complete preservation and maintenance in nature. These projects do not include any relocations and displacements.

During the planning process, all projects will have an opportunity for public comment and participation. A project open house is held for major projects to discuss the socio-economic impacts of the project on the community which includes any low-income populations or minority populations. Also, during construction, appropriate detour routes are developed to minimize delay and disruption on all population groups. Having followed the adopted environmental justice practices BCATS has not identified any disproportionate adverse effects on minority or low-income populations.

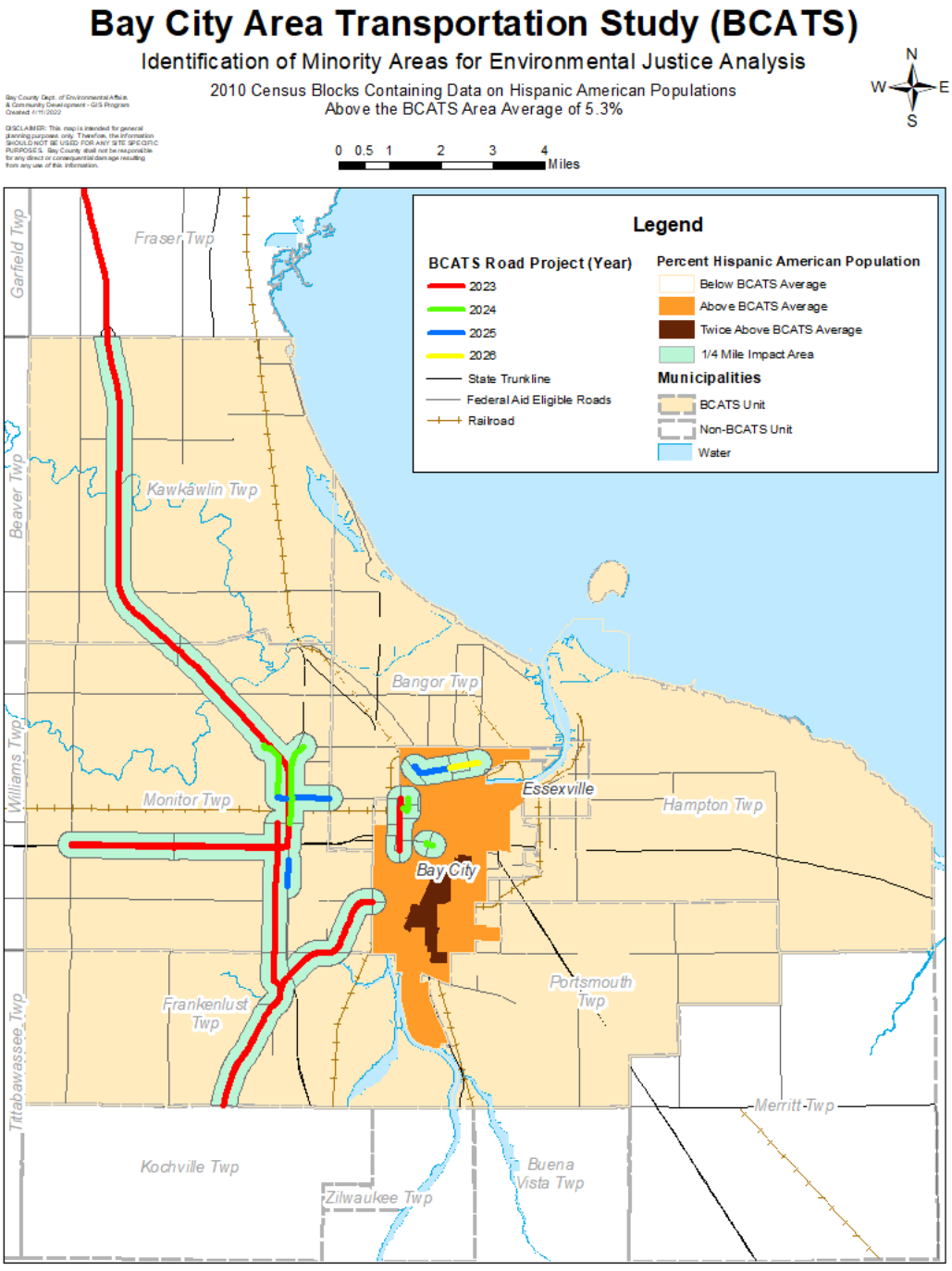
Environmental Justice Maps



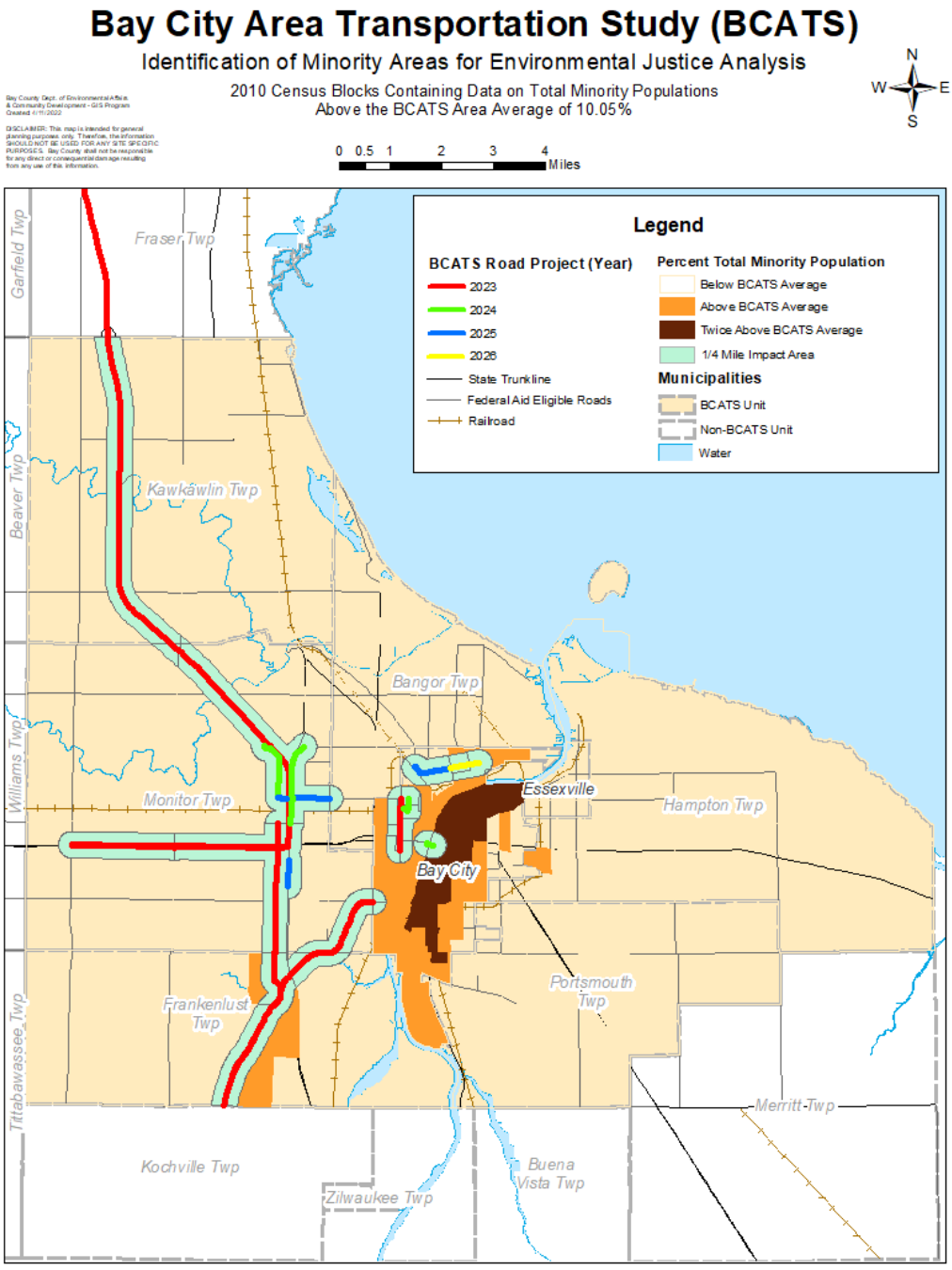
Map 10: Environmental Justice Maps African American Population



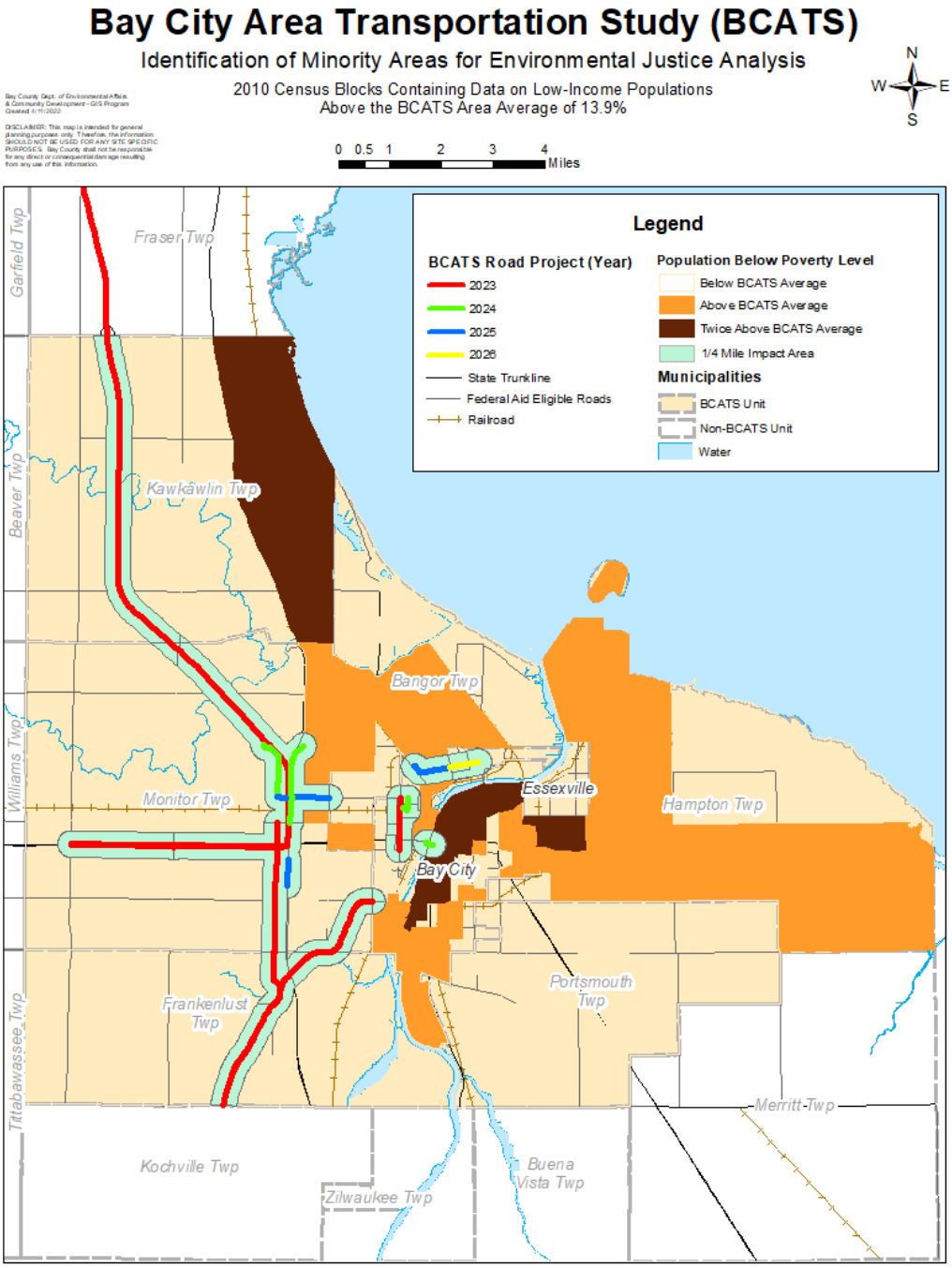
Map 11: Environmental Justice Maps Asian American Population



Map 12: Environmental Justice Maps Hispanic American Population



Map 13: Environmental Justice Maps Total Minority Population



Map 14: Environmental Justice Maps Low Income Population

Block Group	Total Pop.	African Amer. Pop.	% African Amer.	Native Amer. Pop.	% Native Amer.	Asian Amer. Pop.	% Asian Amer.	Hispanic Amer. Pop.	% Hispanic Amer.	Total Minority Pop.	% Minority
Bangor											
2858001	2816	54	**1.92%**	15	**0.53%**	28	**0.99%**	106	3.76%	248	8.81%
2858002	737	1	0.14%	1	0.14%	0	0.00%	21	2.85%	31	4.21%
2858003	1943	17	0.87%	7	0.36%	46	**2.37%**	89	4.58%	187	9.62%
2858004	867	10	1.15%	18	**2.08%**	3	0.35%	27	3.11%	68	7.84%
2859001	1332	6	0.45%	3	0.23%	6	0.45%	57	4.28%	82	6.16%
2859002	1885	18	0.95%	9	0.48%	12	**0.64%**	65	3.45%	112	5.94%
2859003	1868	10	0.54%	11	**0.59%**	9	0.48%	78	4.18%	132	7.07%
2860001	984	4	0.41%	6	**0.61%**	5	0.51%	33	3.35%	56	5.69%
2860002	782	2	0.26%	2	0.26%	5	**0.64%**	31	3.96%	60	7.67%
2860003	1427	7	0.49%	9	**0.63%**	2	0.14%	60	4.20%	85	5.96%
Bay City											
2803001	1300	94	**7.23%**	9	**0.69%**	6	0.46%	118	**9.08%**	281	**21.62%**
2804001	645	15	**2.33%**	5	**0.78%**	5	**0.78%**	67	**10.39%**	100	**15.50%**
2804002	592	30	**5.07%**	4	**0.68%**	0	0.00%	47	**7.94%**	102	**17.23%**
2804003	766	92	**12.01%**	8	**1.04%**	8	**1.04%**	84	**10.97%**	207	**27.02%**
2804004	975	73	**7.49%**	14	**1.44%**	1	0.10%	102	**10.46%**	231	**23.69%**
2805001	1124	40	**3.56%**	6	**0.53%**	3	0.27%	80	**7.12%**	127	**11.30%**
2805002	1046	14	1.34%	2	0.19%	8	**0.76%**	52	4.97%	84	8.03%
2805003	680	6	0.88%	4	**0.59%**	9	**1.32%**	30	4.41%	58	8.53%
2805004	648	10	1.54%	4	**0.62%**	0	0.00%	38	**5.86%**	57	8.80%
2806001	748	32	**4.28%**	5	**0.67%**	0	0.00%	79	**10.56%**	140	**18.72%**
2806002	916	10	1.09%	4	0.44%	6	**0.66%**	66	**7.21%**	101	**11.03%**
2806003	1148	47	**4.09%**	3	0.26%	5	0.44%	105	**9.15%**	180	**15.68%**
2807001	1366	78	**5.71%**	14	**1.02%**	0	0.00%	214	**15.67%**	358	**26.21%**
2807002	1381	82	**5.94%**	10	**0.72%**	3	0.22%	202	**14.63%**	356	**25.78%**
2807003	713	40	**5.61%**	5	**0.70%**	0	0.00%	89	**12.48%**	159	**22.30%**
2808001	1468	21	1.43%	2	0.14%	5	0.34%	93	**6.34%**	133	9.06%
2808002	1231	6	0.49%	1	0.08%	6	0.49%	115	**9.34%**	159	**12.92%**
2808003	892	10	1.12%	5	**0.56%**	1	0.11%	68	**7.62%**	105	**11.77%**
2809001	909	30	**3.30%**	11	**1.21%**	7	**0.77%**	132	**14.52%**	209	**22.99%**
2809002	898	24	**2.67%**	4	0.45%	0	0.00%	65	**7.24%**	121	**13.47%**
2809003	1145	48	**4.19%**	5	0.44%	1	0.09%	119	**10.39%**	211	**18.43%**
2810001	705	4	0.57%	9	**1.28%**	0	0.00%	64	**9.08%**	84	**11.91%**
2810002	709	12	1.69%	2	0.28%	2	0.28%	45	**6.35%**	74	**10.44%**
2810003	569	5	0.88%	9	**1.58%**	1	0.18%	43	**7.56%**	79	**13.88%**
2810004	726	12	1.65%	5	**0.69%**	0	0.00%	52	**7.16%**	85	**11.71%**
2810005	692	8	1.16%	3	0.43%	15	**2.17%**	41	**5.92%**	79	**11.42%**
2810006	627	14	**2.23%**	4	**0.64%**	13	**2.07%**	38	**6.06%**	78	**12.44%**
2813001	826	24	**2.91%**	6	**0.73%**	6	**0.73%**	51	**6.17%**	90	**10.90%**
2813002	709	15	**2.12%**	6	**0.85%**	1	0.14%	40	**5.64%**	74	**10.44%**
2813003	1633	19	1.16%	10	**0.61%**	12	**0.73%**	94	**5.76%**	162	**9.92%**
2865001	1796	148	**8.24%**	15	**0.84%**	12	**0.67%**	190	**10.58%**	395	**21.99%**
2866001	751	9	1.20%	1	0.13%	2	0.27%	48	**6.39%**	74	**9.85%**
2866002	847	23	**2.72%**	4	0.47%	4	0.47%	71	**8.38%**	145	**17.12%**
2866003	999	31	**3.10%**	1	0.10%	5	0.50%	66	**6.61%**	140	**14.01%**
2866004	839	47	**5.60%**	13	**1.55%**	5	**0.60%**	61	**7.27%**	155	**18.47%**

2866005	814	18	**2.21%**	3	0.37%	2	0.25%	58	**7.13%**	96	**11.79%**
2866006	1099	31	**2.82%**	8	**0.73%**	5	0.45%	43	3.91%	111	**10.10%**
Essexville											
2851001	1286	20	1.56%	10	**0.78%**	13	**1.01%**	42	3.27%	102	7.93%
2851002	1461	5	0.34%	8	**0.55%**	12	**0.82%**	38	2.60%	74	5.07%
2851003	731	7	0.96%	2	0.27%	3	0.41%	25	3.42%	45	6.16%
Frankenlust											
2854001	741	3	0.40%	5	**0.67%**	18	**2.43%**	13	1.75%	44	5.94%
2854002	1548	49	**3.17%**	4	0.26%	37	**2.39%**	56	3.62%	166	**10.72%**
2854003	1273	3	0.24%	5	0.39%	20	**1.57%**	32	2.51%	63	4.95%
Fraser & Garfield											
2862001	877	2	0.23%	5	**0.57%**	0	0.00%	13	1.48%	24	2.74%
2862002	1872	4	0.21%	17	**0.91%**	2	0.11%	50	2.67%	87	4.65%
2862003	1233	2	0.16%	6	0.49%	0	0.00%	23	1.87%	36	2.92%
2862004	953	2	0.21%	4	0.42%	3	0.31%	23	2.41%	42	4.41%
Hampton											
2852011	692	1	0.14%	1	0.14%	3	0.43%	15	2.17%	22	3.18%
2852012	795	14	1.76%	2	0.25%	0	0.00%	26	3.27%	61	7.67%
2852013	2252	46	**2.04%**	9	0.40%	16	**0.71%**	92	4.09%	187	8.30%
2852014	1090	1	0.09%	0	0.00%	8	**0.73%**	39	3.58%	71	6.51%
2852015	1005	22	**2.19%**	9	**0.90%**	10	**1.00%**	50	4.98%	105	**10.45%**
2852021	2007	29	1.44%	4	0.20%	17	**0.85%**	62	3.09%	136	6.78%
2852022	1811	28	1.55%	5	0.28%	8	0.44%	61	3.37%	151	8.34%
Kawkawlin											
2861001	1501	2	0.13%	7	0.47%	0	0.00%	27	1.80%	62	4.13%
2861002	880	4	0.45%	3	0.34%	0	0.00%	19	2.16%	29	3.30%
2861003	836	0	0.00%	5	**0.60%**	1	0.12%	10	1.20%	27	3.23%
2861004	1631	4	0.25%	16	**0.98%**	7	0.43%	37	2.27%	86	5.27%
Monitor											
2855001	2670	16	0.60%	1	0.04%	11	0.41%	66	2.47%	130	4.87%
2855002	1481	7	0.47%	0	0.00%	6	0.41%	22	1.49%	43	2.90%
2855003	962	0	0.00%	7	**0.73%**	0	0.00%	36	3.74%	58	6.03%
2855004	1580	5	0.32%	4	0.25%	16	**1.01%**	32	2.03%	66	4.18%
2857001	1700	6	0.35%	8	0.47%	15	**0.88%**	67	3.94%	126	7.41%
2857002	1004	2	0.20%	3	0.30%	4	0.40%	11	1.10%	34	3.39%
2857003	1338	4	0.30%	8	**0.60%**	10	**0.75%**	23	1.72%	58	4.33%
Portsmouth & part of Merritt											
2853001	1312	10	0.76%	3	0.23%	2	0.15%	51	3.89%	74	5.64%
2853002	1002	2	0.20%	6	**0.60%**	3	0.30%	36	3.59%	49	4.89%
2853003	475	3	0.63%	3	**0.63%**	1	0.21%	21	4.42%	29	6.11%
2853004	1097	7	0.64%	8	**0.73%**	1	0.09%	38	3.46%	57	5.20%
BCATS Totals											
	88,346	**1,656**	**1.87%**	**460**	**0.52%**	**522**	**0.59%**	**4,630**	**5.24%**	**8,699**	**9.85%**

Table 19: Census Data Table

Bold *percentages are greater than BCATS average,* ***Red*** *percentages are twice the BCATS average.*
Data Source: 2010 United States Census

Chapter Eleven
Consultation Efforts

Documentation of consultation and public participation efforts during the drafting and public review period of the Bay City Area Transportation Study (BCATS) 2045 Metropolitan Transportation Plan

Section 1

BCATS 2045 Metropolitan Transportation Plan Description

The Bay City Area Transportation Study (BCATS) is the principal public agency, as per Section 134 (a), conducting regional transportation studies for the Bay City Urbanized Area. BCATS, through an agreement with the Bay County Board of Commissioners, provides management and policy functions for the transportation planning program as required by the Fixing Americas Surface Transportation Act (FAST Act). BCATS provides transportation planning services on behalf of the metropolitan planning organization (MPO) for the cities of Bay City and Essexville and the townships of Bangor, Monitor, Hampton, Portsmouth, Kawkawlin, and Frankenlust. The MPO is established by federal law in all urbanized areas of the nation to carry out the "3C" (continuing, cooperative and comprehensive) transportation planning process. This process is required for the area to continue to receive U.S. Department of Transportation (USDOT) funding. Extensive USDOT funds are spent annually in the Bay City area for highway, bridge, transit, transportation enhancement and safety projects and improvements.

One major function of BCATS under federal law is to produce a transportation plan for the area. The transportation plan is used as a basis to guide the decision of where federal transportation funds should be spent. The transportation plan identifies the area's transportation needs through the year 2045 as well as projects, both funded and unfunded and policies to meet those needs. The plan shall include both long-term and short-term strategies/actions, including but not limited to, operations and management activities that lead to the systematic development of an integrated intermodal transportation system that facilitates the safe and efficient movement of people and goods in addressing current and future transportation demand. The transportation plan shall be reviewed and updated every five years in air quality attainment areas and at least triennially in non-attainment areas to confirm its validity and consistency with current and forecasted transportation and land use conditions and trends and to extend the forecast period. In updating a plan, BCATS shall base the update on the latest estimates and assumptions for population, land use, travel, employment, congestion, and economic activity.

There were considerable and numerous discussions with city and township staff, airport staff, various DDA staff, and other community agencies during the course of the traffic demand model creation and development of the BCATS 2045 Metropolitan Transportation Plan (MTP). Many of these efforts will be ongoing even after the BCATS 2045 MTP Update is adopted. This chapter is designed to discuss those outreach and consultation efforts and detail what response or action was taken regarding the comment.

Section 2

Public Involvement and Consultation Efforts

During the development of the Great Lakes Bay Region Travel Demand Model, which occurred from May 2014 through January 2017, nearly every city and township was contacted directly. These efforts included personal visits with every township and city offices in the BCATS study area, and at least a phone conversation with representative staff in townships and cities outside of the BCATS study area. The tabulation of building and demolition permits in the various units of government, as well as verification of existing business locations required lengthy discussions with local supervisory, assessor, and/or building and zoning officials, as well as future development sites and an estimated time frame of the site development. Transportation issues were a main component of these data gathering discussions. These efforts were instrumental in analysis of the ongoing shift of persons and businesses which indicate shifting demands on the transportation system. This shifting demand of goods and services are reflected in the Travel Demand Model in future years by changes in the estimated traffic flows in those future years.

Those contacted include:
Within the BCATS Study Area
Bangor Township – Dennis Kula, Township Surpervisor and Dan Darland, Township Assessor
Frankenlust Township - Ronald Campbell, Township Supervisor
Fraser Township – George Augustaniak, Township Supervisor
Hampton Township - Tom Foret, Township Supervisor
Kawkawlin Township – Dennis Bragiel, Township Supervisor
Monitor Township - Gary Brandt, Township Supervisor
Portsmouth Township – Bob Pawlak, Township Supervisor
City of Bay City - Terry Moultane, Planning Department
City of Essexville - Dan Hansford, City Manager

The building and demolition permit data will be a continuous data gathering effort over the life of the 2045 Plan Update. Additionally, the review of business locations within the BCATS study area will be an ongoing effort. Through this continuous social and economic data update process BCATS will maintain an open communication regarding transportation issues with the townships and cities within the BCATS area and within Bay County in general.

Bay County Offices

BCATS staff had numerous and continuing contact with Mosquito Control, Bay County Drain Office, Bay County Soil Erosion Office, Bay County Environmental Affairs and Community Development Office, Bay County Equalization Office, Bay County Emergency Services, Bay County 911 and the Bay County Health Department. Each of these offices has their own unique and specific transportation related interests.

MBS Airport Contact

There were contacts with MBS International Airport staff during the drafting of the BCATS MTP. Existing Long Range Plans for BCATS and MBS International were exchanged in the past with MBS. BCATS along with MATS and SMATS have held discussions with MBS that involved the traffic patterns that may result from the new terminal, Garfield Rd expansion and safety issues at the US-10/Garfield Rd interchange, and possible freight and manufacturing projects at the site.

Newspaper Contact

Contact with the local newspaper, the Bay City Times - MLive, was conducted initial with the public outreach letter. An ad was posted on the 2045 Metropolitan Transportation Plan public comment period in the Bay City Times on July 3, 2022. A copy of this article is included in the Appendix.

Other Contacts

In the effort by BCATS to fully engage the public, BCATS sent out a letter informing various agencies, governments, and organizations in the area to solicit comments on the on the 2045 Metropolitan Transportation Plan and the candidate projects. A copy of this letter and a list of the recipients are included in Appendix.

BCATS 2045 Metropolitan Transportation Plan Public Review and Comments

At the BCATS 2045 Metropolitan Transportation Plan Public Review session held on August 2nd, 2022, from 3:30 p.m. to 6:30 p.m. at the Alice & Jack Wirt Public Library, 500 Center Ave, Bay City, MI 48708. A copy of the sign-in sheet and any submitted comments are included in the Appendix.

Appendix

Appendix A - Travel Demand Model Maps

2013 TDM Daily and Peak Period Deficiencies Map
2045 TDM Daily and Peak Period – No Build
2045 TDM Daily and Peak Period - Built Network

Appendix B - Public Notice and Comment Solicitation

- Contact List
- Public Open House Sign-in Sheet
- Comments received
- FHWA Comments
- FHWA Approval Letter
- Public Notice Letter
- MLIVE Public Notice

Appendix C - List of Available Federal-Aid Highway and Transit Resources[2]

Highway Resources

Source	Purpose	Examples of Eligible Activities
Surface Transportation Block Grant Program	Maintain and improve the federal-aid highway system.	Construction, reconstruction, or rehabilitation of highways, bridges, and tunnels; transit capital projects, infrastructure-based intelligent transportation systems (ITS) capital improvements; border infrastructure; highway and transit safety projects; traffic monitoring, management, and control facilities; non-motorized projects (including projects eligible under the former Transportation Alternatives Program); and bridge scour countermeasures.
Highway Safety Improvement Program (HSIP)	Decrease highway deaths and injuries.	Intersection safety improvements; pavement and shoulder widening; rumble strips or other warning device; improvements for pedestrian or bicyclist safety or safety of persons with disabilities; Construction and improvement of a railway-highway grade crossing safety feature, including installation of protective devices; traffic calming features; elimination of a roadside hazard; and installation, replacement, and other improvement of highway signage and pavement markings, or a project to maintain minimum levels of retro-reflectivity, that addresses a highway safety problem consistent with a State Strategic Highway Safety Plan; roadside safety audits.
Congestion Mitigation and Air Quality Improvement Program (CMAQ)	Reduce emissions from transportation sources.	Installing dedicated turn lanes; signal retiming, interconnection, or actuation; constructing roundabouts; diesel retrofits; projects to reduce single-occupant vehicle travel; new or reduced-headways transit routes. However, since Bay County is in attainment for Ozone under USEPA's recently implemented 8-hour Ozone Standard, BCATS is not eligible for CMAQ funds.
National Highway Performance Program (NHPP)	Maintain and improve the National Highway System (NHS) (i.e., the subset of the federal-aid highway system that includes roads classified as principal arterials or above).	Construction, rehabilitation, or reconstruction of highways, bridges, and tunnels; transit capital projects on the NHS; infrastructure-based intelligent transportation systems (ITS) capital improvements on the NHS; highway and transit safety projects on the NHS; certain bicycle and non-motorized activities; and construction, rehabilitation, or reconstruction of highways, bridges, and tunnels on federal-aid highways not on the NHS, as long as they are within the same corridor as a segment of the NHS.

2 Not intended to be an exhaustive list of all eligible activities.

Transit Resources

Source	Purpose	Examples of Eligible Activities
Sec. 5307 Urbanized Area Formula Grants	Funding for basic transit capital needs of transit agencies in urbanized areas.	Capital projects, transit planning, and projects eligible under the former Job Access Reverse Commute (JARC) program (intended to link people without transportation to available jobs). Some of the funds can also be used for operating expenses, depending on the size of the transit agency. One percent of funds received are to be used by the agency to improve security at agency facilities.
Section 5310, Elderly and Persons with Disabilities	Improving mobility options for seniors and disabled persons.	Projects to benefit seniors and disabled persons when service is unavailable or insufficient and transit access projects for disabled persons exceeding Americans with Disabilities Act (ADA) requirements. Section 5310 incorporates the former New Freedom program.
Section 5311, Non-Urbanized Area Formula Grants	Improving mobility options for residents of rural areas.	Capital, operating, and rural transit planning activities in areas under 50,000 population.
Section 5337, State of Good Repair Grants	Maintaining fixed-guideway transit systems in a state of good repair.	Capital, maintenance, and operational support projects. Recipients develop and implement an asset management plan. Half of Section 5337 funding is distributed by a formula accounting for vehicle revenue miles and directional route miles; half is based on ratios of past funding received.
Section 5339, Bus and Bus Facilities	Funding for basic transit capital needs of transit agencies, including construction of bus-related facilities.	Replace, rehabilitate, and purchase buses and related equipment, and construct bus-related facilities.

Appendix D - Financial and Operations and Maintenance Assumptions

Funding Growth Rates

These rates are not Year of Expenditure (i.e., inflation). Funding growth rates are the forecast of what is expected to be apportioned and/or allocated to the state and the MPOs. These funds are not indexed for inflation: There is no "cost of living" adjustment. Assumptions are made based on information known at a given point in time. What we know as we develop our current estimates is:

1. Michigan has seen very little growth in its federal-aid highway apportionment over the past couple of decades. Over the past 18 fiscal years, the state's apportionment has only increased, on average 2.47 percent per year. In recent years the average annual change in apportionment has actually been negative, with the ten-year average at -0.30 percent and the five-year average at -1.21 percent.
2. On December 4, 2015, the FAST Act was signed into law. The FAST Act authorizes $305 billion in federal funding for the nation's surface transportation system over the next five years. The legislation breaks the cycle of short-term funding authorizations that have characterized the federal program for the past 10 years and, in covering nearly five full fiscal years, represents the longest surface transportation authorization bill enacted since 1998.
3. Reliance on non-transportation revenue to support investments in surface transportation is continued in the FAST Act. The FAST Act transfers $70 billion from the federal General Fund into the federal HTF to ensure that all investments in highways and transit during the next five fiscal years are fully paid for. This brings the total amount of non-transportation revenue that has supported investments from the HTF during the past seven years to nearly $145 billion.

Although the FAST Act has increased funding stability over the next five fiscal years, funding increases are modest at best. In keeping the modest increases outlined in the FAST Act, MDOT is recommending 1.9 funding increases between 2022-2030 and 2.1 percent between 2031-2045.

Year of Expenditure (YOE) Rates

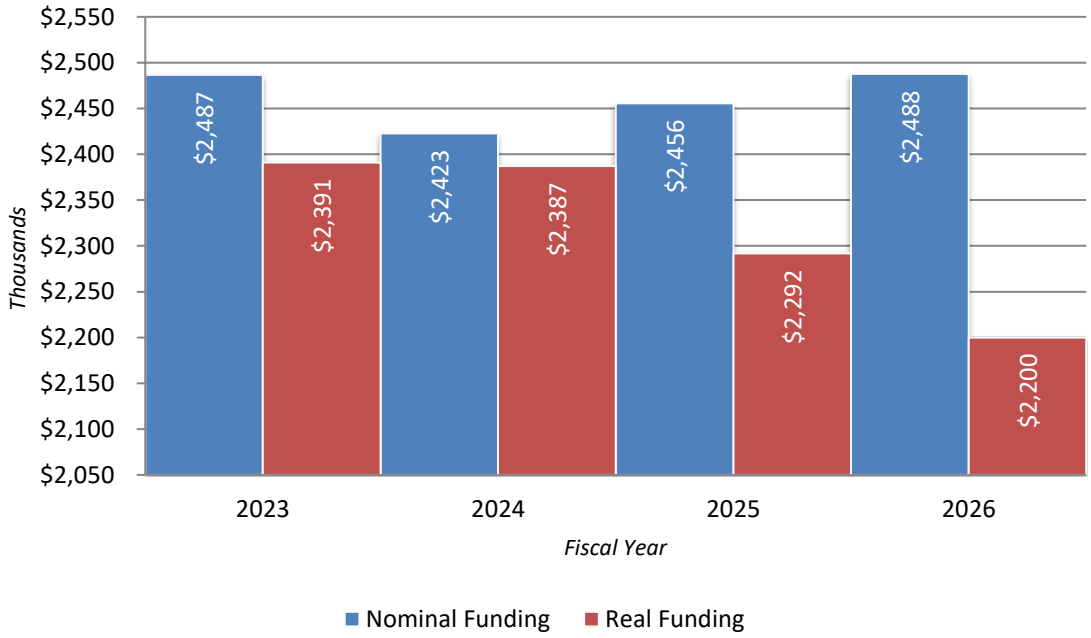
These rates represent the forecast of how much the cost of implementing transportation projects will increase each year, on average. In other words, YOE is the expected inflation rate in the transportation agencies' cost of doing business. YOE adjustments to project costs are essential to show the true relationship between costs and resources. In recent years, highway and transit agencies have been increasingly squeezed by this phenomenon, since the inflation rate on transportation costs have

increased essentially around 2.47 percent, the inflation rate means that less work can be done per allocated dollar. When viewed from the point of view of purchasing power, the states and MPOs have experienced a sharp decline in funding resources.

Based on experience, MDOT, in cooperation with MTPA, will use a 4 percent YOE factor with 2021 as the base year.

Chart 1 is an example that illustrates the difference between what we will officially receive in STPBG Urban funding over the life of the FAST Act (i.e., nominal funding), and what that funding will be worth relative to the purchasing power of the base year (i.e., real funding).

Chart 1. Nominal and Real Funding for Each Fiscal Year



Estimate of Operations and Maintenance (O and M) Costs on the Federal-Aid Highway System

Repair and improvements to capital assets are only part of the total cost of the federal-aid highway system. Operations and maintenance (O and M), defined as those items (other than repair/replacement of capital assets) necessary to keep the highway infrastructure functional for vehicle travel, is just as important. Federal-aid funds cannot be used for O and M, which covers activities like grass cutting, trash removal, and snow removal. However, federal transportation planning regulations require an estimate of those costs on the federal-aid highway system.

The O and M estimate was derived in the following manner:

1. MDOT's estimate of total O and M funding available for the state trunkline system throughout Michigan is approximately $599 million annually.
2. The total lane miles for the entire state trunkline system is determined and used as the denominator in the fraction *$599 million/Total State Trunkline Lane Miles* to determine a per-lane-mile cost.
3. Approximately 1.0 percent of the lane miles in the state trunkline system are located in the BCATS Planning Area.
4. Assuming a roughly equal per-lane-mile operations and maintenance cost throughout the state trunkline system, MDOT should spend approximately $ 5.3 million annually in the BCATS Planning Area on these activities.
5. The per-lane-mile cost will also be applied to locally-owned roads on the federal-aid-highway system.
6. The sum of costs from Steps 4 and 5 will constitute the required O and M estimate.
7. This base estimate is adjusted according to the inflation factors noted above in each fiscal year, since this is the *cost* of O and M, not a particular funding *source*.

Appendix E - Document References

- 2016 Comprehensive Economic Development Strategy document prepared by the East Michigan Council of Governments (EMCOG).
- Bay County Non-motorized report created in 2011 by BCATS.
- MDOT Bicycle Plan- The Economic Benefits of Bicycling
- MDOT 2040 Long Range Plan
- MDOT 2045 Michigan Mobility Draft Plan
- Bay Region Non-Motorized Plan 2010
- US Codes- TITLE 23 - HIGHWAYS CHAPTER 1 - FEDERAL-AID HIGHWAYS

Appendix F - Data Resources

- 2010 US Census Data
- Michigan Geographic Framework – Michigan Center for Shared Solutions
- MDOT Travel Demand Model
- BCATS Project Layers
- Bay County GIS Division – Bay County Department of Environmental Affairs & Community Development
- Bay County Recreation & Facilities Department