



*Bay City, Michigan
Metropolitan Area*

BCATS 2045 METROPOLITAN TRANSPORTATION PLAN



DRAFT REPORT 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.

Bay County Transportation Planning Division
515 Center Avenue, Suite 504
Bay City, MI 48708-5126
989-895-4064
TDD 989-895-4049
www.baycounty-mi.gov/Transportation
andersonj@baycounty.net



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 stormwater 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

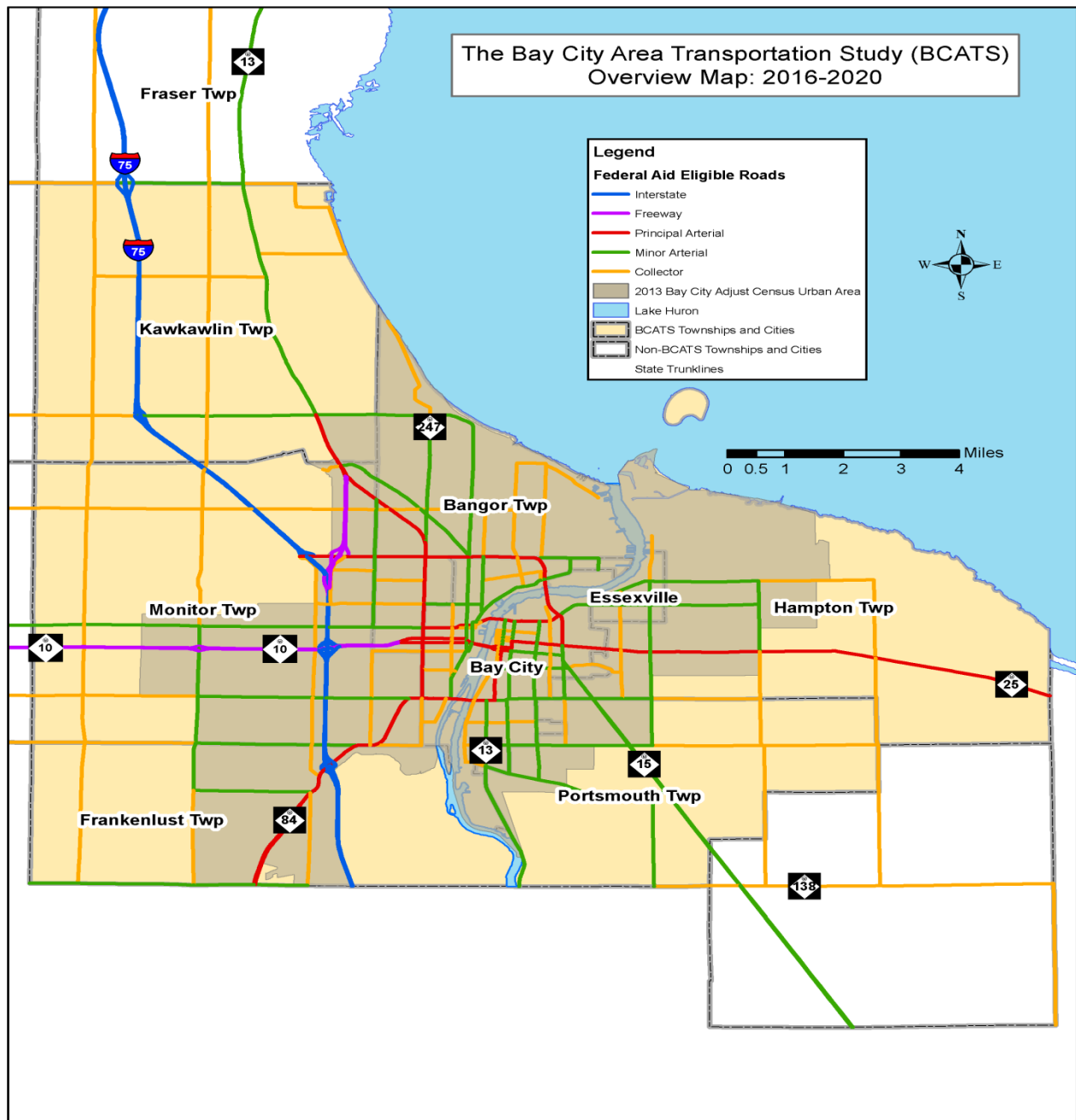
- MAP-21 established national goals in seven areas and was continued under the FAST Act: Safety; Infrastructure Condition; Congestion Reduction; System Reliability; Freight Movement and Economic Vitality; Environmental Sustainability; Reduced Project Delivery Delays.
- USDOT is responsible for establishing performance measures, in consultation with the states,
- MPOs, transit agencies, and stakeholders (and through a rulemaking within 18 months) 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 rural 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 will need to be addressed in the transportation planning process. Performance measures are noted in the BCATS 2045 MTP (see Chapter 2). However, these measures may not be the same as the ones that are eventually approved through the USDOT rulemaking process, and the MTP does not specify performance targets.

The MAP-21 language appears to require a collaborative process to establish the performance targets that involves the state, the MPO's, and the transit operators after the final rule to establish the performance measures is put in place by USDOT. Therefore, BCATS intends to fully participate 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.



Map 1: BCATS Overview Map



Table of Contents

Forward	2
List of Maps	8
List of Tables and Figures	8
Chapter One: Overview of Bay City Area Transportation Study	10
BCATS and Transportation Planning.....	11
BCATS Policy Committee Voting Members.....	12
BCATS Technical Committee Members	13
Introduction to the BCATS Transportation Plan.....	15
The 2045 Planning Process	17
Participation Plan	19
Conformity Determination.....	19
Projects not currently included in the Plan.....	19
Chapter Two: Planning Factors and Performance Measures.....	21
FAST Act Planning Factors	22
BCATS Goal One/FAST Act Factor One.....	22
BCATS Goal Two/FAST Act Factor Two.....	22
BCATS Goal Three/FAST Act Factor Three.....	23
BCATS Goal Four/FAST Act Factor Four	23
BCATS Goal Five/FAST Act Factor Five	23
BCATS Goal Six/FAST Act Factor Six.....	24
BCATS Goal Seven/FAST Act Factor Seven.....	24
BCATS Goal Eight/FAST Act Factor Eight.....	24
BCATS Goal Nine/FAST Act Factor Nine.....	25
BCATS Goal Ten/FAST Act Factor Ten.....	25
Performance Measures	26
BCATS Goal One/FAST Act Factor One.....	26
BCATS Goal Two & Three/FAST Act Factor Two & Three.....	27
BCATS Goal Four/FAST Act Factor Four	29
BCATS Goal Five/FAST Act Factor Five	30
BCATS Goal Six/FAST Act Factor Six.....	30
BCATS Goal Seven/FAST Act Factor Seven.....	31
BCATS Goal Eight/FAST Act Factor Eight.....	32
BCATS Goal Nine/FAST Act Factor Nine.....	32
BCATS Goal Ten/FAST Act Factor Ten.....	33
Chapter Three: Socio-Economic Data.....	34



Socio-Economic Data.....	35
Model Base Year (2013) Data Development	35
Model Forecast Years (2025, 2035, and 2045) Data Development	36
BCATS Study Area Socio-Economic Data.....	38
Chapter Four: Urban Area Travel Demand Modeling Process.....	41
Urban Area Travel Demand Modeling Process	42
Network.....	43
Trip Generation	44
Trip Distribution	45
Mode Choice	46
Assignment.....	46
Travel Demand Model Calibration/Validation	47
Applications of the Validated Travel Demand Model	47
System Analysis for MTP.....	49
Chapter Five: Transportation Deficiencies, Issues, and Projects	50
Transportation Deficiencies, Issues, and Projects	51
Deficiency Ratings by Agency in the GLBR Travel Demand Model: 2045.....	52
GLBR model results Summary for BCATS Area.....	53
2045 Metropolitan Transportation Plan (MTP) Capacity Projects	53
Chapter Six: Intermodal Inventory and Other Issues	56
Intermodal Inventory.....	67
Public Transit	67
Air Transportation.....	70
Michigan Freight Movement.....	74
Rail Transportation	74
Water and Port Transportation	77
Regional Intermodal Study	80
East Michigan Council of Governments Regional Economic Study (2016).....	81
Non-Motorized Transportation	85
Intelligent Transportation Systems (ITS).....	91
Chapter Seven: Financial Analysis and Constraint	94
Financial Analysis.....	95
Available Highway and Transit Funding	95
MDOT Revenue Estimate	99
MDOT 2045 MPO Long Range Revenue Forecast Methodology	100
Transit Revenue Estimates	101



Summary of PASER Data Collection	103
Bay City Federal Aid Asphalt Road Funding Scenarios	106
Chapter Eight: Regional Issues.....	110
Issues/Corridors of Concern.....	111
Trends Affecting Regional Transportation.....	114
Increased Funding for Transportation	114
Safety	114
Regional Coordination	114
Improved Access to Public Transit	115
Chapter Nine Progress Since Last Plan	116
Projects Completed Since Last Plan.....	117
Chapter Ten: Participation Plan for Transportation Planning and Environmental Justice	120
Summary of Objectives	121
Overview of Participation Plan Development Process.....	122
TIP and MTP Development Process	123
BCATS Participation Plan	124
Notice of Meetings.....	125
Annual Report	125
Public Comment Period at all BCATS Policy Committee Meetings.....	126
Public Hearings	126
Radio, TV, Newspaper, Internet	126
Outreach.....	127
Visualization Techniques	128
Environmental Justice	128
Development & Analysis	130
Summary	130
Chapter Eleven: Consultation Efforts.....	140
Section 1.....	141
Section 2.....	142
Public Involvement and Consultation Efforts	142
Appendix	144



List of Maps

Map 1: BCATS Overview Map	4
Map 2: BCATS Overview Map	14
Map 3: Bay County Traffic Analysis Zones (TAZ)	39
Map 4: Bay City and Essexville TAZ	40
Map 5: BCATS Obligated Projects 2045 LRP.....	61
Map 6: BCATS Projects 2045 LRP (no funding source).....	62
Map 7: Bay County Railroad and Airport Facilities	76
Map 8: BCATS Marine Transportation Facilities.....	79
Map 9: Non-Motorized Transportation Route	90
Map 10: Regional Projects Map.....	113
Map 11: 2045 LRP Identified Projects (Refer to Chapter 5 for numbering of projects).....	119
Map 12: Environmental Justice Maps African American Population.....	132
Map 13: Environmental Justice Maps Asian American Population.....	133
Map 14: Environmental Justice Maps Hispanic American Population.....	134
Map 15: Environmental Justice Maps Native American Population	135
Map 16: Environmental Justice Maps Total Minority Population	136
Map 17: Environmental Justice Maps Low Income Population	137

List of Tables and Figures

Figure 1: Non-Motorized Accident Data	28
Figure 2: Vehicle Crash Data (Fatal)	28
Figure 3: Vehicle Crash Data (Injury).....	29
Figure 6: Road Ratings (PASER) 1.5 million per year	104
Figure 7: Road Ratings (PASER) 2 million per year	104
Figure 8: Road Ratings for 2016.....	105
Figure 9: Road Ratings for the past seven years	105
Figure 4: Remaining service life (31.7 million).....	108
Figure 5: Actual RSL Data for 2015 and 2016	109
Figure 10: Past Projects Completed Funding.....	117
Figure 11: Public Participation Flow Chart 11.....	125

Tables

Table 1: BCATS Policy Committee Voting Members.....	12
Table 2: BCATS Technical Committee Members	13
Table 3: Deficiency Ratings by Agency (Travel Demand Model).....	52



Table 4: BCATS Transportation Projects	58
Table 5: BCATS Future Road Projects	60
Table 6: Michigan Department of Transportation – Total Scheduled Passengers	72
Table 7: Local Agencies Revenue Estimates	97
Table 8: Local Agency Fiscal Constraint Demonstration	98
Table 9: MDOT Revenue Estimates	99
Table 10: Transit Revenue Estimates.....	101
Table 11: Transit Fiscal Constraint Demonstration	102
Table 12: Asphalt Treatments	106
Table 13: Completed Projects	118
Table 14: Census Data Table	139



Chapter One

Overview of 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 to family members. 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 in 2020 when census data is collected. 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 16](#)). 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 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.

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 on the second Tuesday of the week of every other month and is open to the public. The Policy and Technical Committee members are listed below.

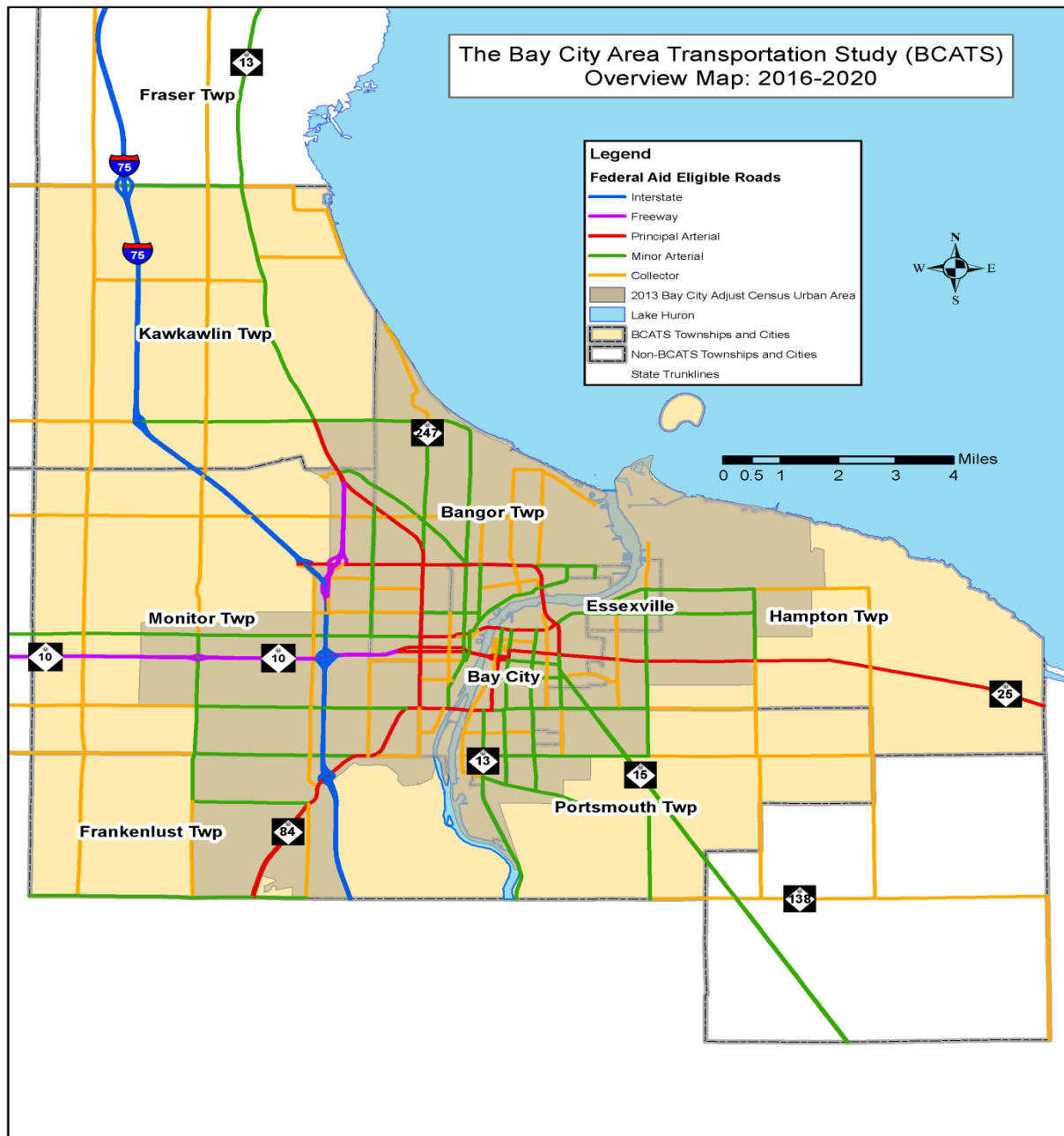
BCATS Policy Committee Voting Members	
Glenn Rowley, Supervisor	Bangor Township
Ernie Krygier, Chairman	Bay County Commission
Vaughn Begick, Commissioner	Bay County Commission
Jim Barcia, Executive	Bay County Executive
Richard Gromaski, Chairman	Bay County Road Commission
Robert Redmond, Supervisor	Bay Metro Transit Authority
Kathleen Newsham, Mayor	City of Bay City
Andrew Niedzinski, Commission President	City of Bay City
Russell Tanner, Mayor	City of Essexville
Sue Fortune, Executive Director	East Michigan Council of Governments
Ronald Campbell, Supervisor	Frankenlust Township
Steve Wisniewski, Supervisor	Hampton Township
Dennis Bragiel, Supervisor	Kawkawlin Township
Pamela Boyd, Statewide Planning	Michigan Department of Transportation
Kenneth Malkin, Supervisor	Monitor Township
Robert Pawlak, Supervisor	Portsmouth Township

Table 1: BCATS Policy Committee Voting Members



BCATS Technical Committee Members	
Jay Anderson, BCATS Director	Bay County Transportation Planning
Jim Lillo, Engineer-Manager	Bay County Road Commission
Eric Sprague, General Manager	Bay Metro Transit
Rachel Phillips, City Engineer	City of Bay City
Terry Moulthane, Planner	City of Bay City
Dan Hansford, City Manager	City of Essexville
David Engelhardt, Planner	East Michigan Council of Governments
Andy Pickard, Transportation Planning Team Leader	Federal Highway Administration
Jack Hofweber, Manager	MDOT / Bay Transportation Service Center
Ryan McDonnell, Engineer	MDOT / Bay Transportation Service Center
Jay Reithel, Regional Planner	MDOT / Bay Region
Matthew Pitlock, Planner	MDOT / Statewide Planning

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 FAST Act, MAP-21, SAFETEA-LU, and the CAAA are four recent 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.



Safety improvement projects, both motorized and non-motorized, 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.

Even the Bay City area, which has a good highway system and the ease of automobile travel in the area, 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 after which 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 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, will establish 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 will set performance targets in support of those measures, and state and metropolitan plans will 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.

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 connectors) 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 congestion 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 increases based on regional priorities and needs. The metropolitan transportation plan may consider projects and strategies that address areas or corridors where current or projected congestion threatens the efficient 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 nonattainment 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 take into account 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 nonattainment 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 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 FAST Act requirements, such as fiscal feasibility, etc.

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

DRAFT



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 following goals and objectives have been formulated by an integration of previous BCATS goals and objectives along with the FAST Act 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). Following is each MTP goal followed by identification of the PMs.

The U.S. DOT has issued Notices of Proposed Rulemaking or Final Rules for most of 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, requires MPOs to set performance targets in relation to the performance measures (where applicable).

Performance targets will be measured by USDOT to assess whether or not 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.

The following goals and 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. MDOT currently has not set any performance targets, so the following targets are suggested by BCATS to help prepare and set targets once they are proposed by MDOT. Once Targets are set by MDOT, BCATS policy members will vote on whether to accept MDOT targets, or develop BCATS own targets. In the coming months BCATS members will be advised on the MDOT planned targets, and what following those will entail for the BCATS area.

BCATS Goal One/FAST Act Factor One

Support the economic vitality of the metropolitan area, especially by enabling global



competitiveness, productivity, and efficiency.

Performance Measures:

- Transit system operation cost per Household served, Transit operating cost per Passenger, and Transit operating cost
- Passenger miles of travel
- Estimated Cost of Planned Improvements compared to Actual Project Costs for transportation projects within a range of 0.90 to 1.1
- Analyze percentage of total transportation investment money that came from private sector
- Maintain Level Of Service (LOS) D or better on all major truck routes in the study area
- Monitor the freight traffic volumes along major commercial corridors

Performance Targets:

- Keep track of ship vessel traffic in and out of the Saginaw River
- Develop and construct a complete street design connecting people to tourist destinations (e.g. Bay City to the Bay County State Park)
- Increase the number of road diet projects within BCATS area that are recommended
- Increase passenger miles traveled

BCATS Goal Two & Three/FAST Act Factor Two & Three

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

Performance Measures:

- Incident rate statistics can be used to compare incident rates for the BCATS area to statewide rates over time.
- Work to reduce the number of non-standard traffic control devices
- Review incident rates to locate intersections needing traffic control devices
- Number of accidents at grade crossings and number of fatalities at grade crossings
- Review pedestrians and non-motorized with vehicle incidents
- Compliance with access management guidelines published by the Bureau of Transportation Planning

Performance Targets:



- 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.

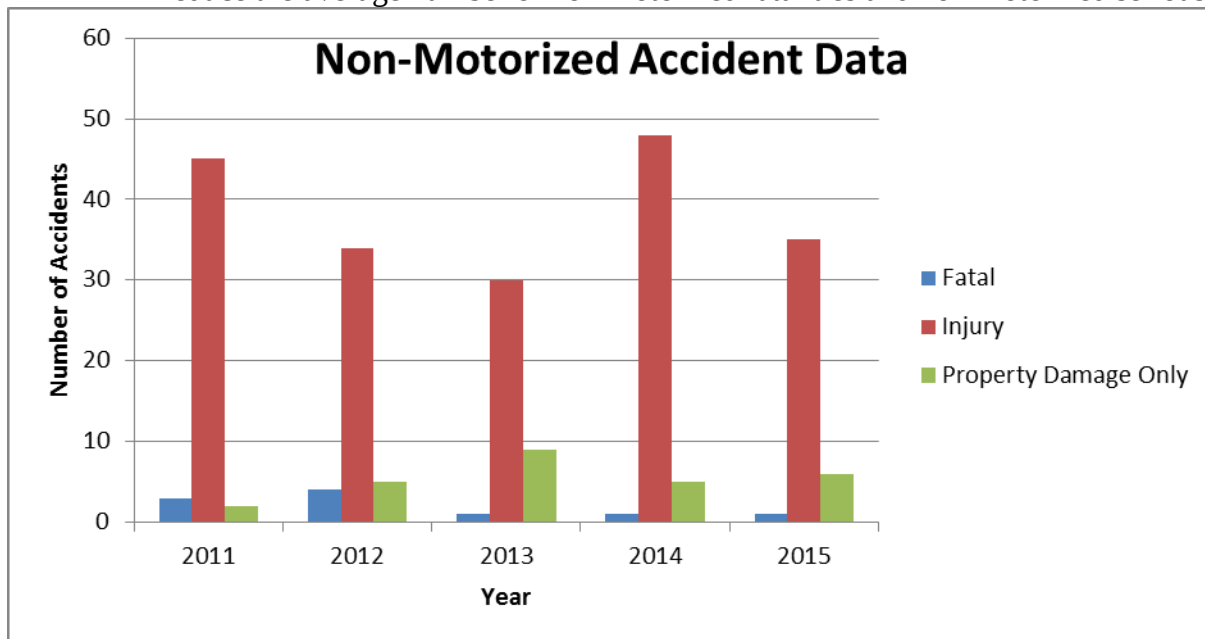


Figure 1: Non-Motorized Accident Data

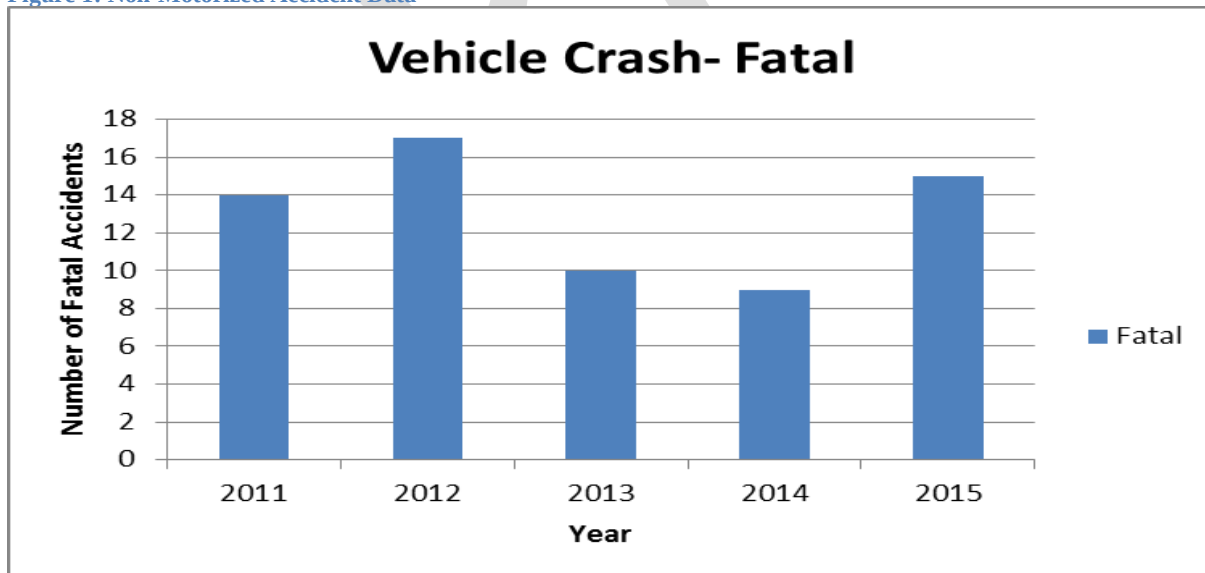


Figure 2: Vehicle Crash Data (Fatal)

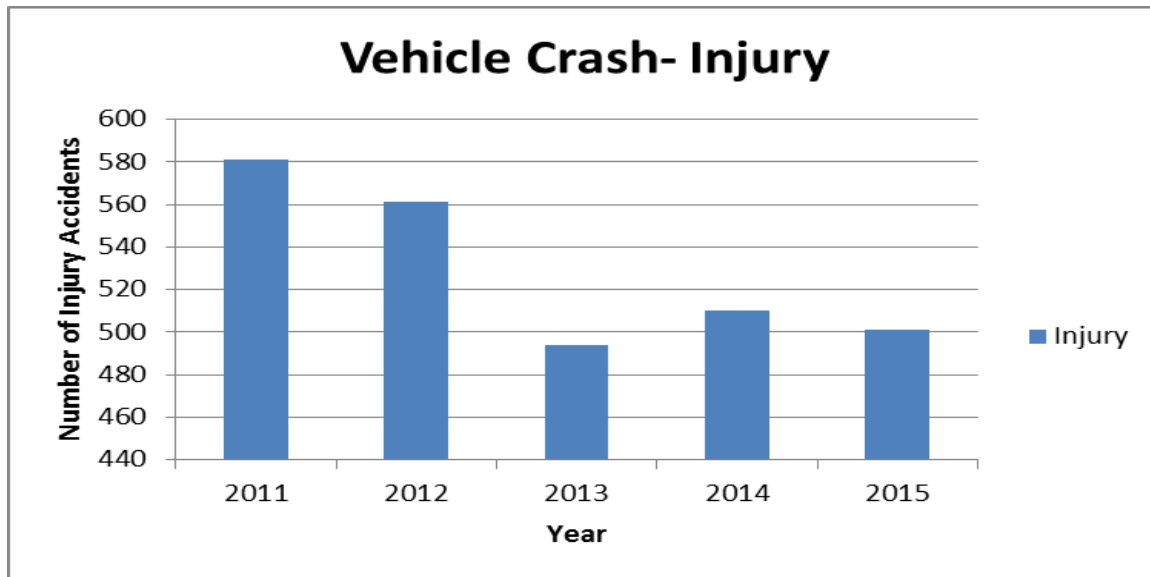


Figure 3: Vehicle Crash Data (Injury)

BCATS Goal Four/FAST Act Factor Four

Increase the accessibility and mobility of people and for freight.

Performance Measures:

- Percent of demand response fleet that is accessible per ADA guidelines
- Reduced fares to seniors and disabled persons
- Number of auto-less households within walking distance of a bus route.
- Reduce travel time in target corridors, travel time thresholds could be set and performance could be monitored, and before and after improvement comparisons could also be done to show how much a particular improvement contributes to overall system performance
- Percent of demand response pickups that are on time
- Number of employers with flexible work hours, number of rideshare customers, and percent increase in rideshare customers
- Level of Service thresholds for each National Functional Class
- Number of miles at unacceptable loss of service (LOS)

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 and the market place

BCATS Goal Five/FAST Act Factor Five

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

Performance Measures:

- Compliance with State and Federal Law including the Clean Air Act Amendments and the Clean Water Act
- The MTP takes into account other plans developed for the area, considers different modes of travel and promotes using land use techniques to help reduce the costs of transportation projects
- Assist in identification of potential environmental mitigation issues by acquiring, creating, and updating, as needed, geographic information system data layers for use by the implementing agencies
- Reduce delays and create connections between non-motorized travel and transit
- Improve project selection by utilizing eco-logic a FHWA ecosystem approach to developing infrastructure projects
- Improve coordination between transportation agencies and those involved with developing and implementing plans for growth, economic development, and similar issues and concerns impacting land use

Performance Targets:

- Create a tool that will incorporate impacts on the environment from transportation projects
- Utilize GIS to analyze storm water data and improve location selection and storm water mitigation
- Measure the transit routes near businesses (percentage) and create target on the ability for people to access jobs and businesses
- Develop transportation corridors to determine projects ability to provide access to amenities and use of non-motorized transportation

BCATS Goal Six/FAST Act Factor Six

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



Performance Measures:

- The MTP takes into account other plans developed for the area, considers different modes of travel and promotes using land use techniques to help reduce the costs of transportation projects
- Create transportation corridors to analyze the connectivity of the transportation system to move freight and people
- Identify gaps in mobility, particularly for veterans, older adults, people with disabilities and people with lower incomes
- Identify gaps in freight movement

Performance Targets:

- Monitor freight movement by truck, train, and ship
- Incorporate BCATS transportation corridors to monitor the gaps in transportation connectivity in the region
- Increase access to jobs for households without a vehicle

BCATS Goal Seven/FAST Act Factor Seven

Promote efficient system management and operation.

Performance Measures:

- Vehicle Hours of Travel at Unacceptable LOS compared to total vehicle hours of traveled. Commercial Vehicle Miles of Travel at Unacceptable LOS, and average travel rate for each Roadway Type or National Functional Class
- Lane Miles of deficient pavement by jurisdiction, Number (or percent) of deficient intersections by jurisdiction, and funds spent to retire these deficiencies (distribution by jurisdiction)
- Peak Period transit load factors by route, peak period available capacity by route, and peak head-ways by route
- Miles of Multi-Use Roadways (suitable for pedestrian, non-motorized and motorized traffic)
- Vehicle hours of delay due to drawbridge and rail crossing

Performance Targets:

- Decrease Average trip length and travel time
- Enhance non-motorized transportation options



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

BCATS Goal Eight/FAST Act Factor Eight

Emphasize the preservation of the existing transportation system.

Performance Measures:

- Number of households, business, churches, historic sites disrupted, displaced, relocated due to transportation projects, costs associated with these disruptions, displacements compared to benefits associated with the projects
- Increase the Percentage of Pavement Surface Evaluation and Rating (PASER) conditions to good or better
- Provide for consideration of projects and strategies that will emphasize the preservation of the existing transportation system

Performance Targets:

- Measure the road condition from PASER data over 5 years and get a baseline ([Fig.9](#))
- 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.

BCATS Goal Nine/FAST Act Factor Nine

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

Performance Measures:

- Develop a Storm Water Management Plan (SWMP)
- Utilize Road Commission storm water data collection to develop a management plan



- Elimination of discreet non-point source pollutants released to the storm water system from construction site runoff erosion, sediment, drain way, and non-sediment controls

Performance Targets:

- Elimination of discreet non-point source pollutants released to the storm water system from construction site runoff - erosion, sediment, drain way, and non-sediment controls

BCATS Goal Ten/FAST Act Factor Ten

Enhance travel and tourism

Performance Measures:

- Number of households, business, churches, historic sites accessible by non-motorized transportation
- Create signed and easily assessable routes to BCATS area attractions, such as the Bay City State Park and water front

Performance Targets:

- Create links to the Iron Belle Trail coming through Bay City
- Decrease Average trip length and travel time



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 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 (2013) 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 was made readily available to the public, and was electronically downloaded from the Census FTP site.
- 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.

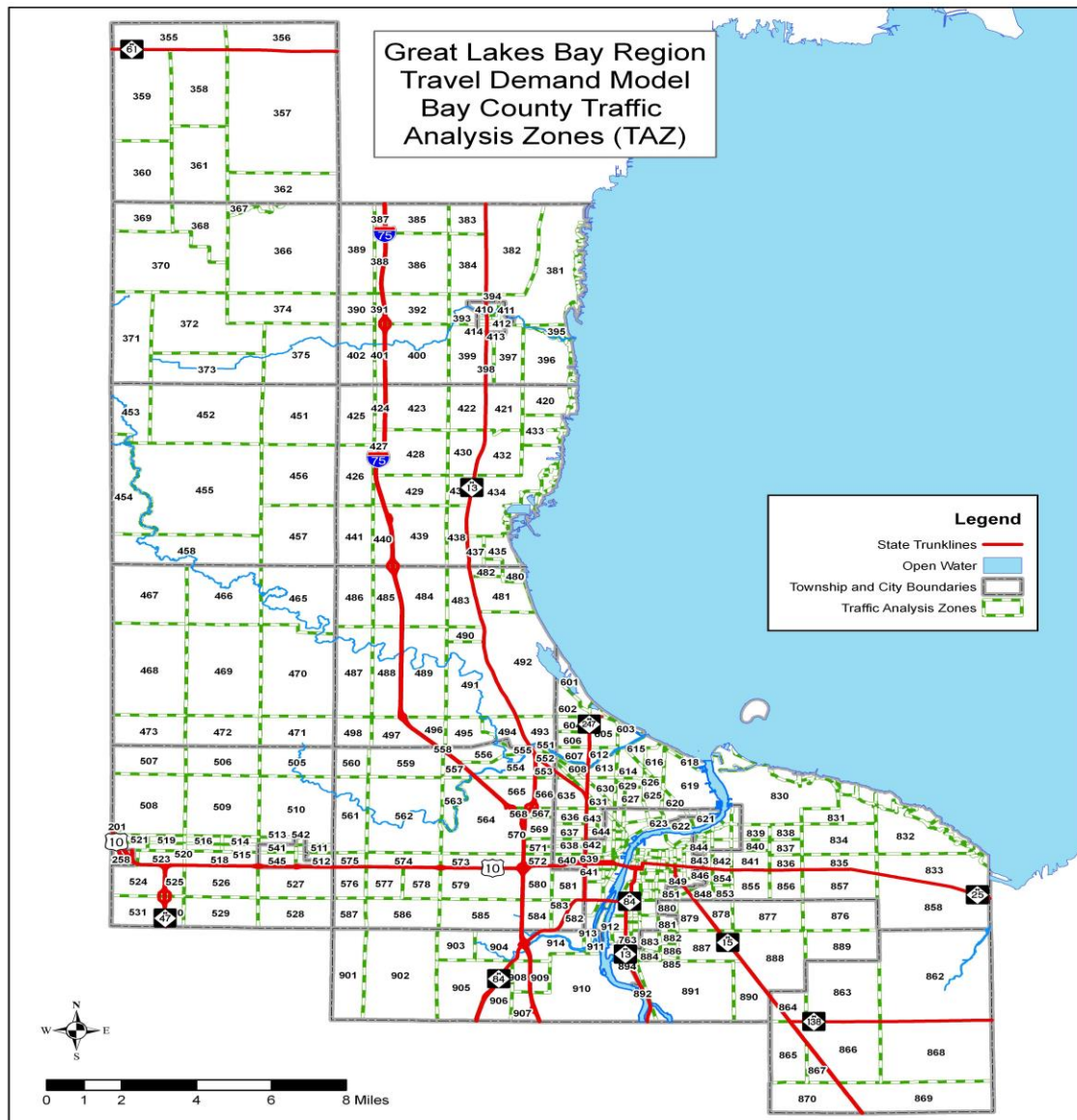
Therefore, although socio-economic projections are a useful and required tool in the planning of an area's future growth and development, it is important to note that the projections are not infallible and should be modified as time progresses to better reflect development impacts occurring in the BCATS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

Listed below are the BCATS portion of the GLBR model, which includes Bay County with the exception of 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.

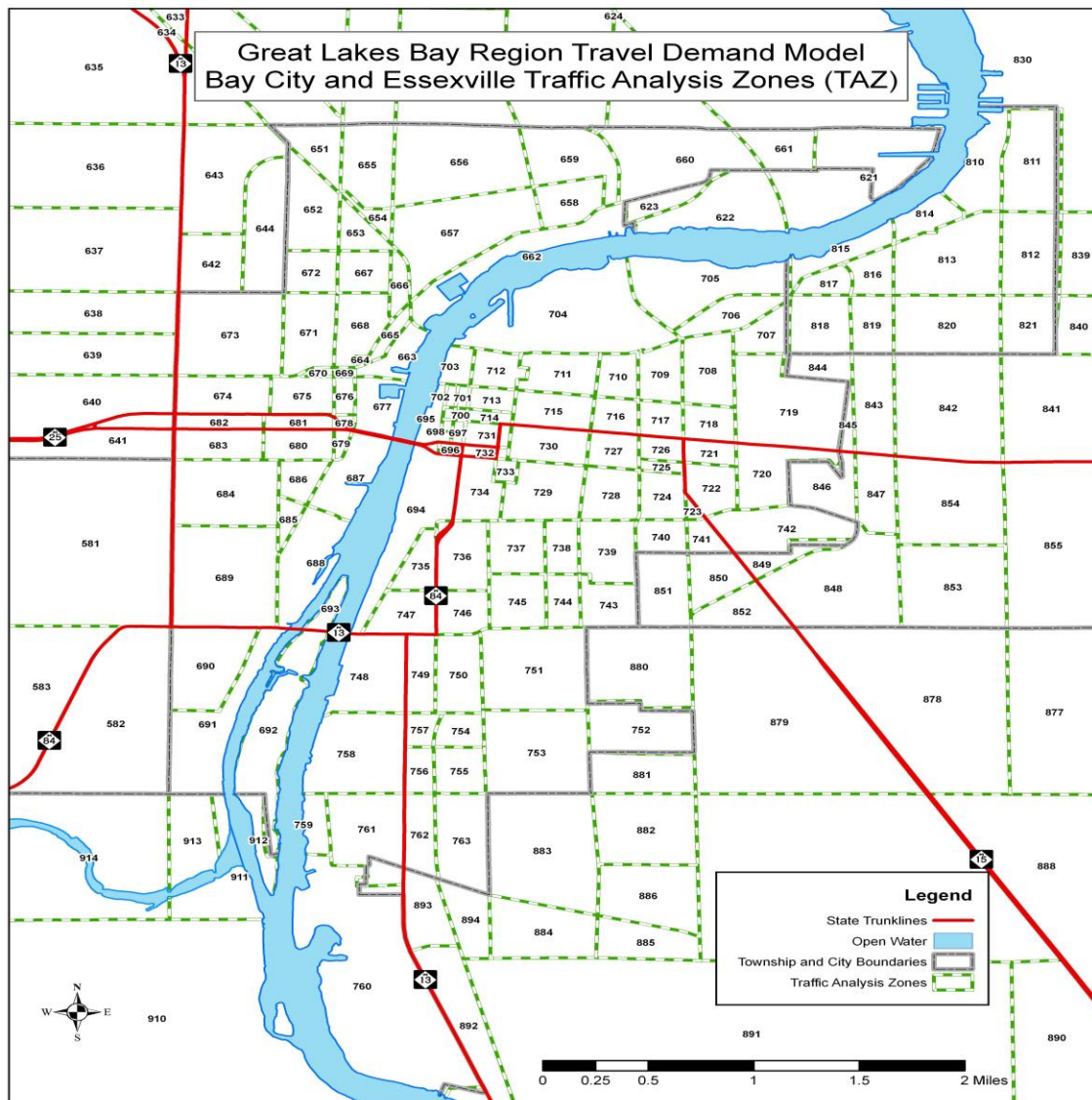


BCATS Study Area Socio-Economic Data

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



Map 3: Bay County Traffic Analysis Zones (TAZ)



Map 4: Bay City and Essexville TAZ



Chapter Four

Urban Area Travel Demand Modeling Process



DRAFT



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 Bay City Area Transportation Study (BCATS) 2045 Metropolitan Transportation Plan (MTP) is a regional model, referred to as the Great Lakes Bay Region (GLBR) Model that includes Bay, Saginaw, and Midland Counties. This effort required coordination and cooperation between BCATS, Saginaw Metropolitan Area Transportation Study (SMATS), 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). 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 results of the modeling effort is to provide an important decision making tool for the MPO Metropolitan Transportation Plan development as well as any transportation related studies that might follow. 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.

The travel demand modeling for BCATS has been completed through the use of TransCAD software utilized by MDOT. The model is a computer estimation of current and future traffic conditions and is a system-level transportation planning model. Capacity deficiencies are determined using a Level of Service E capacity.

The urban travel demand forecasting process used has seven phases:

1. **Data Collection**, in which socio-economic and facility inventory data are collected.
2. **Trip Generation**, which calculates the number of person trips produced in or attracted to a traffic analysis zone (TAZ).
3. **Trip Distribution**, which takes the person trips produced in a TAZ and distributes them to all other TAZs, based on attractiveness of the zone.



4. **Mode Choice**, which assigns person trips to a mode of travel such as drive alone, shared ride 2, shared ride 3+, and ride transit.
5. **Assignment**, which determines what routes are utilized for trips. Non-motorized and transit trips are accounted for however they are not part of the traffic assignment.
6. **Model Calibration/Validation**, which is performed at the end of each modeling step to make sure that the results from that step are within reasonable ranges. The final assignment validation involves verifying that the volumes (trips) estimated in the base year traffic assignment replicate observed traffic counts.
7. **System Analysis**, tests alternatives and analyzes changes in order to improve the transportation system.

There are two basic systems of data organization in the travel demand forecasting process. The first system of data is organized based on the street system. Roads with a national functional class (NFC) designation of "minor collector" and higher are included in the network. Some local roads are included to provide connectivity in the network or because they were deemed regionally significant. The unit of analysis is called a "link." A link is a segment of roadway which is terminated at each end by an intersection. In a traffic assignment network, intersections are called "nodes." Therefore, a link has a node at each end.

The second data organization mechanism is the Traffic Analysis Zones (TAZ). TAZs are determined based upon several criteria, including similarity of land use, compatibility with jurisdictional boundaries, the presence of physical boundaries, and compatibility with the street system. Streets are generally utilized as zone boundary edges. All socio-economic and trip generation information for both the base year and future year are summarized by TAZ.

The two data systems, the street system (network) and the TAZ system (socio-economic data), are interrelated through the use of "centroids." Each TAZ is represented on the network by a point (centroid) which represents the weighted center of activity for that TAZ. A centroid is connected by a set of links to the adjacent street system. That is, the network is provided with a special set of links for each TAZ which connects the TAZ to the street system. Since every TAZ is connected to the street system by these "centroid connectors," it is possible for trips from each zone to reach every other zone by way of a number of paths through the street system.

Network

A computerized "network" (traffic assignment network) is built to represent the existing street system. The GLBR Model network is based on the Michigan Geographic Framework version 14 and includes most streets 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 available, national functional classification, traffic counts (where available), and volumes for level of service E (frequently described as its capacity). If the information is not the same for the entire length of a link, the predominant value is used. The network attributes were provided to the MPO and MDOT staff by the respective road agencies, with the exclusion of link capacity. The link capacity was determined by utilizing a look-up table, developed for MDOT as part of the Urban Model Improvement Program, which takes into account the network attributes and sets a capacity that would approximate a level of service "E". Therefore a volume to capacity ratio of 1 or greater indicates a Level of service E and is characterized by stop-and-go-travel, reduced flow rates and severe intersection delays. This typifies unacceptable or deficient traffic conditions.

The street network is used in the traffic assignment process. The traffic assignment process takes the trip interactions between zones from trip distribution and loads them onto the network. The travel paths for each zone-to-zone interchange are based on the minimum travel time between zones. They are calculated by a computer program which examines all possible paths from each origin zone to all destination zones. The shortest path is determined by the distance of each link and the speed at which it operates. The program then calculates travel times for all of the possible paths between centroids and records the links which comprise the shortest travel time path.

Speeds used to calculate minimum travel times are based on each link's national functional classification, facility type, and area type. Speeds represent a relative impedance to travel and not posted speed limits.

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. In order to develop a trip table, productions (P's) and attractions (A's) must be balanced also referred to as normalization. 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 moving on to trip distribution.

The GLBR 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 I (QRFM I). The QRFM I uses the employment data from the TAZs in its calculations.



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

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 (7a - 9a)

Mid Day (9a - 3p)

PM Peak (3p - 6p)

Night Time (6p – 7a)

A fixed time of day factor method was utilized. The factors were developed from the MI Travel Counts Michigan travel survey data and vary by trip purpose. Default factors from the Quick Response Freight Manual I (QRFM I) were used for truck trips.

The traffic assignment process takes the trips produced in a zone (trip generation) and distributed to other zones (trip distribution) and loads them onto the network via the centroid connectors. A program examines all of the possible paths from each zone to all other zones and calculates all reasonable time paths from each zone



(centroid) to all other zones. Trips are assigned to paths that are the shortest path between each combination of zones. As the volumes assigned to links approach capacity, travel times on all paths are recalculated to reflect the reduction in speed due to congestion. This may create a new shortest path which trips will be assigned to in the next iteration. This process continues through several iterations until no trip can reduce its travel time by changing routes and all used alternative paths between zones have approximately the same travel time. This user equilibrium assignment method reflects the alternative routes that motorists use as the original shortest path becomes congested. The assignment step produces an assigned volume for each link by time period that can be added together to calculate a daily volume.

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

Forecasted travel is produced by substituting forecasted socio-economic and transportation system data for the base year data. This forecasted data is reviewed and approved by the MPO. The same mathematical formulae are used for the base and future year data. The assumption is made that the relationships expressed by the formulae in the base year will remain constant over time (to the target date).

Some of the applications of the model that were utilized in the development of the MATS 2045 MTP capacity project list are:



- Future traffic can be assigned to the existing network to show what would happen in the future if no improvements were made to the present transportation system.
- Network alternatives to relieve congestion can be tested. This process is often referred to as "deficiency analysis." From this, improvements can be planned that would alleviate demonstrated capacity problems.
- Proposed "road diet" configurations can be tested for their effect on the transportation system.
- The impact of planned roadway improvements or network changes can be assessed.
- Links can be analyzed to determine what zones are contributing to the travel on that link and to better understand traffic patterns.
- The network can be tested to simulate conditions with or without a proposed bridge or new road segment. The assigned future volumes on adjacent links would then be compared to determine traffic flow impacts. This, in turn, would assist in assessing whether the bridge should be build, replaced and/or where it should be relocated to.

Additional applications that may be performed outside of the MTP development are:

- Road closure/detour evaluation studies can be conducted to determine the effects of closing a roadway. This type of study is very useful for construction management.
- The impacts of land use changes on the network can also be evaluated (e.g., what are the impacts of a new regional mall being built).

Understanding of two issues are critical in using the modeling tools and processes:

- 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.



System Analysis for MTP

Three different alternative scenarios were developed for the MTP deficiency report:

1. Existing trips on the existing system. This is the "calibrated," existing network/scenario. This is a prerequisite for the other two scenarios.
2. Future trips on the existing network. Future trips are assigned to the existing network. This alternative displays future capacity and congestion problems if no improvements to the system are made. This is called the "No Build" alternative, and usually includes the existing system, plus any projects which are in the MPO Transportation Improvement Program (TIP) and thus committed to be built in the near future.
3. Future trips on the future system. This scenario is the "Build" alternative and the network includes the capacity projects listed in the MTP.

It is important to remember that the volume to capacity ratio reflects a volume for a specified time period and a capacity for that same period of time. It does not reflect deficiencies that only occur briefly at certain short time periods or because of roadway geometrics, or roadway condition. Please refer to table below and the maps of the capacity deficiencies identified by the GLBR travel demand model.



Chapter Five:

Transportation Deficiencies, Issues, and Projects

Bay County Road Commission
City of Bay City
City of Essexville
Michigan Department of Transportation
Bay Metro Transit Authority
Transit Project List
Adopted Project List
Environmental Mitigation





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 projects that may be programmed into the Transportation Improvement Program (TIP):

- A. Identified capacity deficiencies from the 2013 transportation network loaded with 2013 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 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 190.4 miles of federal-aid routes within the BCATS urbanized area. About 123.3 miles are under local jurisdiction and about 67.1 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 February 2012, approximate 10% of BCATS federal aid eligible roads are in Good to Excellent condition, 42% in Fair condition and 48% 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.



Deficiency Ratings by Agency in 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 3: Deficiency Ratings by Agency (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 adds 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 adds 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 forecasted decline in some area of the BCATS area the overall model volumes are decreasing with the exception of 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.

Other Deficiencies

Bay County Road Commission

Maintenance Deficiencies

Road Segments

Bangor Rd – Wheeler Rd to Donahue Beach Drive

Beaver Rd – Old Beaver Rd to Fraser Rd (I-75)

Euclid Avenue - M-84 to Hotchkiss Rd

German Rd – M-15 to S. Trumbull Rd

Killarney Beach Rd - North of Euclid Avenue

Linwood Rd – M-13 to Seven Mile Rd

Mackinaw Rd – Prevo Rd to Anderson Rd; Delta Rd to Freeland Rd

Midland Rd - Mackinaw Rd to Three Mile Rd

Monitor Rd – Wheeler Rd to Grove Street (Kawkawlin)

North Union Rd- Monitor Rd to Euclid Avenue



Old Kawkawlin Rd - M-13 to State Park Drive
Patterson Rd – Wilder Rd to Wheeler Rd
Pine Rd – Cass Avenue to Youngs Ditch
Ridge Rd - Bay City Limits to Scheurmann Rd
Salzburg Rd – Three Mile Rd to Mackinaw Rd
Scheurmann Rd - Youngs Ditch Rd to M-25
Seven Mile Rd – Salzburg Rd to Midland Rd; Beaver Rd to River Rd; Prevo Rd to Anderson Rd
Shady Shores Drive - Patterson Rd to Saginaw River
Three Mile Rd - M-84 to Amelith Rd; Wilder Rd to Midland Rd
Trumbull Street - 22nd Street to North of Cass Avenue
Wilder Rd - Patterson Rd to Tiernan Rd
Youngs Ditch – Pine Rd to Knight Rd
Zimmer Rd – Bangor Rd to Patterson Rd

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.

Bridges

Chip Road over the Kawkawlin River
Mackinaw Road over the Kawkawlin River
Wheeler Road over the Kawkawlin River

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

Segments

3rd St: Madison to Boutell
Bangor St: Marquette to Wilder
Cass Ave: Polk St to Michigan
E Midland St: N Walnut St to N Walnut St
E Midland/Vermont St: Midland to Vermont
E Smith St: State St to Sophia St
Fremont St: S Grant St to Madison Ct
Marquette Ave: Hart to Wilder
McGraw St: Harrison St to Michigan
Michigan Ave: Fremont to 25th St
N Wenona Ave: W Vermont St to W Vermont St
S Lincoln St: 28th to Bala Dr
S Wenona Ave: Ionia to E Midland St
State St: Ausable to Huron
W Fisher St: Euclid to Wenona
W Ionia St: Euclid to Wenona
W Midland St: Euclid to Wenona
Woodside Ave: Liberty Bridge EB/WB to Mclellan

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

Segments

- Pine Street: RR Tracks to Hampton Township Line

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 as a result 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

Segments

Vets Bridge: Over Saginaw River
Salzburg Ave: S Wenona Ave to Euclid
Center Ave: Madison to N Vanburen St; N Lincoln St to N Birney St
W Thomas St: S Kiesel St to S Dean St
Lafayette Bridge: EB/WB Evergreen to Evergreen Dr
Washington Ave: Columbus to McKinley St
E Jenny St: Kiesel to S Dewitt St; S Catherine St to Jenny
7th St: W 7TH/MECHLN to Saginaw
N Madison Ave: Mckinley to 6th St
S Washington Ave: Washington to 14th St
E Thomas St: Henry to Bridge 646
E Jenny St: S Dean St to S Catherine St



Broadway Ave: McGraw to 38th St to Cass Ave

Lafayette Ave: Lafayette to Water

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 road interchange (operational/capacity)

US-10 & Garfield Rd road 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	Cost (x1000)
1	Midland St/Vermont St	Wenona Ave to Dean St	Mill and Resurface	0.16	2017	\$417
2	Patterson Ave	Smith St to Marquette Ave	Reconstruction	0.19	2017	\$710
3	3 Mile Rd	M-84 to Amelith	Crush & Shape	1.00	2017	\$866
4	German Rd	Bullock to M-15	Resurface	1.86	2017	\$800
5	I-75	Cottage Grove Road to Linwood Road	Major Rehabilitation	1.80	2017	\$11,935



6	M-25 WB	M-25 WB	Traffic Operations or Safety (PE)	0.24	2017	\$103
7	US-10 – WB	US-10 from Flajole Road to I-75	Traffic Operations or Safety (PE)	9.94	2017	\$284
8	M-247	M-13 to Bay City State Park	Resurface (PE)	3.036	2017	\$34
9	Trumbull St	M-25 to Woodside Ave	Full Reconstruction	0.63	2018	\$1,672
10	I-75	Beaver Rd to Cottage Grove Rd	Restore & rehabilitate (PE)	3.60	2018	\$759
11	M-13	Beaver Road	Traffic Operations or Safety (PE)		2018	\$135
12	M-247	M-13 to Bay City State Park	Resurface (CON)	3.036	2018	\$724
13	Old Kawkawlin Rd	M-13 to 2 Mile Rd	Mill, resurface, drainage, signage	0.73	2019	\$1,324
14	I-75	8 bridges in Bay County	Deep Overlay	2.40	2019	\$8,764
15	I-75	3 bridges in Bay County	Deck Replacement	1.69	2019	\$7,799
16	I-75 NB	M-13 Connector to Beaver Road	Restore & rehabilitate (CON)	5.33	2019	\$21,569
17	M-25 WB	M-25 WB	Traffic Operations or Safety (CON)	0.24	2019	\$305
18	Old Kawkawlin Rd	2 Mile Rd to M-247	Restore & rehabilitate	1.15	2020	\$1,845
19	US-10	US-10 from Flajole Road to I-75	Traffic Operations or Safety (CON)	9.94	2020	\$3,125
20	M-13	& M-84 over East Channel Saginaw River	Bridge Replacement		2020	\$56,902
2017-2020 Totals						\$120,072
<i>*Road segment is within BCATS, but outside the urbanized area. PE- Project Engineering phase and CON-Construction phase</i>						

Table 4: BCATS Transportation ProjectsTable 5



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.

DRAFT

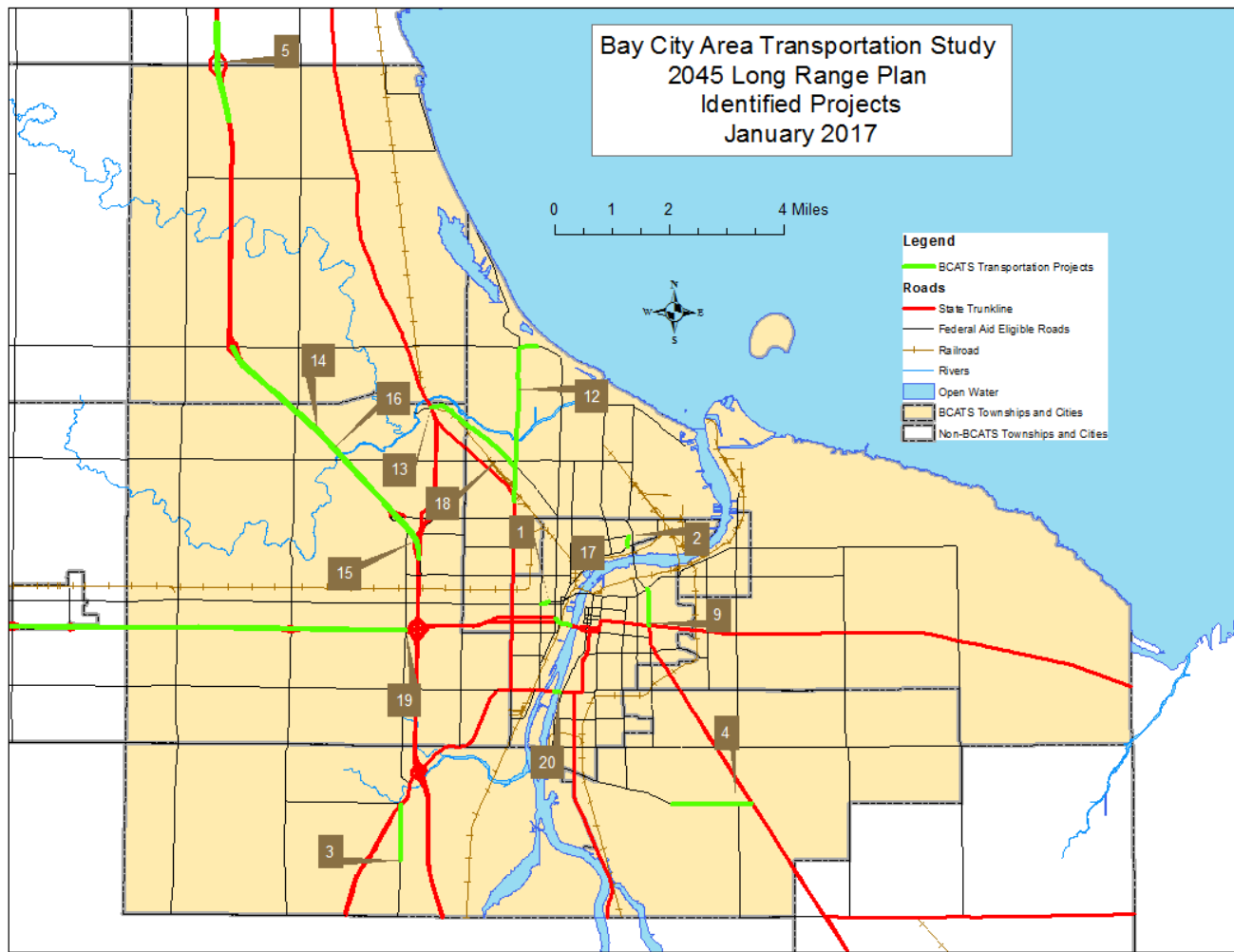


Project Number	Project	Location	Project Type	Length (mi.)	Year of Cost Estimate	Cost (x1000)
21	Midland Road	Four Mile Road to Mackinaw Road	Restore & rehabilitate	1.00	2021	\$1,500
22	Midland Road	Mackinaw to Auburn City Limits	Reconstruction	3.50	2025	\$5,250
23	Three Mile Road	M-84 to Midland Road	Restore & rehabilitate	3.25	2026	\$4,875
24	West Hampton Road	Essexville City Limits to Knight Road	Restore & rehabilitate	2.0	2031	\$8,000
25	West Borton Road	Essexville City Limits to Knight Road	Restore & rehabilitate	2.0	2032	\$8,000
26	Knight Road	M-25 to Borton Road	Restore & rehabilitate	1.5	2035	\$6,000
27	Midland Road	Euclid Avenue to Four Mile Road	Restore & rehabilitate	3.0	2036	\$6,000
28	Midland Road	Four Mile Road to Mackinaw Road	Restore & Widen	1.0	2040	\$2,500
29	Two Mile Road	Midland Road to M-13	Rehabilitate	2.75	2041	\$19,250
30	Pine Road	Cass Avenue to Nebobish	Rehabilitate & Partial Widening	2.50	2043	\$16,250
31	State Park Drive	Wilder Road to the State Park Entrance	Rehabilitate & Partial Widening	3.50	2045	\$31,500
					2020-2045 Totals	\$109,125

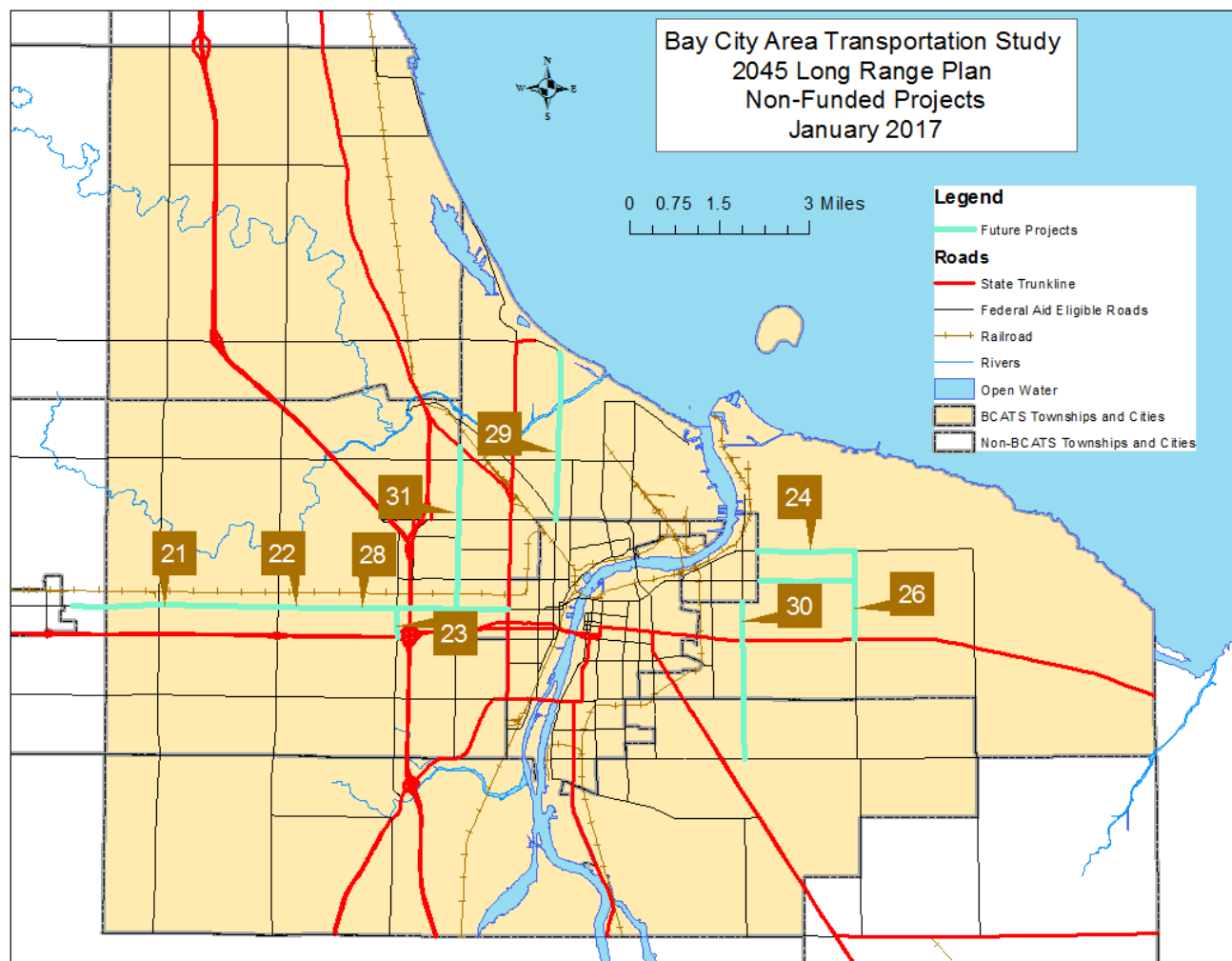
Table 6: BCATS Future Road Projects

In summary, more than \$250 million (\$141 million and \$109 million from project tables above) are planned to be spent on road projects from 2017 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 5: BCATS Obligated Projects 2045 LRP



Map 6: BCATS Projects 2045 LRP (no funding source)



Environmental Mitigation

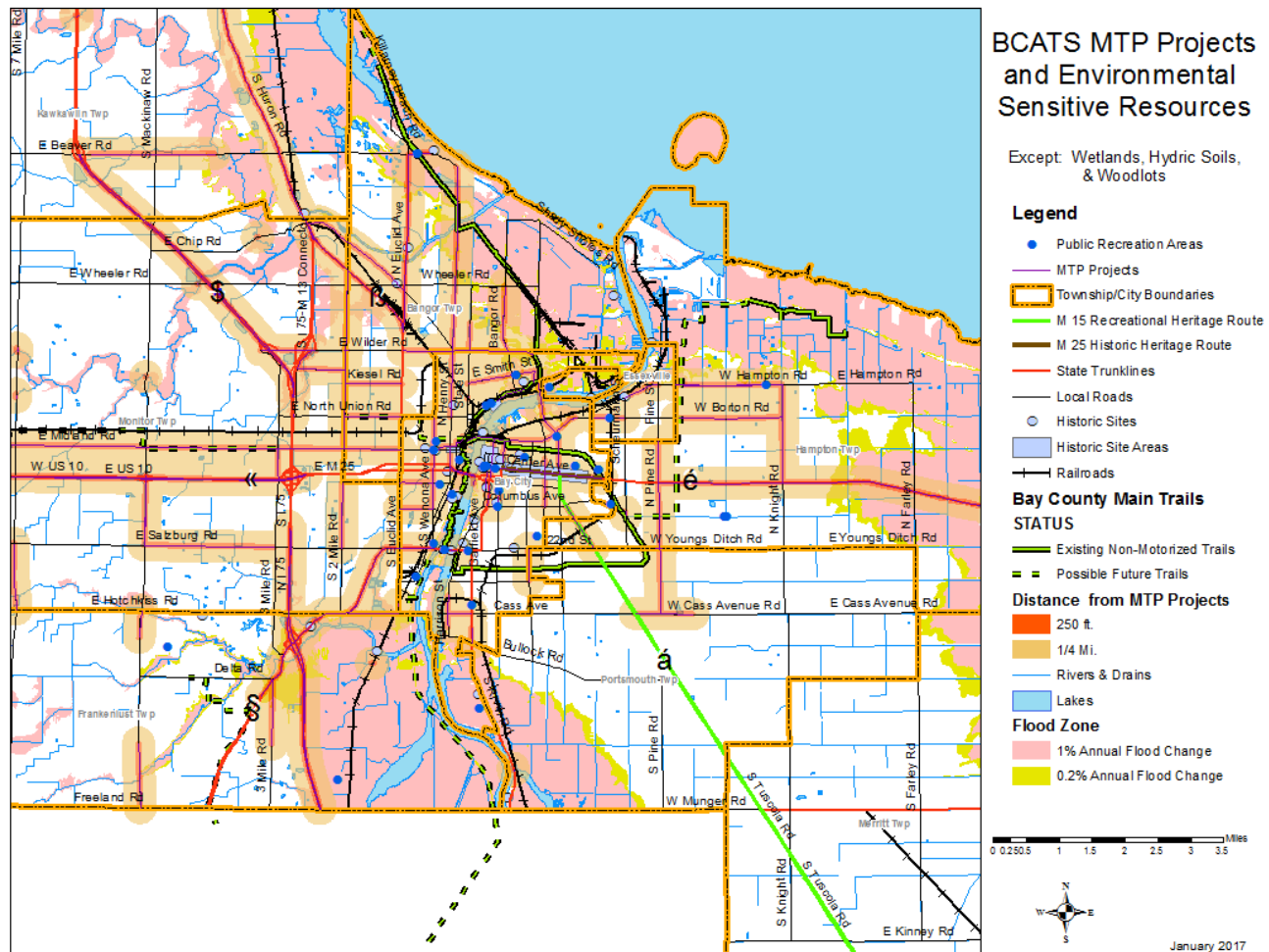
BCATS has inventoried the following Environmental Sensitive Resources in the BCATS area using Geographic Information System (GIS) technology along with local knowledge. Maps of these resources and the related [Metropolitan Transportation Plan Projects](#).

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

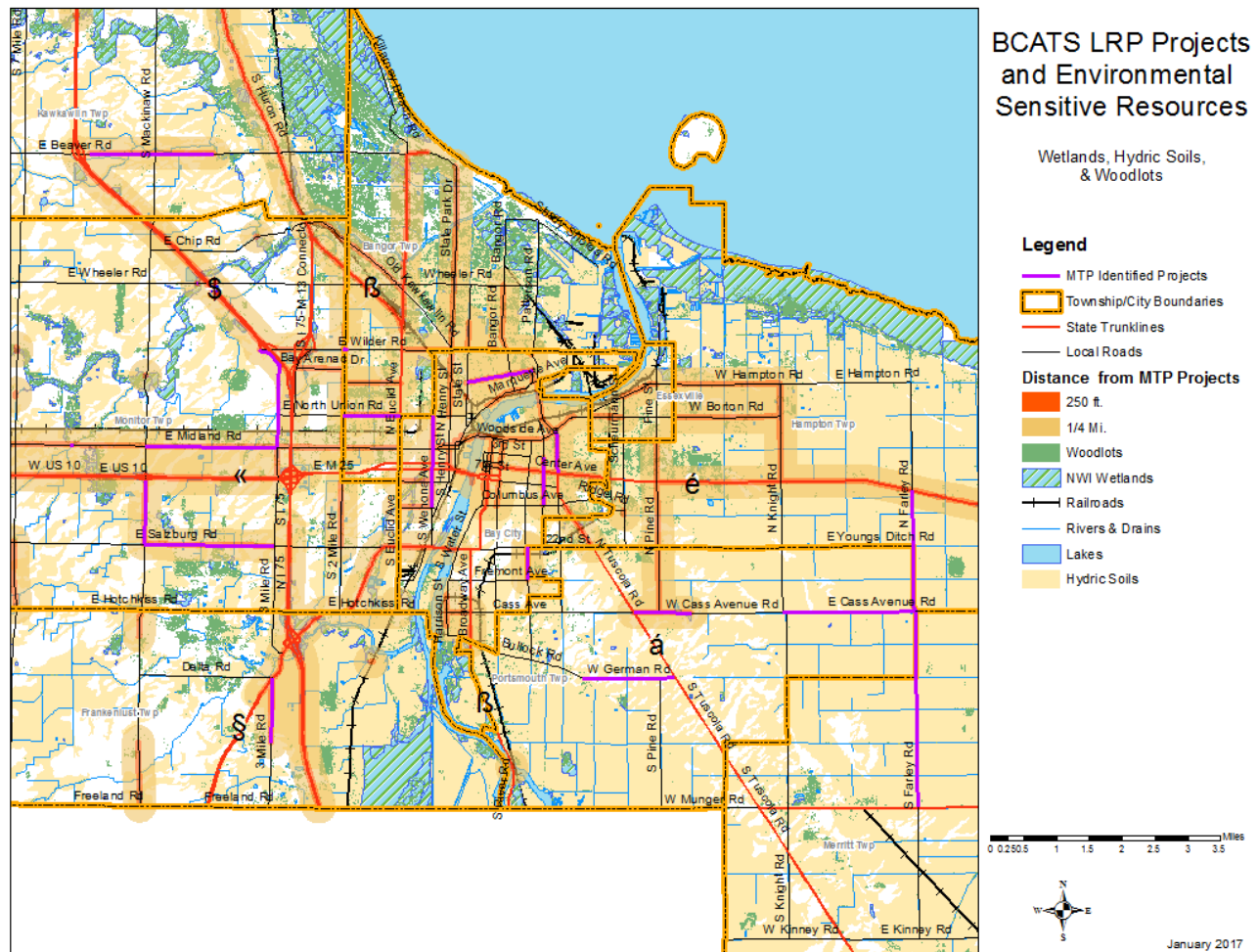
The 32 [transportation improvement projects](#) are pavement reconstruction or resurfacing projects that would not expand the current roadway. Following is a list of the number of possible projects that may impact environmental sensitive resources within BCATS

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 7- LRP Projects and Environmental Sensitive Resources



Map 8- 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 2016, BMTA carried 600,000 riders and traveled 1.5 million miles. 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 contracts with a private carrier to supplement the passenger capacity for its paratransit, demand response service.

BMTA Services

In FY 2016, the BMTA operated 46 buses and 16 vans in fixed route and demand response service. Nine 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. Fixed routes are operated countywide throughout the year. These public routes primarily transport disabled individuals to and from work sites and to educational facilities. BMTA fixed and flexed route services are operated between the hours of 6:00 am and 6:30 pm weekdays (Monday through Friday) and 9:00 am and 6:30 pm on Saturday. The base fare for the fixed and flexed route services 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 called dial a ride transit (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 (Monday through Friday and 9:00 am and 6:30 pm on Saturday. The demand response fare is \$1.50 for all rides.



Future Conditions

BMTA is currently engaged in an effort to identify the types of services that will need to operate in the community 5 to 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. Because of a network of quality support services in the community, a relatively high proportion of the population is made of seniors and individuals with disabilities. This segment of the population will continue to grow. The need for more demand-response transit service is likely. This is a much more expensive service and may require the reduction or elimination 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. Unless the efficiency of the current demand-response 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 larger share of its operating revenues (about 27 %) from local property tax that must be renewed every 5 years.

Fixed route efficiency, effectiveness and necessity the increasing demand on the demand-response service requires a constant evaluation of the fixed route service. The fixed route service is a much less expensive service to operate in terms of cost per passenger. An improvement in the efficiency and effectiveness of the fixed route service would allow for a shift of resources toward the demand-response service and draw passengers from the demand-response service to the fixed route service. Questions which must be answered regarding the effectiveness of the fixed routes service are; is this service properly marketed, is the system easy to learn, do the routes stop where needed, do the buses give the impression of being clean and safe, do the routes operate early or late enough, and do the routes operate with enough frequency. Centers of employment, education facilities, shopping centers, governmental service centers, medical facilities, and residential areas generate the transit passengers. These “stakeholders” shift geographically and in relevance to the community over time; if the fixed route service does not adapt to the community’s needs, the service will lose its relevance. The evaluation of the fixed route service could result in additional buses on existing routes, schedule adjustments, shifting of routes, elimination of routes, or a combination of all of the above.

Regionalization – BMTA serves Bay County only, although it does make regular connections with the transit systems in the adjacent counties of Saginaw, Midland and Arenac. It is likely in the future that the three urban areas in the region, Bay City, Saginaw, and Midland, will be consolidated into a single



urbanized area. 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 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 stakeholders to establish a steady stream of park-and-ride lot users and transit passengers.

Transit Financing

BMTA's FY 2016 operating expenses were approximately \$8 million. Fares covered 11% of operating expenses. Other sources of revenue include the local property tax levy (27%), State of Michigan assistance (34%), federal assistance (27%) and miscellaneous (1%). In 2014, the voters of Bay County approved a county-wide .75 mill transportation tax renewal good through the year 2020. This strong local support has enabled the Authority to operate smoothly in spite of decreasing support from the state and federal governments. The State of Michigan is still an important player in terms of operating support, presently providing about 34 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).

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

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	2015	2014	2013	2012	% Change 2012-2015
Detroit	Metro Wayne	33,440,112	32,513,555	32,389,544	32,241,731	3.72%
Grand Rapids	G Ford Intl	2,550,193	2,335,105	2,237,979	2,134,956	19.45%
Flint	Bishop Intl	820,708	837,736	784,371	818,852	0.23%
Lansing	Capital City	323,510	376,912	418,850	389,600	-16.96%
Traverse City	Cherry Capital	429,364	397,649	378,241	362,059	18.59%
Kalamazoo/BCreek	Intl	244,878	266,758	253,236	255,236	-4.06%
Mid/Bay City/Sag	M B S Intl	235,598	246,957	244,504	271,686	-13.28%
Marquette	Sawyer Intl	83,732	80,657	84,254	76,001	10.17%
Houghton/Hancock	Co. Mem.	52,879	48,250	51,741	51,850	1.98%
Pellston	Emmet Co Reg	50,758	56,817	53,831	49,451	2.64%
Sault Ste Marie	Chip Co Intl	45,391	41,752	42,794	39,125	16.01%
Muskegon	County	36,453	33,396	35,912	36,089	1.01%
Escanaba	Delta County	31,705	34,176	29,089	25,363	25.00%
I. Mtn/Kingsford	Ford	21,058	20,820	18,406	16,388	28.50%
Alpena	Alpena Co Rg	19,474	24,852	31,292	25,350	-23.18%
Manistee	Co Blacker	9,365	7,708	5,390	5,908	58.51%
Ironwood	Gogebic Co	9,218	4,971	4,948	5,081	81.42%

Table 7: 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 235,598 for 2015. MBS has seen a slight decline 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.

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 164,219, up from 142,734 pounds in 2012. This slight increase was seen through much of the state. 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 hangars, 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. Two of the major freight-related projects in the state, the Detroit Intermodal Freight Terminal and the Gordie Howe International Bridge, have made progress and should alleviate congested infrastructure.

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 increased the least relative to 2009, leading to a decrease in share from 14 percent to 13 percent. This was met by an increase in rail from 19 percent in 2009 to 20 percent in 2013.

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.



The Federal Railroad Administration wants to remove 25 percent of the existing highway grade crossings. Most should be closed permanently. Some should be separated at grade. These measures would substantially improve rail safety, while allowing operating speeds to be increased, adding to the quality of service and the capacity of routes.

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, use of rail road sections have been used to complete a regional trail linking Saginaw to Bay City. Continued use of railroad lines could be used for the Great Lakes Bay Regional Trail and the Iron Belle Trail.

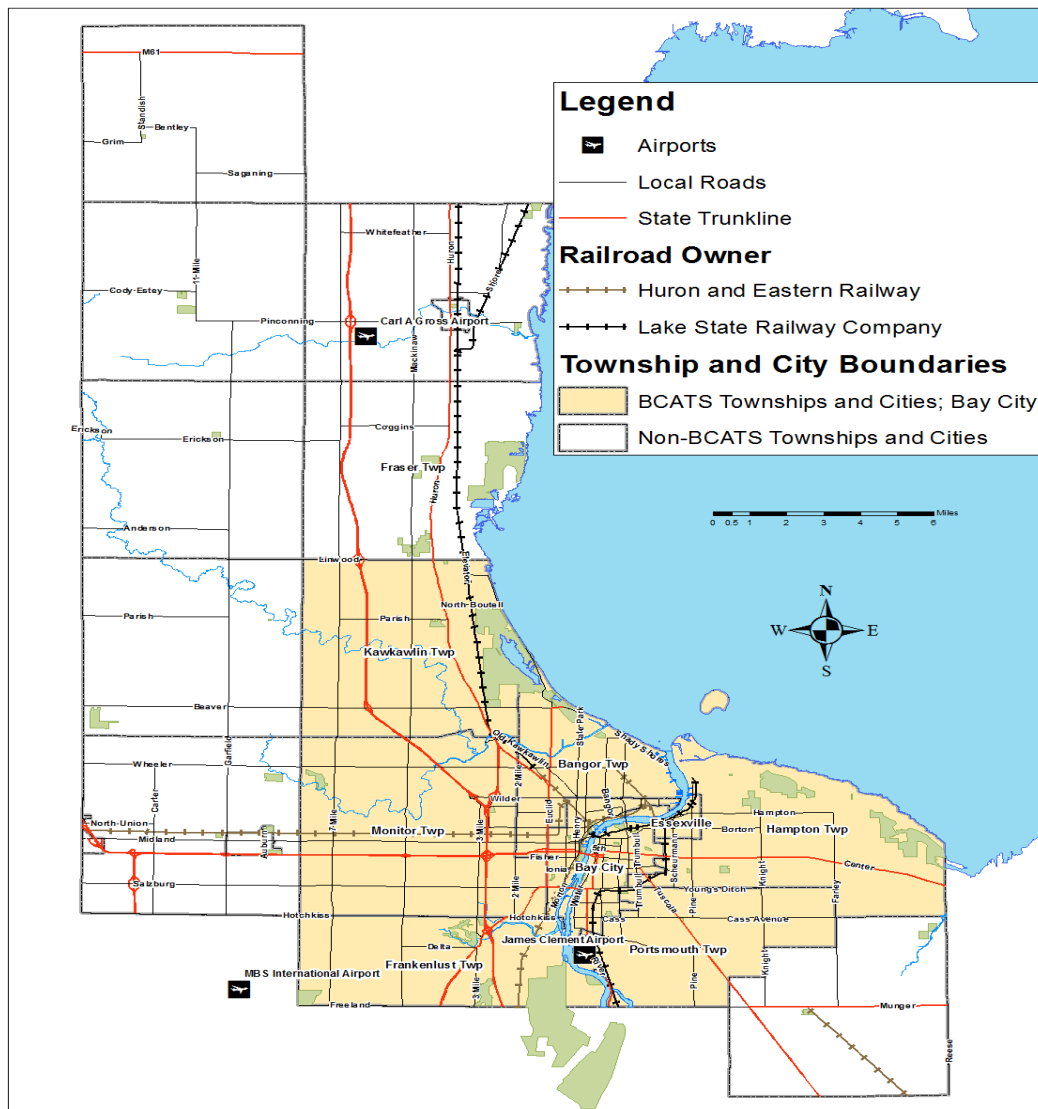
In summary, the last long range plan indicated a decline over the last two decades in rail transport. Yet, many of the State's leading manufacturing, agricultural and extraction industries still relied on the railroad as a means of efficient and economical shipment of bulk freight. Currently there has been an increasing trend in the use of rail transport. Railroads carried more than 100 million tons of freight throughout Michigan in 2013, an increase of nearly 17 percent from 2009. 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 railtrail 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



Bay County Transportation Facilities



Map 9: Bay County Railroad and Airport Facilities



Water and Port Transportation

The number of commercial ports in Michigan remained at approximately 40 between 2000 and 2015. 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 water freight movement accounted for 13% of the total tonnage moved, which water ports handled between 70 and 90 million tons per year.

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.

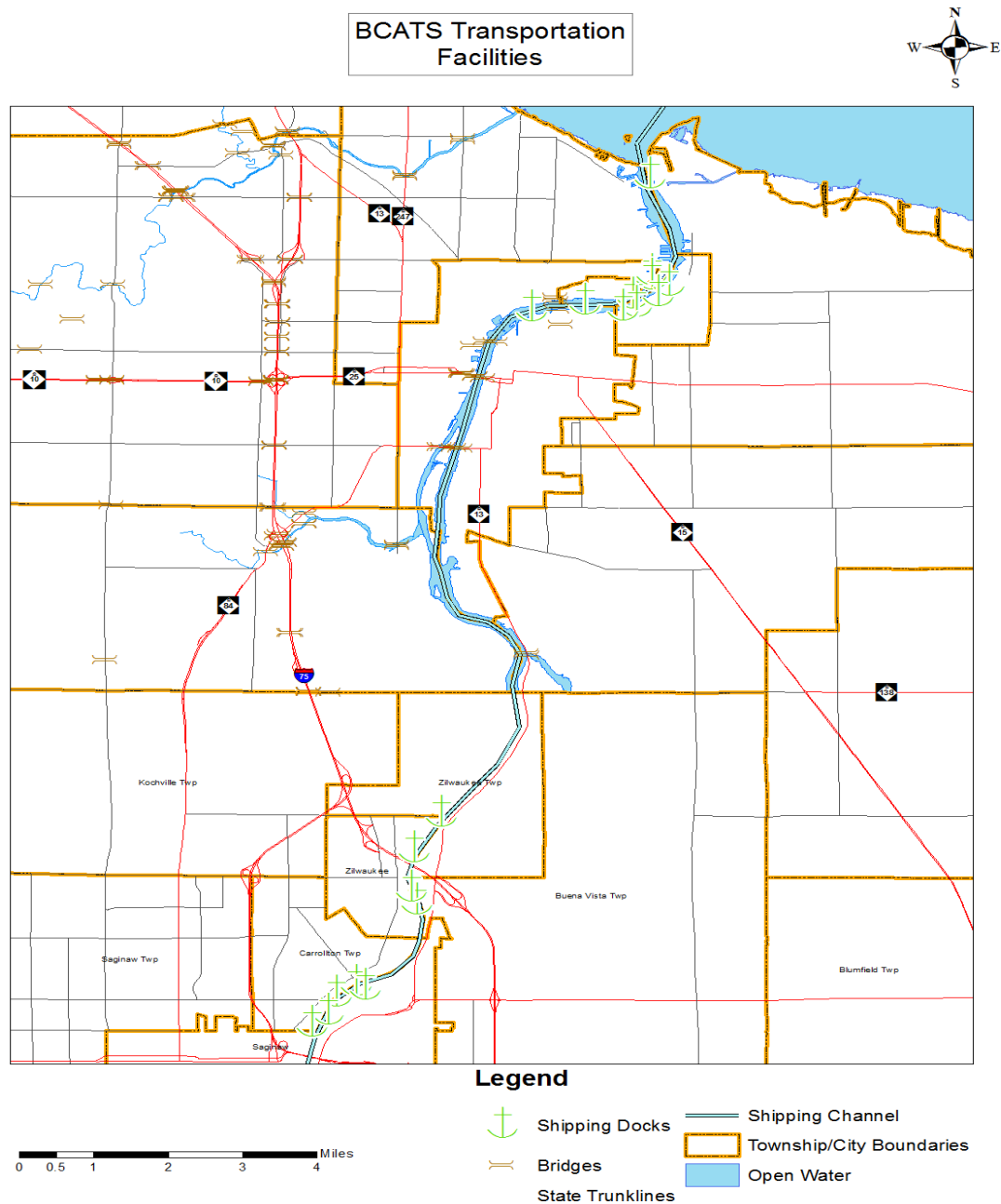
Current and future development on the river has been benefited by recent funding from the 2.8 million dollar allocation from the federal government to dredge the Saginaw River. Along with the dredging, a feasibility study for deepening the upper Saginaw river has been approved and expected to be completed in the next two years. The deepening of the river would make it easier for commercial ships to move up and down the channel that connects Saginaw and Bay City to the Saginaw Bay. The dredging and feasibility study 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



increase 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 10: 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 of 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 exist;
- 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 (Goslon 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.

Rivewalk/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.

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 brining people to local business.

Routes Currently in the Planning Phases

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.

Great Lakes Bay Trial is currently in construction and will complete 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>).



Non-Motorized Plan

BCATS adopted a [Non-Motorized Transportation Plan](#) in 2011. 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. An updated Non-Motorized Transportation Plan is being worked on and expected to be completed in 2018, and will continue to illustrate the importance of connectivity of non-motorized transportation.

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. The case study can be found by following this [link to MDOT website](#). 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 tourists 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

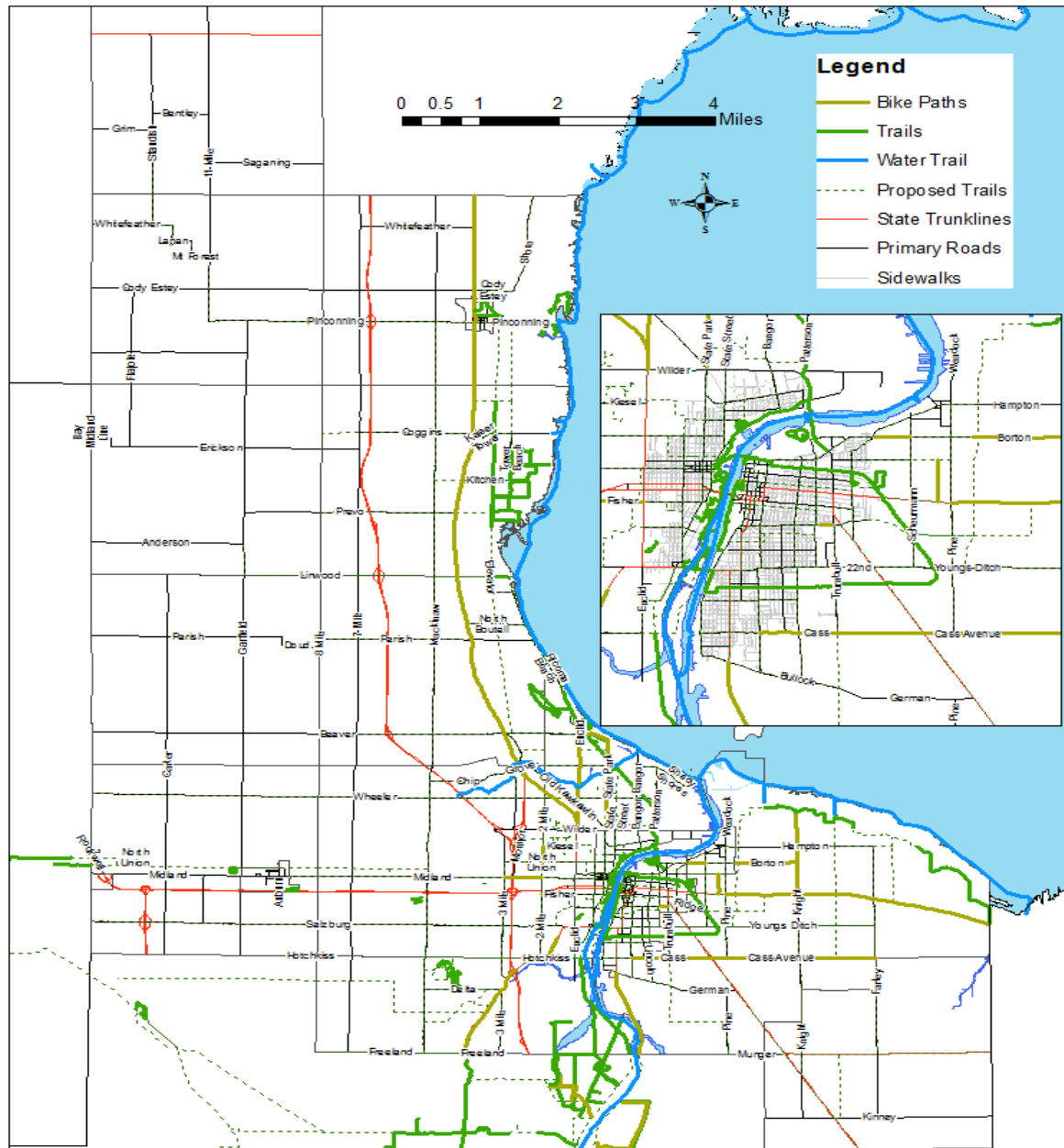


appropriate to accommodate users of the facilities.

- Support the development of recreational non-motorized routes and have over 100 miles of trail by 2020.
- 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.



Bay County Non-Motorized Trail System



Map 11: Non-Motorized Transportation Route



Intelligent Transportation Systems (ITS)

The BCATS planning process recognizes that ITS technologies must become an integral component of transportation plans and programs. BCATS will work toward the successful implementation of the objectives of the National ITS Plan.

The objective of The National Intelligent Transportation Systems Plan is to advance the safety, efficiency and security of the surface transportation system, provide increased access to transportation services, and reduce fuel consumption and environmental impact.

The ITS Vision is to ensure that:

Future transportation systems will be managed and operated to ensure that they provide seamless, end-to-end intermodal travel for passengers regardless of age, disability, or location, as well as efficient, seamless, end-to-end intermodal freight movement. Future transportation systems will be safe, customer oriented, performance driven, and institutionally innovative, enabled by information from a fully integrated spectrum of computing, communications, and sensor technologies. Public policy and private sector decision-makers will seize the opportunity to make ITS a vital driver in achieving the vision of the transportation system for the 21st century. The National ITS Architecture has eight groups of ITS service areas. That include:

- Traffic Management (ATMS) – includes transportation operations centers, detection systems, Closed Circuit Television (CCTV) cameras, dynamic message signs (DMS), Portable Changeable Message Signs (PCMS), and other related technologies.
- Emergency Management (EM) – includes emergency operations/management centers, improved information sharing among traffic and emergency services, automated vehicle location (AVL) on emergency vehicles, traffic signal preemption for emergency vehicles, and wide-area alerts.
- Commercial Vehicle Operations (CVO) – includes coordination with Commercial Vehicle Information Systems and Networks (CVISN) efforts, Hazardous Material (HAZMAT) management, weigh-in motion (WIM) technology, and security technology, including driver authentication.
- Traveler Information (ATIS) – includes broadcast traveler information such as web sites, traveler information kiosks, and highway advisory radio (HAR).
- Archived Data Management (AD) – includes electronic data management and archiving systems.
- Vehicle Safety (AVSS) – includes connected vehicle technology such as collision avoidance and vehicle automation, specifically speed and steering.
- Maintenance and Construction Management (MCM) – includes work zone management, roadway maintenance and construction information, winter maintenance, and Road Weather Information Systems (RWIS).



- Public Transportation Management (APTS) – includes transit and paratransit AVL, dispatch systems, transit travel information systems, electronic fare collection, and transit security.

The introduction of ITS technologies into the institutional and funding framework of surface transportation, the current and proposed transportation infrastructure and future vehicle development offers the opportunity to achieve an Integrated Network of Transportation Information that will facilitate:

- Availability of information to allow travel choices wherever and whenever desired without being limited by physical disability, age or location.
- Full coordination between bus and rail transit, railroads, highway and arterial systems and eliminating missed connections, confusion during detours and diversions due to emergency and weather conditions.
- Timely and accurate commercial vehicle and freight data shared electronically among authorized stakeholders to support safety, security, productivity, mobility and environmental goals.

An Integrated Network of Transportation Information will require:

- Forging new partnerships within the public sector, at all levels, and the private sector, in its broadest sense, including manufacturers, carriers, service providers and travelers in all modes.
- Research into traveler behavior and requirements, user response to new types of information and personal services, and the types and quality of data that will be most useful to travelers and that will affect their travel patterns and behavior.
- Reaching out to the public safety community to assure a high level of communication and interface to support emergency and disaster response.

Interim Guidance issued by the USDOT:

The final rule and FTA policy on Intelligent Transportation Systems (ITS) Architecture and Standards were issued on January 8, 2001, to implement section 5206(e) of the Transportation Equity Act for the 21st Century (TEA-21). This final rule/policy requires that ITS projects funded by the Highway Trust Fund and the Mass Transit Account conform to the National ITS Architecture, as well as to USDOT adopted ITS Standards.

The final rule/policy means that regions currently implementing ITS projects must have a regional ITS architecture in place in four years. Regions not currently implementing ITS projects must develop a regional ITS architecture within four years from the date their first ITS project advances to final designs.



ITS projects funded by the Highway Trust Fund and the Mass Transit Account must conform to a regional ITS architecture. Major ITS projects should move forward based on a project level architecture that clearly reflects consistency with the National ITS architecture.

The Michigan Department of Transportation has completed a regional ITS architecture and deployment plans for the Bay Region in January of 2008. The document is available at https://www.michigan.gov/documents/mdot/Bay_Region_ITS_Architecture_271327_7.pdf with amendments in 2015. The only current ITS projects that have been completed or a projected project are on I-75 in the BCATS area. The project consists of installing ITS triangle devices.



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, currently 18.4 cents per gallon on gasoline and 24.4 cents per gallon on diesel. 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. In recent years, the HTF has seen large infusions of cash from the federal General Fund, due to declining collections from motor fuel taxes. This is mostly due to increased fuel efficiency in conventionally-powered vehicles, as well as a growing number of hybrid and fully-electric vehicles that require little to no motor fuel.

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. Local agencies within the BCATS Planning Area receive approximately \$1 million in federal-aid highway funding each year. In addition, MDOT spends approximately \$11 million annually for capital needs on state-owned highways in the region (I-, US-, and M- roads).

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. Beginning in 2017, state motor fuel taxes are will increase from 19 cents per gallon on gasoline and 15 cents per gallon on diesel to 26.3 cents per gallon for both gasoline and diesel. 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.

A series of laws enacted in November 2015 increased state funding for transportation. The Michigan House Fiscal Agency estimates that, starting in FY 2016, an additional \$455 million will be raised, increasing each year until 2020, when it's expected that the increase will stabilize at an additional \$1.2 billion per year.¹

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.

¹ Hamilton, William E., Jim Stansell, and Kyle I. Jen. "Road Funding Package-Enacted Analysis." Lansing, MI House Fiscal Agency, November 2015.



Local Agencies Revenue Estimates

Table 7: Local Agencies Revenue Estimates

Estimates as of	BCATS STUL Funds (Federal \$)	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*
2016 Funding	\$1,388,148	\$840,989	\$1,902,410	\$159,805	\$4,291,352	\$2,259,109
Lane miles	298	196	93	9	298	298
2017	\$1,415,911	\$872,106	\$1,902,410	\$159,805	\$4,405,780	\$2,073,537
2018	\$1,444,229	\$904,373	\$1,902,410	\$159,805	\$4,405,780	\$2,073,537
2019	\$1,473,114	\$937,835	\$1,940,458	\$163,002	\$4,493,896	\$2,121,008
2020	\$1,502,576	\$972,535	\$1,979,267	\$166,262	\$4,583,774	\$2,169,428
2021	\$1,532,628	\$1,008,519	\$2,018,853	\$169,587	\$4,675,449	\$2,218,817
2022	\$1,563,280	\$1,045,834	\$2,059,230	\$172,979	\$4,768,958	\$2,269,193
2023	\$1,604,238	\$1,084,530	\$2,113,182	\$177,511	\$4,893,905	\$2,336,506
2024	\$1,646,269	\$1,124,658	\$2,168,547	\$182,161	\$5,022,126	\$2,405,582
2025	\$1,679,194	\$1,166,270	\$2,225,363	\$186,934	\$5,153,705	\$2,476,469
2026	\$1,712,778	\$1,209,422	\$2,283,667	\$191,832	\$5,288,732	\$2,549,212
2027	\$1,753,885	\$1,237,239	\$2,343,499	\$196,858	\$5,427,297	\$2,623,862
2028	\$1,795,978	\$1,265,695	\$2,404,899	\$202,015	\$5,569,492	\$2,700,467
2029	\$1,839,082	\$1,294,806	\$2,467,908	\$207,308	\$5,715,413	\$2,779,079
2030	\$1,883,220	\$1,324,587	\$2,532,567	\$212,740	\$5,865,157	\$2,859,751
2031	\$1,928,417	\$1,355,052	\$2,598,920	\$218,313	\$6,018,824	\$2,942,536
2032	\$1,974,699	\$1,386,218	\$2,667,012	\$224,033	\$6,176,517	\$3,027,491
2033	\$2,022,092	\$1,418,101	\$2,736,887	\$229,903	\$6,338,342	\$3,114,671
2034	\$2,070,622	\$1,450,718	\$2,808,594	\$235,926	\$6,504,406	\$3,204,135
2035	\$2,120,317	\$1,484,084	\$2,882,179	\$242,108	\$6,674,822	\$3,295,944
2036	\$2,171,205	\$1,518,218	\$2,957,692	\$248,451	\$6,849,702	\$3,390,157
2037	\$2,223,313	\$1,553,137	\$3,035,184	\$254,960	\$7,029,164	\$3,486,840
2038	\$2,276,673	\$1,588,859	\$3,114,705	\$261,640	\$7,213,328	\$3,586,055
2039	\$2,331,313	\$1,625,403	\$3,196,311	\$268,495	\$7,402,318	\$3,687,869
2040	\$2,387,265	\$1,662,788	\$3,280,054	\$275,530	\$7,596,258	\$3,792,352
2041	\$2,444,559	\$1,701,032	\$3,365,991	\$282,749	\$7,795,280	\$3,899,571
2042	\$2,503,228	\$1,740,155	\$3,454,180	\$290,157	\$7,999,517	\$4,009,600
2043	\$2,563,306	\$1,780,179	\$3,544,680	\$297,759	\$8,209,104	\$4,122,512
2044	\$2,624,825	\$1,821,123	\$3,637,551	\$305,560	\$8,424,183	\$4,238,381
2045	\$2,687,821	\$1,863,009	\$3,732,854	\$313,566	\$8,644,896	\$4,357,287
Total	\$57,176,037	\$39,396,684	\$77,355,146	\$6,497,957	\$179,146,426	\$87,812,148

*Includes 30% of total Act 51 funds less \$1,000,000 for two Bay City Bascule Bridges

Estimates are based on 2016 and increased annually for first 10 years by 2%, and remaining years by 2.4%

Table 8: Local Agencies Revenue Estimates



The table on the previous page, [table seven](#), 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 2016 funding levels. Growth in revenues is expected for 2017 through the next 10 years. Starting in 2017 a 2% increase is estimated through 2027. After 2027, the estimated yearly increase is 2.4%, bringing the 29 year total for all the BCATS local agencies to \$179 million.

Of that \$179 million, nearly 70% is used for routine maintenance and operations which includes snow and ice removal, administration, mowing, road patching, and equipment. It excludes any capital improvement projects that will extend the life on the road such as crack sealing, chip and seal, resurfacing, and reconstruction. The amount that is left available for capital improvement from 2017 to 2045 totals \$87 million, averaging \$2.8 million per year between the Bay County Road Commission (BCRC), Bay City and Essexville to maintain 298 lane miles of roads.

Local Agency Summary	Dollars (x1000)
Total Local Road Agency Available Funds	\$179,146
Operations and Maintenance Cost	\$91,334
Funds Available for Capital Projects	\$87,812
Metropolitan Transportation Plan Identified Projects	\$30,534
Available for unassigned Preservation and Maintenance Projects	\$57,278

Table 9: Local Agency Fiscal Constraint Demonstration

Table eight (above) compares the local agency roads projects listed in [Chapter 5](#) with the estimated revenue from [table seven](#). Although the local agency program is fiscally constrained with the cost of the listed projects being less than the estimated revenue for the local agencies, numerous preservation and maintenance transportation projects are not currently identified by the BCATS implementing agencies. These agencies will fully utilize any and all existing dollars in attempts to maintain the existing transportation system. It is reasonably expected for local agencies to need more than \$180 million for capital projects over the life of this plan to adequately maintain the existing federal aid road system. The following scenarios on the Bay City asphalt roads will help identify this trend.



MDOT Revenue Estimate

Table nine (right), shows the 5-year estimates of future revenue for the MDOT expenditure within the entire BCATS rural and urban areas. Future estimates are based on the 2016 funding levels. Starting in 2017 a 3.7% increase is estimated through 2027. After 2027, the estimated yearly increase is 2.3%, bringing the 29 year total for MDOT to \$541 million. As MDOT currently has some identified projects in this plan, such as the M-13 Bridge of the Saginaw River. Future projects include more work on I-75 and US-10 as portions of those expressways are expected to reach the end of their life span during the timeframe of this plan. As these are high volume, high cost roads, it is expected that cost to maintain MDOT roads through 2045 within BCATS will exceed the estimated revenue by at least 50%, similar to the numbers shown by Bay City.

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 any and 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.

Table Seven: MDOT Revenue Estimates

	BCATS STUL Funds (Federal \$)	MDOT Trunkline Fund for BCATS
Lane Miles	298	338
Year		
2017-2021	\$7,368,458	\$68,284,868
2022-2026	\$8,205,759	\$71,626,837
2027-2031	\$9,200,582	\$83,446,198
2032-2036	\$10,358,935	\$92,357,099
2037-2040	\$9,218,564	\$92,334,205
2041-2045	\$8,205,759	\$85,362,641
Total	\$57,176,037	\$540,890,260

Table 10: MDOT Revenue Estimates



MDOT 2045 MPO Long Range Revenue Forecast Methodology

Highway Revenue Forecast Growth Rate

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. For some years the state forecast assumes additional revenue through a variety of mechanisms to match federal aid. In order to take a conservative approach with the federal and state revenue forecasts beyond the near term, 90% of the historic growth rates were used. The resulting rates beyond the near term are: federal 2.6% annual growth, and state 2.3% annual growth.

Total estimated federal revenue: \$31.4 B

Total estimated state revenue: \$27.9 B

Revenue available for Capital outlay

Debt service, non-capital uses and routine maintenance are deducted from the estimated federal and state revenue. The resulting FY 2017-2045 total estimated revenue available for highway capital outlay is \$37.5 billion (in future year dollars).

Methodology for MPO Allocation of Capacity Improvement/New Road Dollars

The trunkline capacity improvement and new road (CI/NR) projects in the Long Range Revenue Forecast are in the 2017-2021 Five-Year Transportation Program, have earmarks or are on corridors of National Significance. They were reviewed and vetted by MDOT executive management. The revenue remaining after accounting for the CI/NR projects is available for the preservation program.



Transit Revenue Estimates

Year	Federal Transit Funding	State Match	State Operating Funds	Locally Raise Revenue (millage, fare box, etc)	Total
2016 Base	\$2,075,000		\$123,000	\$5,517,564	\$7,715,564
2017	\$2,138,910	\$0	\$126,788	\$5,551,913	\$7,817,611
2018	\$2,204,788	\$0	\$130,693	\$5,551,913	\$7,887,395
2019	\$2,272,696	\$0	\$134,719	\$5,593,552	\$8,000,967
2020	\$2,342,695	\$0	\$138,868	\$5,614,248	\$8,095,812
2021	\$2,414,850	\$0	\$143,145	\$5,635,021	\$8,193,016
2022	\$2,489,227	\$0	\$147,554	\$5,655,871	\$8,292,652
2023	\$2,565,896	\$0	\$152,099	\$5,692,068	\$8,410,063
2024	\$2,644,925	\$0	\$156,784	\$5,728,498	\$8,530,206
2025	\$2,726,389	\$0	\$161,612	\$5,765,160	\$8,653,161
2026	\$2,810,362	\$0	\$166,590	\$5,802,057	\$8,779,009
2027	\$2,896,921	\$0	\$171,721	\$5,839,190	\$8,907,832
2028	\$2,986,146	\$0	\$177,010	\$5,876,561	\$9,039,717
2029	\$3,078,119	\$0	\$182,462	\$5,914,171	\$9,174,752
2030	\$3,172,925	\$0	\$188,082	\$5,952,022	\$9,313,029
2031	\$3,270,651	\$0	\$193,875	\$5,990,115	\$9,454,641
2032	\$3,371,387	\$0	\$199,846	\$6,028,451	\$9,599,685
2033	\$3,475,226	\$0	\$206,001	\$6,067,033	\$9,748,261
2034	\$3,582,263	\$0	\$212,346	\$6,105,862	\$9,900,472
2035	\$3,692,597	\$0	\$218,886	\$6,144,940	\$10,056,423
2036	\$3,806,329	\$0	\$225,628	\$6,184,268	\$10,216,225
2037	\$3,923,564	\$0	\$232,578	\$6,223,847	\$10,379,988
2038	\$4,044,409	\$0	\$239,741	\$6,263,680	\$10,547,830
2039	\$4,168,977	\$0	\$247,125	\$6,303,767	\$10,719,869
2040	\$4,297,382	\$0	\$254,736	\$6,344,111	\$10,896,229
2041	\$4,429,741	\$0	\$262,582	\$6,384,713	\$11,077,037
2042	\$4,566,177	\$0	\$270,670	\$6,425,576	\$11,262,423
2043	\$4,706,815	\$0	\$279,006	\$6,466,699	\$11,452,521
2044	\$4,851,785	\$0	\$287,600	\$6,508,086	\$11,647,471
2045	\$5,001,220	\$0	\$287,600	\$6,549,738	\$11,838,558
TOTAL	\$97,933,374		\$5,796,349	\$174,163,132	\$277,892,855

Table 11: 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 Ten (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.

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

Table 12: Transit Fiscal Constraint Demonstration

Table Four compares the local agency roads projects listed in [Chapter 5](#) with the estimated revenue from [Table Ten](#). 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 than 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 and the remaining ratings were collected in 2009 and continuing on into 2010. These ratings and the road treatments completed during that time frame were combined into the software RoadSoft in the 2040 Long Range Plan. A deterioration curve in RoadSoft was used, so the condition of the road could be predicted for future years. These curves are based on the seven years of PASER ratings, applied treatments, and the expected lifespan of an asphalt road. The predicted curve can be found in the following graphs.

For the 2045 Long Range Plan, BCATS compared the results from 2016 PASER collection and compare it to the projected curves in Graph 6 and 7. Spending of 2.8 million in 2016 follows the trajectory of the predicted curve for 2.0 million in Graph 7. Additionally, BCATS will continue to compare PASER rating, but will be using the current PASER groupings used by MDOT: Good (8-10), Fair (5-7), and Poor (1-4).

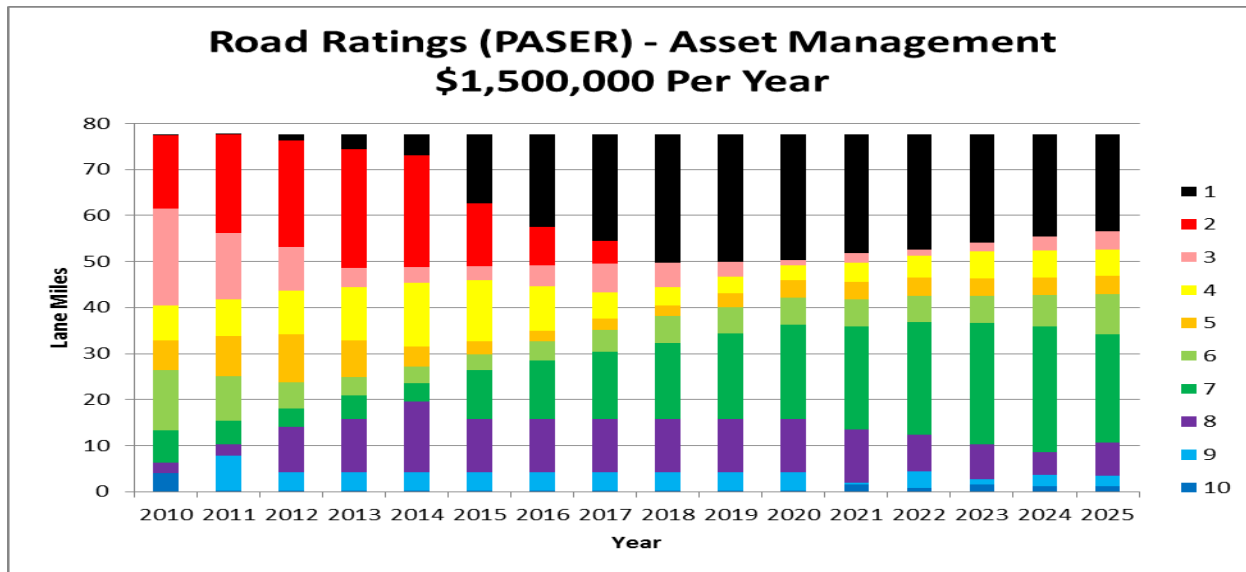


Figure 4: Road Ratings (PASER) 1.5 million per year

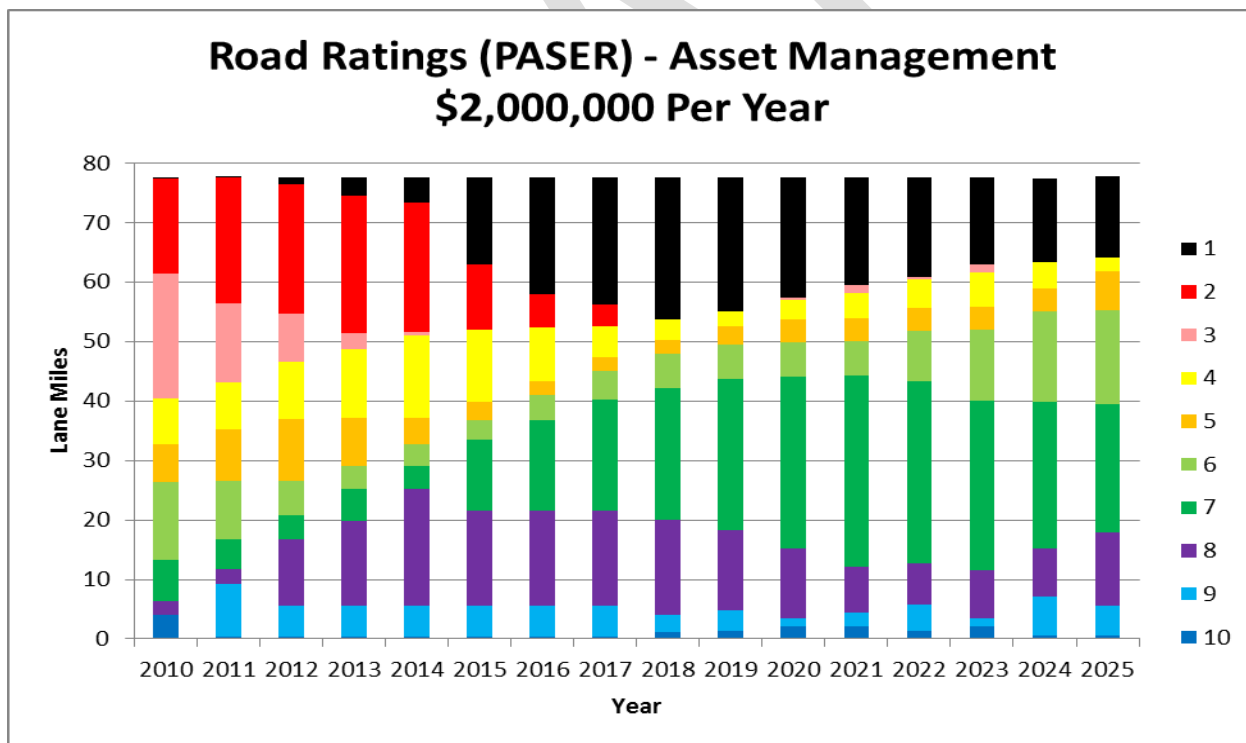


Figure 5: Road Ratings (PASER) 2 million per year

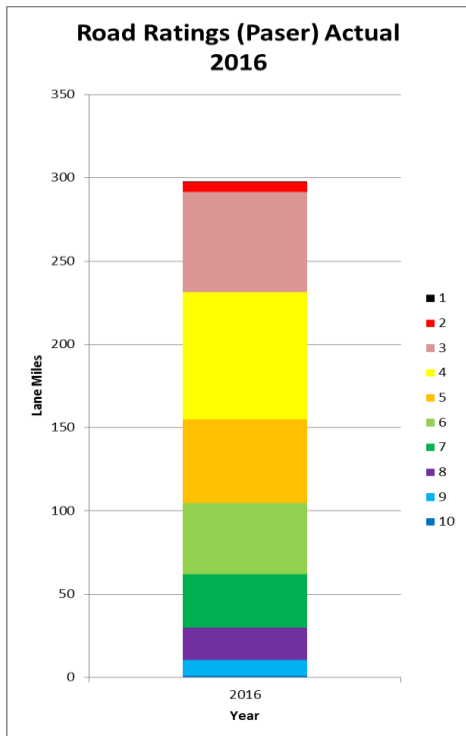


Figure 6: Road Ratings for 2016

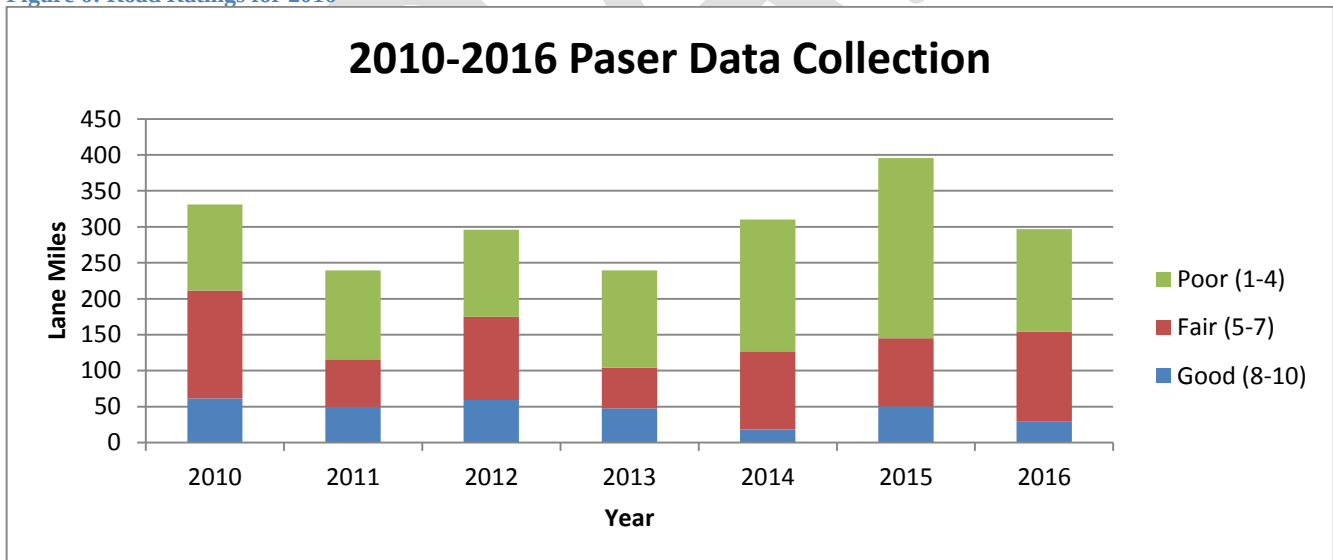


Figure 7: Road Ratings for the past seven years



Bay City Federal Aid Asphalt Road Funding Scenarios

In an attempt to determine the amount of funding needed to maintain the existing transportation system, BCATS has utilized the asset management software, RoadSoft; along with road treatment cost estimates and existing surface conditions on the Bay City Federal Aid Asphalt Roads and ran several scenarios for the 2040 long range plan. In the 2045 plan, BCATS has used the cost estimates for Road Service Life (RSL) and Paser rating predictions to analyze the results of the scenarios and the progress made from the 2040 plan.

Scenario One uses the existing revenues estimates as identified in [table four](#). Scenario Two shows a cost-effective route to improve the transportation system by 2025. This scenario more than doubles the year expenditures on the Bay City asphalt road system. Both scenarios utilize the same “mix of fixes” approach to road treatment by providing the right fix at the right time to maximize the funds with the improvement to the Remaining Service Life (RSL) of the road. The “mix of fixes” includes five different asphalt treatments that would be applied to a road at a specific point in its life span. They include crack sealing (\$4,800), chip seal (\$32,000), mill and overlay (\$150,000) crush and

Asphalt Treatment	2016 Cost per Lane Mile	RSL before Treatment	RSL after Treatment
Total Reconstruction	\$600,031	< -10	15
Crush and Shape	\$342,395	-6	14
Mill & Overlay	\$150,000	-1	11
Sealcoat	\$32,000	3	7
Crack Seal	\$4,800	9	10

Table 13: Asphalt Treatments

shape rehabilitation (\$342,000) and total reconstruction (\$600,000). These costs are in 2016 dollars per lane mile and are inflated by 3.3% per year through 2025.

[Graph 4](#) on the following page shows the result of the annual RSL of the Bay City asphalt Federal Aid roads if the City utilizes their entire estimated Act 51 revenue only on the asphalt roads plus half of BCATS surface transportation funds. By 2025, the condition of the of those roads will continue to deteriorate to the point where 82% of those lane miles will be at least 10 years past their remaining service life (RSL) and only 2% will have a positive RSL. This would also put most, if not all, the 15.3 lane miles of concrete and sealcoat roads in poor condition as they would be neglected during this time frame.

[Graph 5](#), also on the next page, highlights the scenario of Bay City spending approximately \$2.25 million per year on asphalt roads. The result would produce only 15% of lane miles with a negative RSL all while costing \$31.7 million through 2025. However, between the years of 2015 and 2019, there are more than 20 lane miles (25% of asphalt roads) with an RSL at negative 10 or older, much



higher than the 5% it is in 2012.

[Graph 6](#), also on the next page, highlights the actual 2015 and 2016 RSL and the spending of 2.8 million per year. The Graph 2 scenario as predicted by Graph 2 is steadily increasing the RSL of roads. With new federal funding in place over the next 5 to 6 years, following the trend of Graph 2, BCATS area roads should see a steady increase in RSL. BCATS will continuously follow the RSL trends each year.

DRAFT

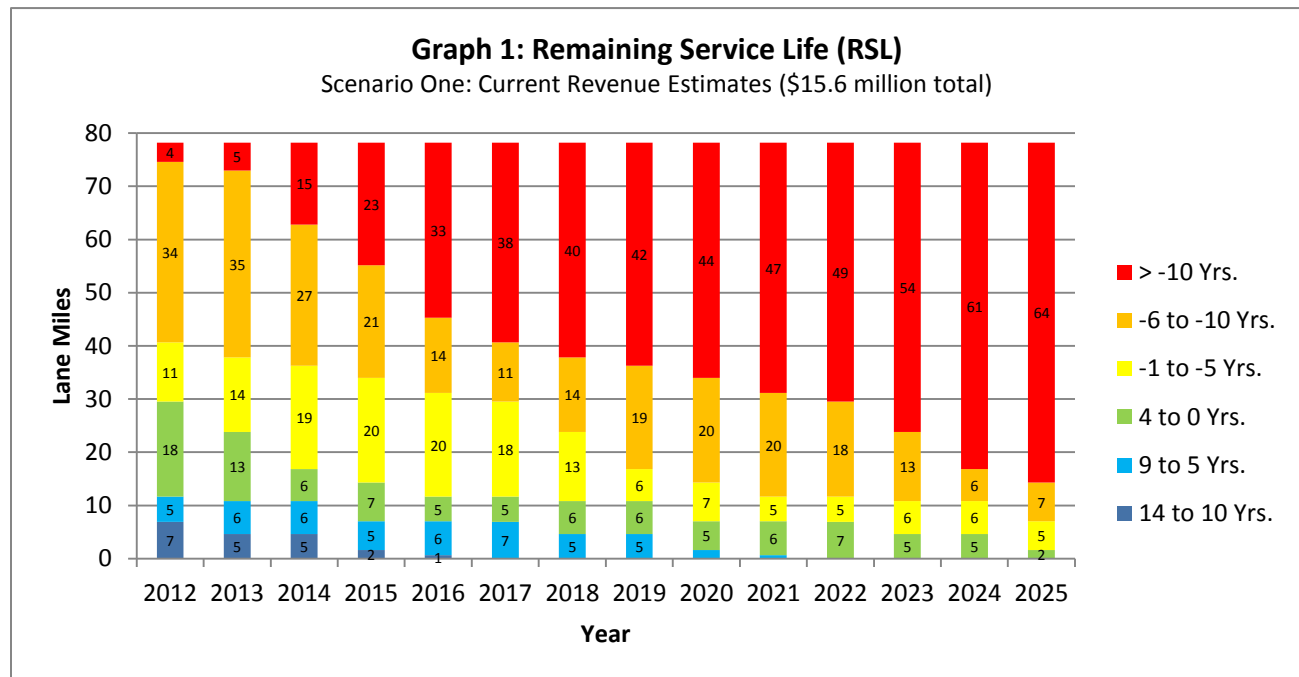


Figure 8: Remaining service life (31.7 million)

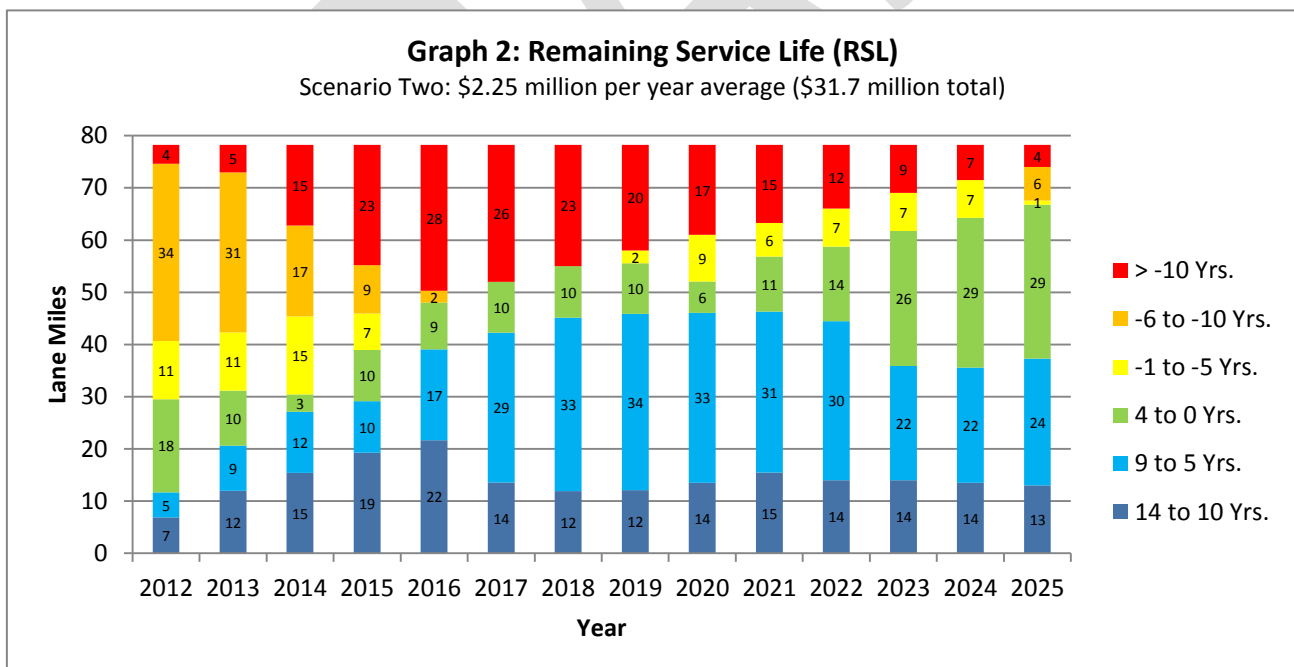


Figure 5: Remaining service life (31.7 million)

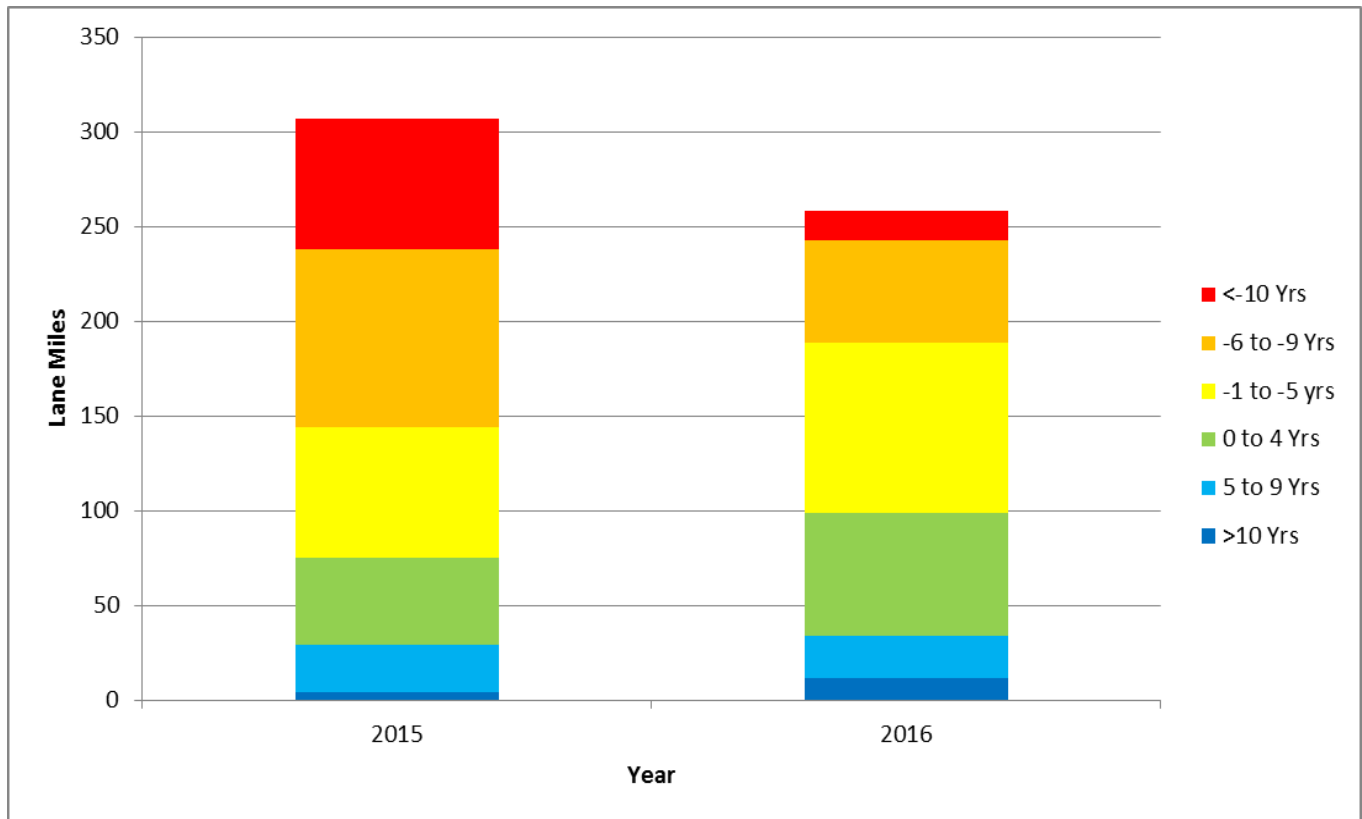


Figure 9: Actual RSL Data for 2015 and 2016



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 8, project 1

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 is currently on the FY 2017-2020 TIP to be reconstructed to trunkline standards with the addition of a center turn lane. BCATS feels strongly that once Trumbull Street reconstruction is completed that the surface condition of the corridor would be optimal for a turnover to MDOT.

Liberty Bridge & Independence Bridge: Map 8, project 2

Both are bascule bridges over the Saginaw River that provide crucial links to the BCATS Area and are owned operated by the City of Bay City. The City of Bay City in an August 15th, 2016 Bay City Commission meeting discussed the nearly \$6 million in repairs that will be needed over the next five years on both bridges. Bay City is exploring all options to pay for these repairs including federal grants and a local millage. The Bay City Commission has even discussed having an economic impact study done to assess the effects of permanently closing one of the two bridges and leaving it in the up position for river traffic. A recent bill signed by Governor Snyder in June of 2016 will provide help to municipalities that have movable bridges by reimbursing them for operational costs of the moveable bridges.

M-25/Thomas Street & Jenny Street (Henry Street to M-13/Euclid Avenue) : Map 8, 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. BCATS is coordinating with MDOT and the Beautification Committee to consider any and all capacity changes that could be made along the corridor.

Mackinaw Road over US-10: Map 8, 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. The study for this interchange recommends a reconfiguration as either a tight diamond or the incorporation of modern roundabouts at the ramp endings. There is currently no funding available for this project.

Bay City to Midland Connector Trail: Map 8, project 5

Several options for a non-motorized path between Midland and Bay City have been discussed but little progress has been made. Close coordination with City of Midland, City of Bay City, Bay County, Williams Township, Monitor Township, and the Great Lakes Bay Region Trail Group will be necessary to find the best route.

Bay City to Saginaw Connector Trail: Map 8, project 6

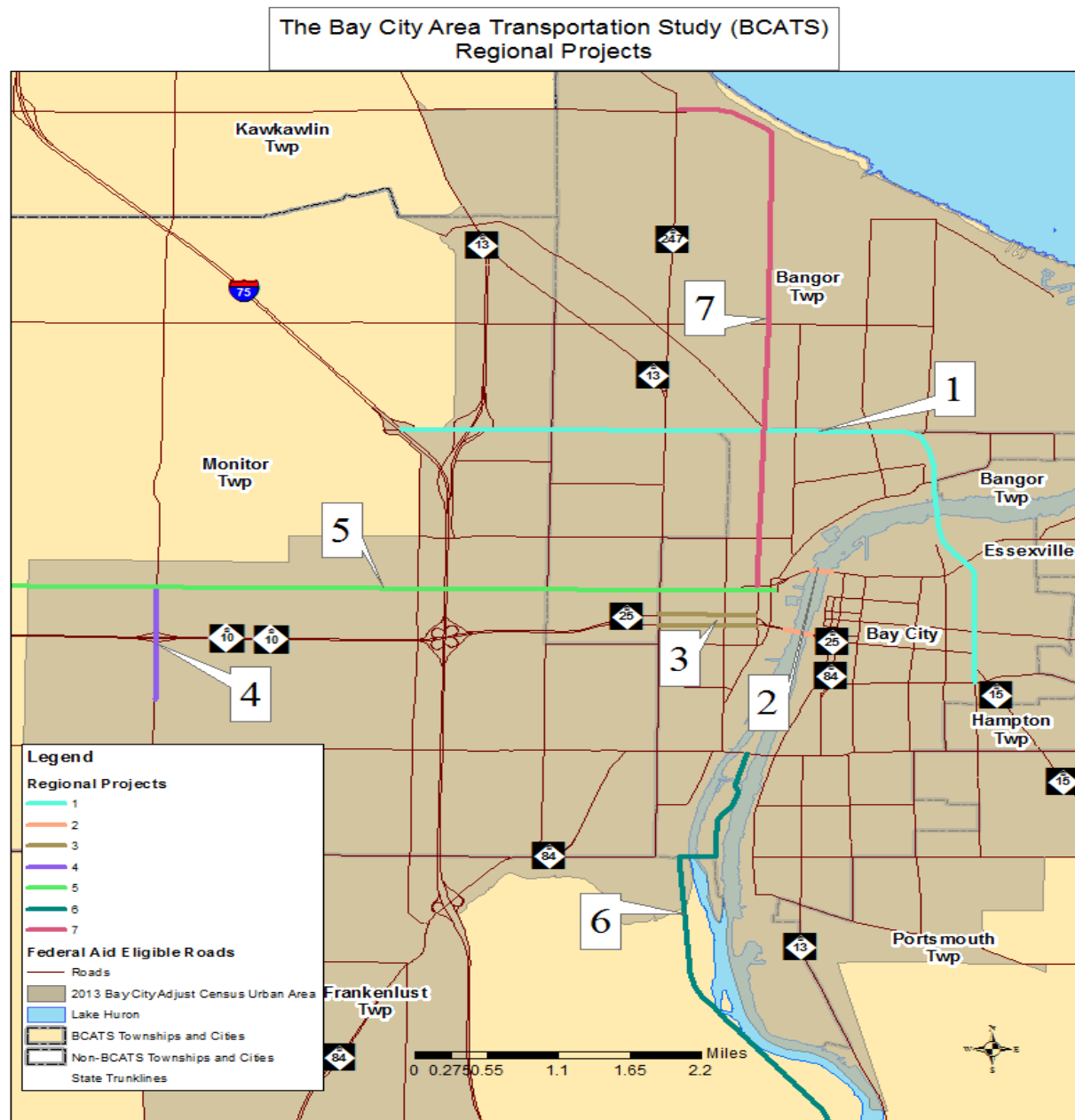
The trail connecting Bay City to Saginaw has been partially completed in Frankenlust Township. A 7-mile piece of the proposed 100 mile route was constructed in 2016. The trial link starts at Ojibway Island in Saginaw and runs along the old rail system to a trail head at East Hotchkiss road. The next 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.

Bay City to the Bay City State Recreation Area - Henry Street & State Park Drive (Midland Street to M-247): Map 8, 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. While the City of Bay City, Bangor



Township, and Bay County are in support of this effort there is currently no funding identified to move this project forward.



Map 12: 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 placemaking, 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.

DRAFT



Chapter Nine

Progress Since Last Plan





Projects Completed Since Last Plan

During the last four years, over 70 transportation projects receiving federal aid were completed in the BCATS Area. The total amount invested in these projects was \$71.9 million and involved federal, state, and local funds. The Table (Table 13) 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 such as the Interchange Study for US-10 at Mackinaw Road, the M-13 (Euclid Avenue) & Wilder Road Access Management Study, and installation of railroad crossing signals.

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.

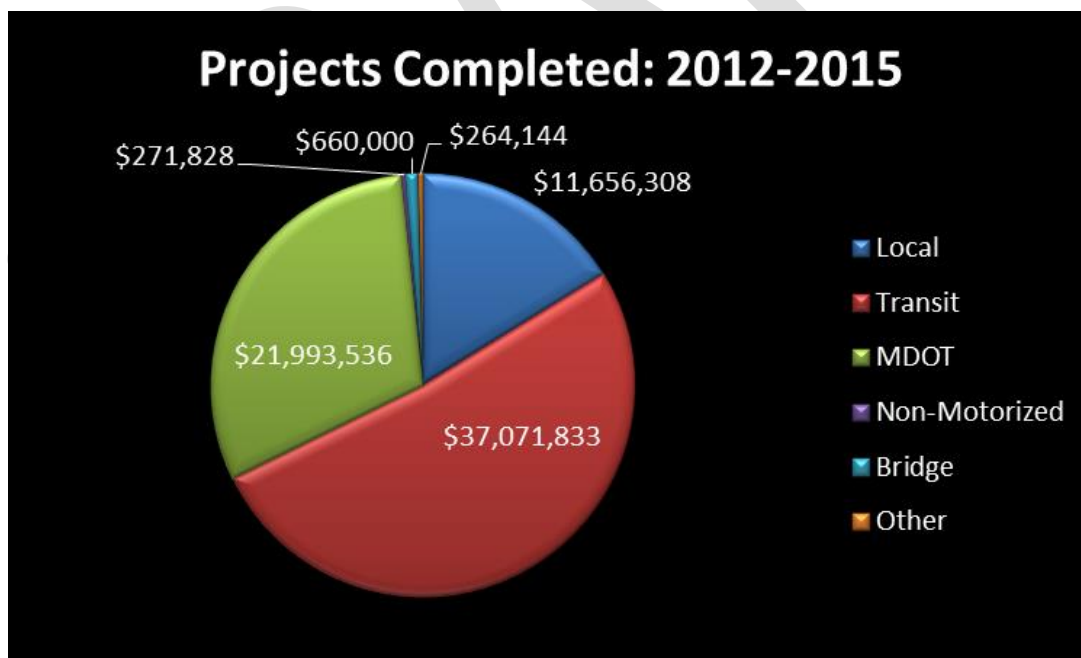


Figure 10: Past Projects Completed Funding



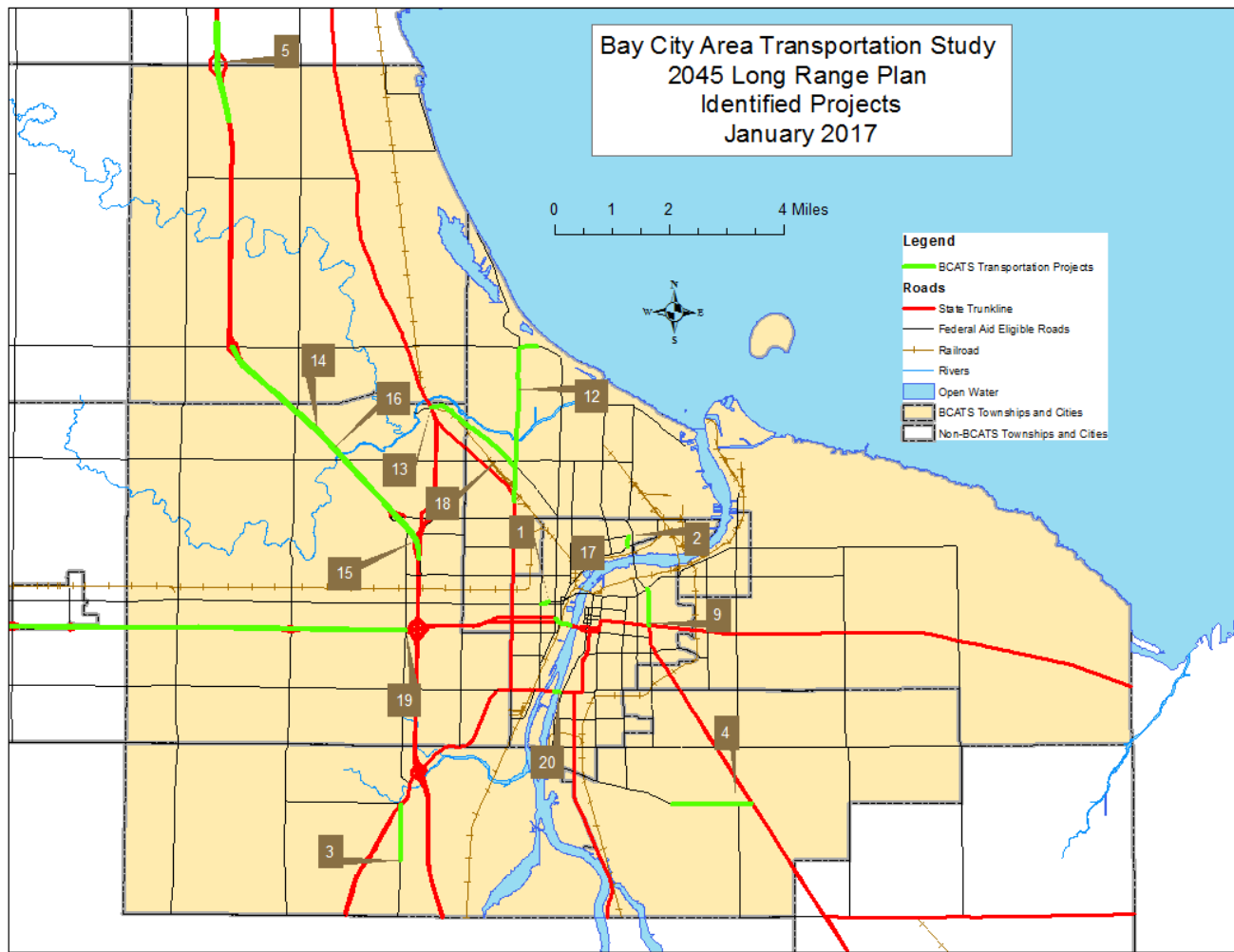
Fiscal Year	Number of Projects	Total Cost
FY 2012	15	\$ 18,104,188
FY 2013	21	\$ 17,977,276
FY 2014	17	\$ 13,808,729
FY 2015	18	\$ 22,027,456
Total	71	\$ 71,917,649

Table 14: 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.



Map 13: 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
Outreach
Visualization Techniques
Environmental Justice
Development & Analysis
Summary

DRAFT



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.

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.

Process for Changes to the Participation Plan for Bay City Area Transportation Study

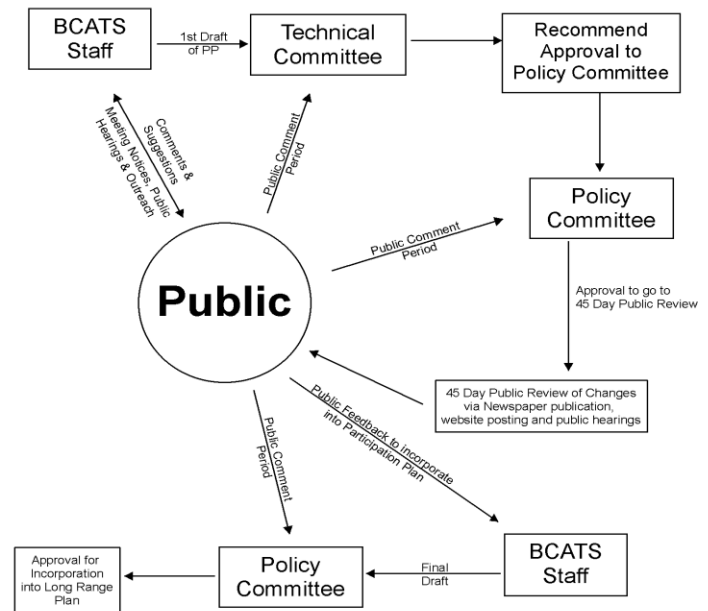


Figure 11: Public Participation Flow Chart 11

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/or 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.

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 a number of other federal programs. However, a state or locality may adopt a higher threshold for low-income, as long as 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



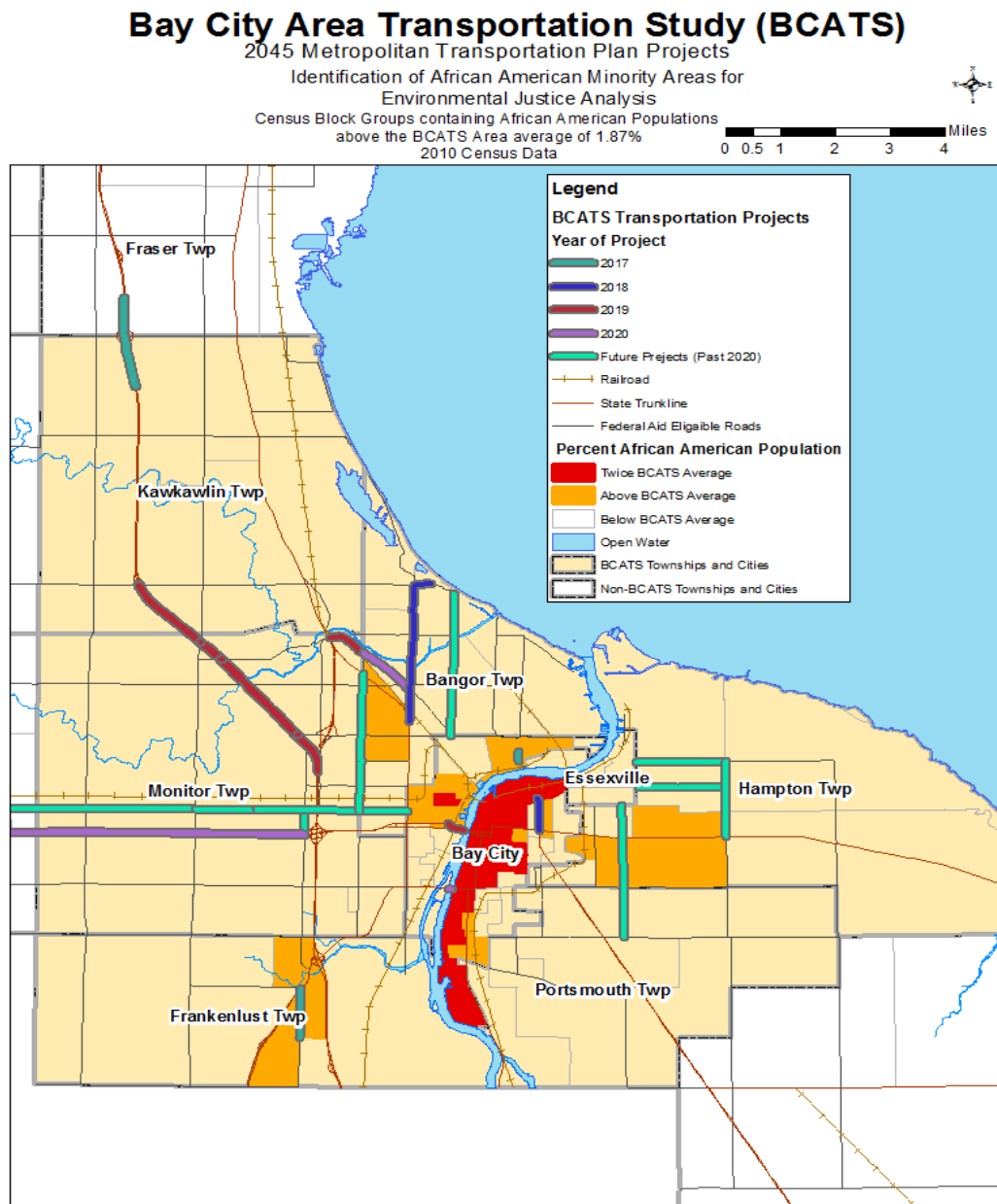
within or adjacent to African American minority areas, 16 projects are located within or adjacent to Asian minority areas, 18 projects are within or adjacent to Native American minority areas, and 6 projects are within or adjacent to Hispanic minority areas. In addition, 9 of the 31 projects are within 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 14: Environmental Justice Maps African American Population



Bay City Area Transportation Study (BCATS)

2045 Metropolitan Transportation Plan Projects

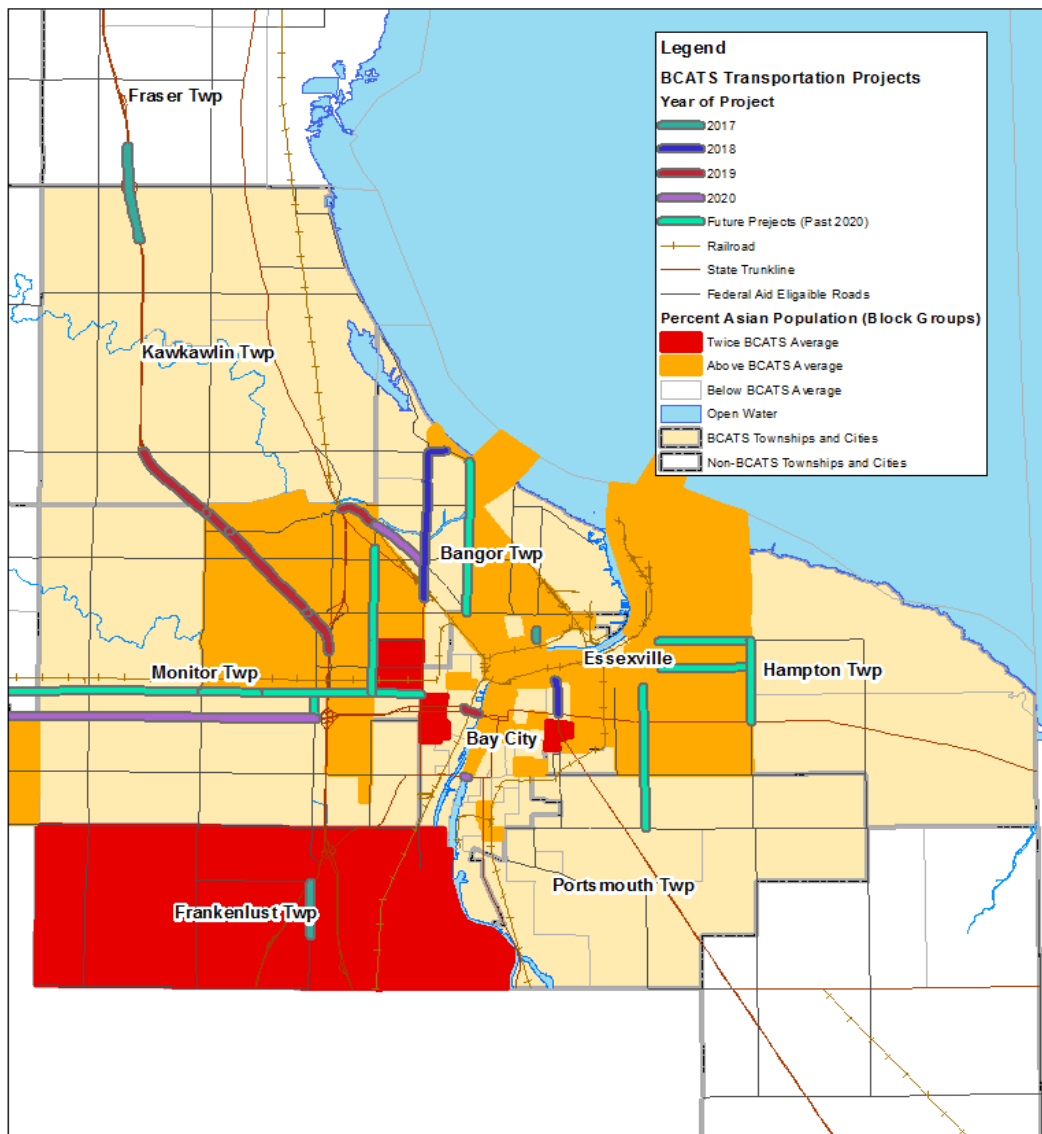
Identification of Asian American Minority Areas for

Environmental Justice Analysis

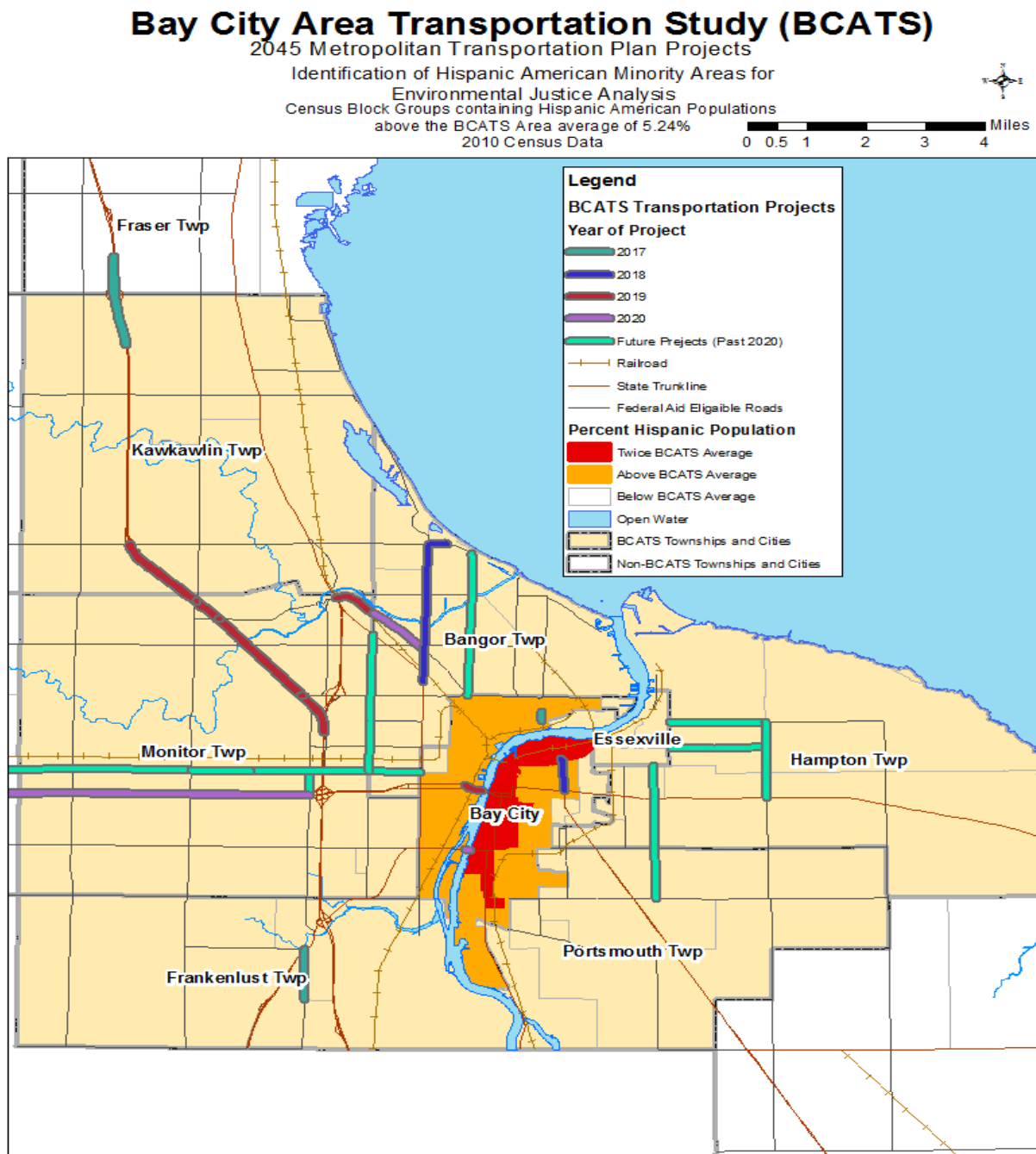
Census Block Groups containing Asian American Populations
above the BCATS Area average of 0.59%
2010 Census Data



0 0.5 1 2 3 4 Miles



Map 15: Environmental Justice Maps Asian American Population



Map 16: Environmental Justice Maps Hispanic American Population



Bay City Area Transportation Study (BCATS)

2045 Metropolitan Transportation Plan Projects

Identification of Native American Minority Areas for

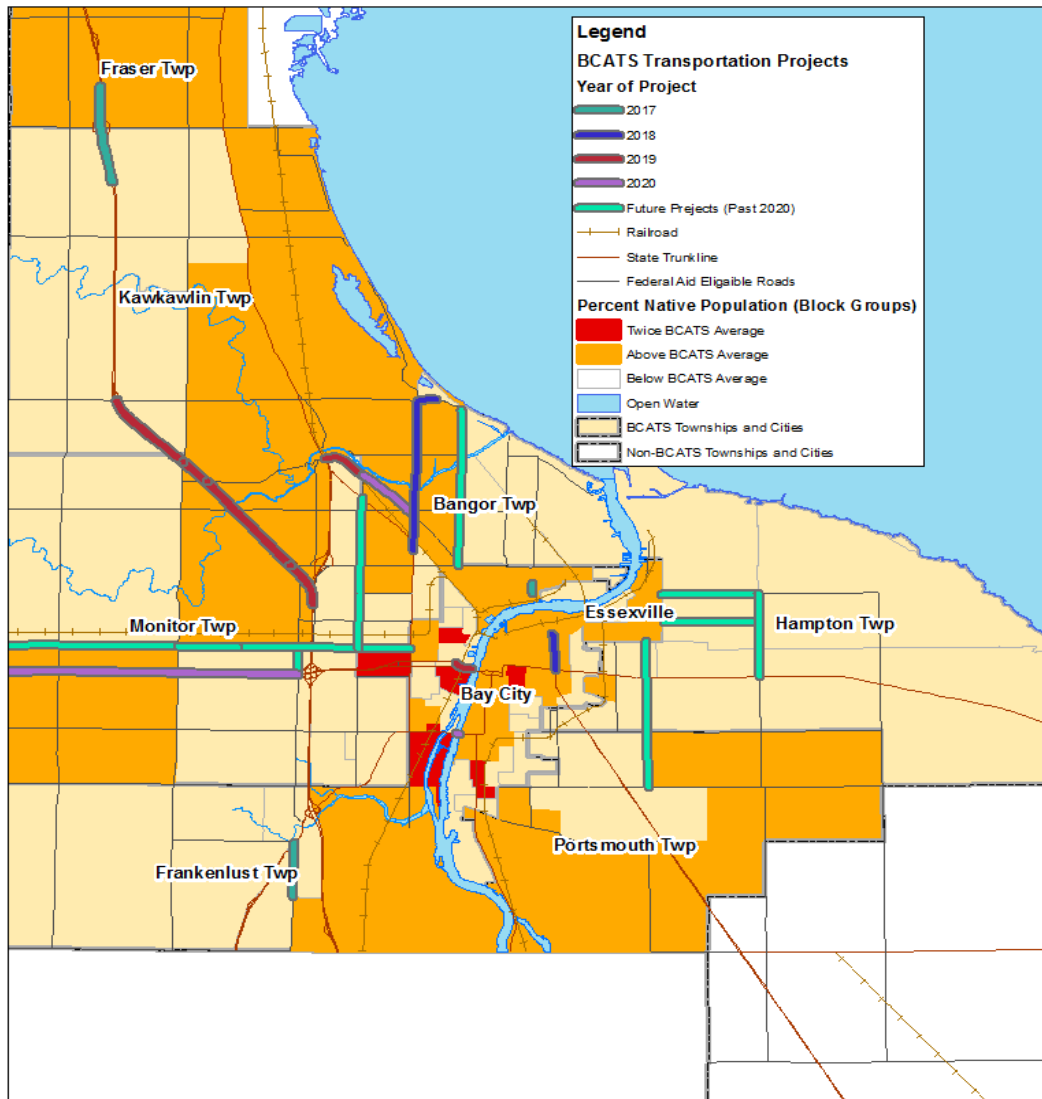
Environmental Justice Analysis

Census Block Groups containing Native American Populations

above the BCATS Area average of 0.52%

2010 Census Data

0 0.5 1 2 3 4 Miles



Map 17: Environmental Justice Maps Native American Population



Bay City Area Transportation Study (BCATS)

2045 Metropolitan Transportation Plan Projects

Identification of Total Minority Areas for

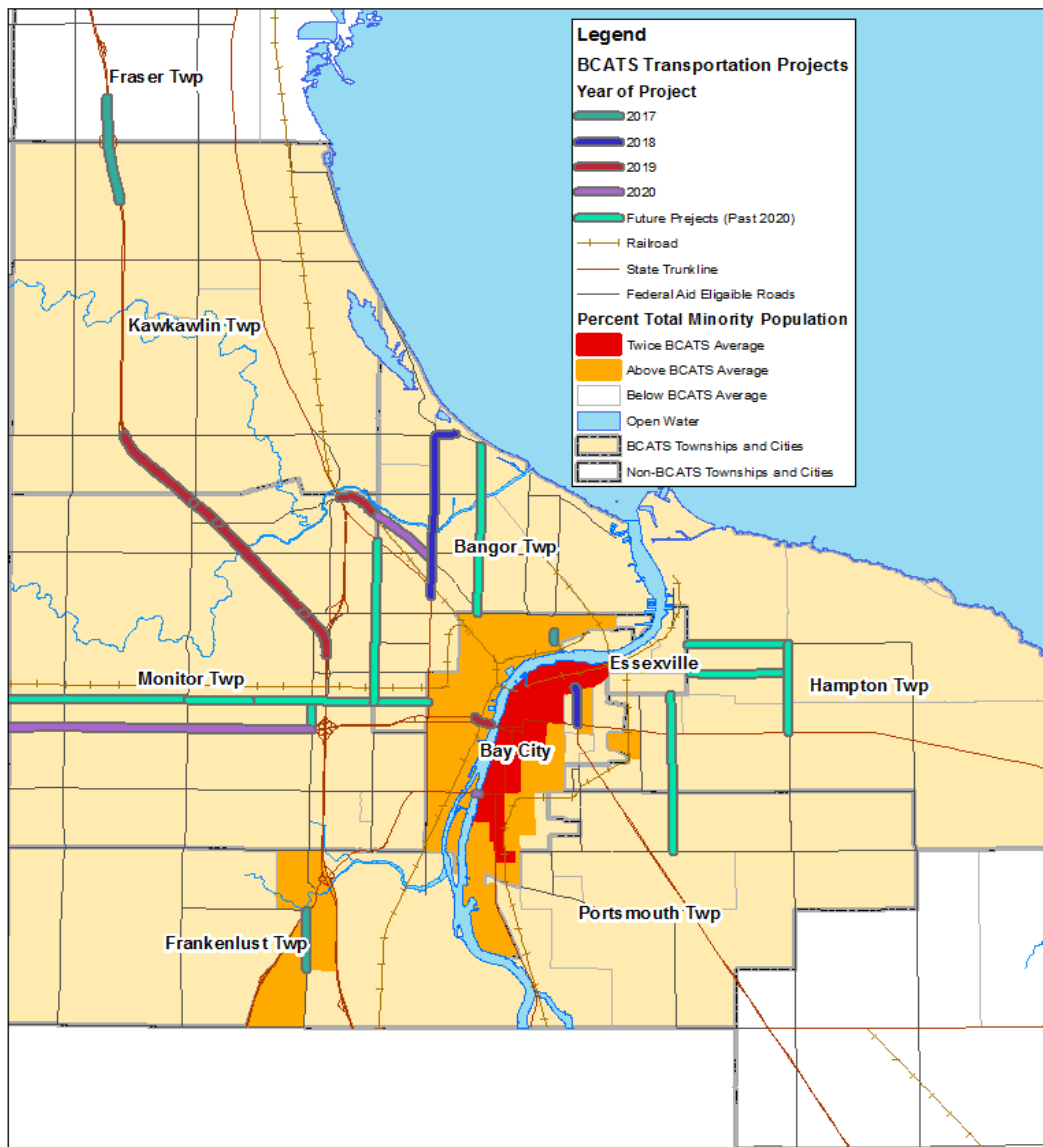
Environmental Justice Analysis

Census Block Groups containing Total Minority Populations

above the BCATS Area average of 9.85%

2010 Census Data

0 0.5 1 2 3 4 Miles



Map 18: Environmental Justice Maps Total Minority Population



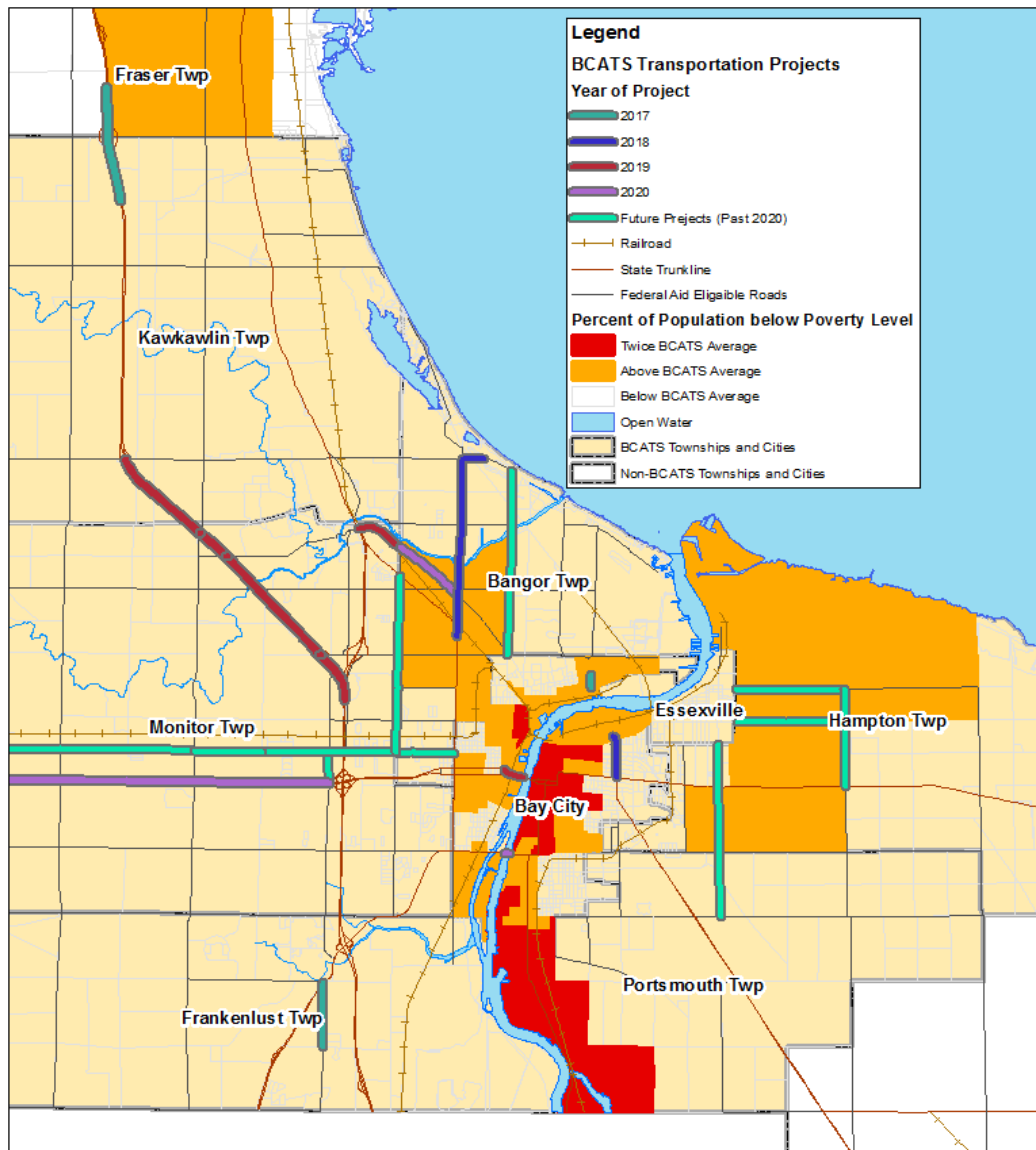
Bay City Area Transportation Study (BCATS)

2045 Metropolitan Transportation Plan Projects

Identification of Low Income Population Areas for
Environmental Justice Analysis
Census Block Groups containing Low Income Populations
above the BCATS Area average of 10.20%
2006-2010 American Community Survey Data



0 0.5 1 2 3 4 Miles



Map 19: 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 15: 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 was 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 is adopted. This chapter is designed to discuss those outreach and consultation efforts and detail what response or action was taken in regard to 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 conversations 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 Supervisor 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 Moulane, 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. 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 January 20, 2017. 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 February 7, 2017 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

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](#)

Public Notice and Comment Solicitation

Public Notice Letter

- Contact List
- Bay City Times Article, Web addition 9 May, 2012
- Bay City Times Article, Print addition 10 May, 2012
- Public Open House Sign-in Sheet
- Comments received
- Bay County Executive Newsletter
- FTA Comments
- FHWA Comments
- FHWA Approval Letter

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](#)
- [Bay Region Non-Motorized Plan 2010](#)
- [US Codes- TITLE 23 - HIGHWAYS CHAPTER 1 - FEDERAL-AID HIGHWAYS](#)



Data

- 2010 Census Data
- MDOT Road Layer
- MDOT Travel Demand Model
- BCATS Project Layers
- Bay County Geo-Database
- Michigan Center for Shared Solutions
- Bay County Recreation Department