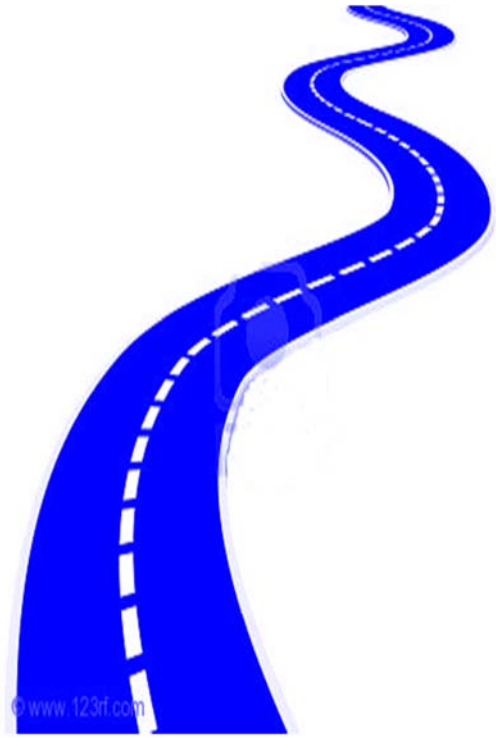

2040

Metropolitan

Transportation Plan

for the

Battle Creek Area

Transportation Study

November, 2016

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ACKNOWLEDGMENTS

This document partially fulfills the Federal requirements for the development of a twenty-year long range Transportation Plan by the Metropolitan Planning Organization (MPO), in this case the Battle Creek Area Transportation Study (BCATS). This Plan was prepared under work activity 2.0428 of the Unified Work Program of BCATS.

The contents of this report reflect the analysis, findings and recommendations of the BCATS planning process and do not necessarily represent programs or projects that have been approved for final funding and implementation by the Michigan Department of Transportation (MDOT), the Federal Highway Administration (FHWA), the Federal Transit Administration (FTA), or any local road or transit agency. The contents of this report do not necessarily reflect the official views or polity of the U.S. Department of Transportation. This document does not constitute a standard, specification, or regulation. Final funding and implementation approvals are carried out through the Transportation Improvement Program process.

This Plan and document were financed by the following means: through grants from the FHWA and FTA; with funds provided by the MDOT (for its staff time); and locally with matching funds provided by the City of Battle Creek, the Calhoun County Road Department, and the City of Springfield.

The BCATS 2040 Metropolitan Transportation Plan was formally approved by the BCATS' Policy Committee on November 30, 2016.

Battle Creek Area Transportation Study

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Statement of Vision

2040 Metropolitan Transportation Plan

"The 2040 Transportation Plan for the Battle Creek Area Transportation Study is a vision of the area's transportation system through the year 2040. The transportation improvements in the first four years (2017-2020) of the Plan are considered firm commitments by the implementing agencies. This means that the improvements in the first four years will be completed unless unforeseen circumstances prevent completion. The remaining years of the Plan are a vision of how the transportation system may develop based on the existing master and zoning plans of the cities and townships in the Battle Creek Area Transportation Study area, transit development programs, and the current projections of available revenues. The transportation improvements in the later years (2021-2040) represent current priorities for the future. The transportation plan is updated every four to five years and the priorities for the later years can and will change as conditions warrant."

BATTLE CREEK AREA TRANSPORTATION STUDY

2040 METROPOLITAN TRANSPORTATION PLAN

November 2016

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BCATS

Glossary of Transportation Planning Terms

3-C AGENCY - The local agency or group responsible for the conduct of the Continuing, Cooperative, Comprehensive transportation planning process.

AGRICULTURE/MINING (AG/MNG) - An employment category comprised of workplaces related primarily to agriculture (including agricultural services such as veterinarian and landscaping services), forestry, fishing, and mining (including oil and gas extraction).

ALL-OR-NOTHING ASSIGNMENT - The process of allocating the total number of trips between each pair of traffic analysis zones (TAZ) to the path or route with the minimum traveltime.

ANALYSIS AREA - Any geographic area such as a TAZ or group of TAZs combined for the purpose of making an analysis.

ANNUAL AVERAGE DAILY TRAFFIC (AADT) - The total number of vehicles passing a given location on a roadway over the course of one year, divided by 365 (days in the year). Requires permanent traffic recorder to measure annual total.

ARTERIAL - Class of street serving major movement of traffic not served by freeways.

ASSIGNMENT - See traffic assignment.

ATTRACTION - The pull or attracting power of a traffic analysis zone. For non-home based trips, attractions in a TAZ can be considered synonymous with trip destinations in that TAZ.

AVERAGE DAILY TRAFFIC (ADT) - The average number of vehicles passing a specified point during a 24-hour period, calculated from an approximation of AADT based on a limited number of 24-hour counts, adjusted for known variation in levels of travel by month of year and day of week.

AVERAGE VEHICLES/DWELLING UNIT - A socio-economic variable input to determining trip generation. A "surrogate" variable for household income, which relates directly to the number of vehicles available and consequently to the number of trips per day by household members.

BASE YEAR - The year selected to which the major portion of data is related.

BCATS - Battle Creek Area Transportation Study

BLOCKS - The smallest Census Geographic area used as basic tabulation units in urbanized areas with populations of 10,000 or more.

CALIBRATION - The procedure used to adjust travel models to simulate base year travel.

CAPACITY RESTRAINT - The process by which the assigned volume on a link is compared with the practical capacity of that link and the speed of the link adjusted to reflect the relationship between speed, volume, and capacity. The procedure is iterative until a realistic balance is achieved.

CAPACITY - The maximum number of vehicles that can pass over a given section of a lane or roadway in one direction (or in both directions for a two-lane or three-lane highway) during a given time period under prevailing roadway and traffic conditions. It is the maximum rate of flow that has a reasonable expectation of occurring. The terms "capacity" and "possible capacity" are synonymous. In the absence of a time modifier, capacity is an hourly volume. The capacity would not normally be exceeded without changing one or more of the conditions that prevail. In expressing capacity, it is essential to state the prevailing roadway and traffic condition under which the capacity is applicable. Refer to the revised edition of the "Highway Capacity Manual" for more detail.

CBC - City of Battle Creek

CCRD - Calhoun County Road Department, a department under the governing body of Calhoun County, Michigan

CENSUS TRACT - Small areas into which large cities and adjacent areas are divided for the purpose of providing comparable small area population and housing census tabulations.

CENSUS TRANSPORTATION PLANNING PACKAGE (CTPP) - Results of appropriate data items from the 1990 Census tabulated at the TAZ level by the Census Bureau for transportation planning applications.

CENTRAL BUSINESS DISTRICT (CBD) - Usually the downtown retail trade area of a city, or generally an area of very high land valuation, traffic flow, and concentration of retail business offices, theaters, hotels, and service businesses.

CENTROID - An assumed point in a TAZ that represents the origin or destination of all trips to or from the TAZ. Generally, it is the center of trip ends rather than a geometrical center of the zonal area.

CORDON LINE - An imaginary line enclosing a study area, along which external interviews with motorists may be conducted for input to the modeling process.

CORRELATION - A mutual or reciprocal relation between variables.

CORRIDOR - A group of linear transportation facilities established by common characteristics, such as proximity, direction, or functional classification.

COUNT - A volume counted on the street, which may be used for comparison with the present traffic volume assigned to the corresponding link. The count may be directional or total two-way, peak hour - morning and/or afternoon - and/or a 24 hour value.

CTPP - Census Transportation Planning Package

CUTLINE - An imaginary line placed at a strategic location, in order to intercept all the links in an identified corridor. Traffic counts and trips assigned to the corridor are compared as a check of survey accuracy or model calibration.

DESIGN HOURLY VOLUME (DHV) - A volume determined for use in design, representing traffic expected to use a road.

DESTINATION - The TAZ in which a trip terminates.

DISTRIBUTION - The process by which the movement of trips between TAZs is estimated. The distribution may be measured or be estimated by a growth factor process, or be a synthetic model.

DRIVING TIME - The time to traverse the distance between TAZs, not including terminal time at each end of the trip.

DWELLING UNIT - A room or group of rooms occupied or intended for occupation as separate living quarters by persons or a group of persons. Includes houses, flats, apartments, or other places thought of as homes. Occasionally a dwelling unit may be located in a warehouse, office building, trailer, on the grounds of another "house" , or in other unusual places.

EXPRESSWAY - A divided arterial highway for through traffic with full or partial control of access and generally with grade separations at intersections.

FACILITY - A specific road, road segment, route, or route segment.

FEDERAL-AID URBAN BOUNDARY - The boundaries of the area which encompass the entire urban place as designated by the U.S. Bureau of Census plus that adjacent area as agreed upon by local officials in cooperation with the State.

FHWA - Federal Highway Administration

FISCAL YEAR (FY) - For Federal and State of Michigan agencies, and BCATS, the time period beginning October 1 and ending September 30 of the subsequent calendar year. Fiscal years are designated by the calendar year in which they end.

FORECAST ZONE - A subdivision of the study area used for purposes of forecasting trip ends and perhaps for trip distribution.

FORECASTING - The process of determining the future values of land use, socio-economic, and trip making variables within the study area.

FUNCTIONAL CLASSIFICATION - An identification and categorization of segments of the street and highway system according to the character of service they provide.

GOVERNMENT (GOVT) - An employment category comprised of, for this study, workplaces related primarily to public health/social services, and public administration, including public safety personnel.

GRAVITY MODEL - A mathematical model of trip distribution based on the premise that trips produced in any given area will distribute themselves in accordance with the accessibility of other areas and the opportunities they offer.

GRIDLINE - An imaginary line, extending across the study area, splitting the area into 2 parts. Unlike a screenline, the location need not follow a natural barrier. Checks of traffic counts and trips assigned may be made in addition to a check of survey accuracy or model calibration.

GROWTH FACTOR - A ratio of future trip ends divided by present trip ends.

HOME-BASED TRIP - A trip with one end at the residence.

LABOR FORCE - The number of persons residing in a designated area assumed to be employable and actively seeking work.

LEVEL OF SERVICE (LOS) - The term used to indicate the quality of service provided by a facility under a given set of operating conditions. Refer to the revised edition of the "Highway Capacity Manual" for more detail.

LINK - In traffic assignment, a section of the highway network defined by a node at each end. A link may be one-way or two-way.

LINK LOAD - The assigned volume on a link.

LOCAL STREET - A street intended only to provide access to abutting properties. In traffic assignment, any link having a centroid as one node.

LONG RANGE TRANSPORTATION PLAN (LRTP)/METROPOLITAN TRANSPORTATION PLAN (MTP) - Documentation of transportation facilities/improvements that are projected for the next 20 years.

LRP - Long Range Plan

MAJOR STREET OR HIGHWAY - An arterial highway primarily for traffic movement and secondarily for providing direct access to abutting properties, with intersections at grade, and with traffic control and geometric design features used to expedite safe traffic movement.

MANUFACTURING (MANUF) - A category of employment which includes establishments engaged in the mechanical or chemical transformation of substances into new products. These establishments are usually described as plants, factories, and mills. Production is usually carried on for the wholesale market, inter-plant transfer, or for industrial purposes. Seldom is there direct sale to the domestic consumer. For this study, manufacturing includes construction, direct manufacturing, transportation, communication, and public utility operations.

MDOT - Michigan Department of Transportation

METROPOLITAN PLANNING ORGANIZATION (MPO) - The organization designated by the Governor responsible, together with the State, for comprehensive transportation planning according to 23 U.S.C. 134, 23 U.S.C. 104(f)(3), and 49 U.S.C. 1602(a)(2) and (c)(a)1, 49 U.S.C. 1603(a), and 49 U.S.C. 1064(g)(1) and (1). This organization shall be the forum for cooperative decisionmaking by principal elected officials of general local government.

MICHIGAN TRANSPORTATION ECONOMIC DEVELOPMENT FUND (TEDF) - Special fund of transportation monies for projects promoting economic development. There are several categories of funds available, all with specific requirements and restrictions. Administered at the MDOT, calls for projects not on a predetermined schedule.

MINIMUM PATH - That route of travel between two points which has the least accumulation of time, distance or other parameter to traverse. This path is found by path building programs (BUILDVN, UPATH, UROAD).

MODAL SPLIT - The term applied to the division of person trips between public and private transportation. The process of separating person trips by the mode of travel.

MODE OF TRAVEL - Means of travel such as auto driver, vehicle passenger, mass transit passenger, or walking.

MODEL - A mathematical formula that expresses the actions and interactions of the elements of a system in such a manner that the system may be evaluated under any given set of conditions: i.e. land use, economic, socio-economic, and travel characteristics.

MPO - Metropolitan Planning Organization

NETWORK - A system of links describing a transportation system for analysis.

NODE - A numbered point representing an intersection or TAZ centroid.

ORIGIN - The location of the beginning of a trip or the TAZ in which a trip begins.

PEAK HOUR - That one-hour period during which the maximum amount of travel occurs. Generally, there is a morning peak and an afternoon peak and traffic assignments may be made for each period, if desired.

PERSON TRIP - A trip made by a person using any mode for any purpose.

POPULATION - Refers to the number of persons residing in a designated area.

PRODUCTIONS - The number of home based trip ends in the TAZ of residence. For all non-home based trips, productions are synonymous with origins.

RAMP - An entrance to or exit from a freeway. In traffic assignment, a link which connects a freeway node and an arterial node.

RETAIL TRADE - The sale of merchandise for personal or household consumption. Any service or processing (as in a restaurant or delicatessen) is incidental or subordinate to the sale of goods.

RIGHT-OF-WAY - A general term denoting land, property or interest therein, usually in a strip, acquired for or devoted to transportation purposes

ROUTE - That combination of street and freeway sections connecting an origin and destination. In traffic assignment, a continuous group of links connecting centroids that normally require the minimum time to traverse.

S/E - Socio-Economic

SAMPLE - The individual occurrence that represents a set or group of occurrences, usually trips.

SCREENLINE - An imaginary line, usually along a physical barrier such as river or railroad tracks, splitting the study area into a few parts. Traffic counts and possibly interviews are conducted along this line, and the crossings are compared to those calculated from the interview data as a check of survey accuracy.

SERVICES (SRVCS) - An employment category comprised of workplaces related primarily to finance, insurance, real estate, and business, professional, and personal services.

SMPC - Southcentral Michigan Planning Council

SOUTHCENTRAL MICHIGAN PLANNING COUNCIL (SMPC) - A regional planning organization located in Portage, MI. It is responsible for transportation planning in the rural areas outside of Battle Creek and Kalamazoo in a five county area.

STANDARD METROPOLITAN STATISTICAL AREA (SMSA) - A county or a group of counties containing at least one city (or twin cities) of 50,000 or more population, plus any adjacent counties which are metropolitan in character and economically and socially integrated with the central county or counties.

STATE IMPLEMENTATION PLAN FOR AIR QUALITY (SIP) - A plan developed by the State for an air quality control region which details what has to be done to assure compliance with the air quality guidelines.

STATION - A location at the external cordon line where driver interviews are conducted.

STUDY AREA - The area delineated for the purpose of data collection by a transportation study. This area contains the central city and surroundings, which will become urbanized in 20 to 30 years and is the area for which forecasts of travel are made.

STUDY AREA BOUNDARY - The area that is expected to take on urban characteristics in the next 20 to 30 years (i.e. - by the end of the planning period).

SURVEILLANCE - Maintenance of land use, socio-economic and transportation data on an annual basis that are necessary elements in the ongoing land use/transportation planning process if comparisons and evaluations of existing conditions in relation to forecasts are to be made.

TDFM - Travel Demand Forecast Model

TEDF - Michigan Transportation Economic Development Fund

TERMINAL TIME - Time included in the total traveltime of a given trip, accumulated at either end of the trip. Terminal time typically involves pedestrian travel to and from the vehicle and parking.

TRAFFIC ANALYSIS ZONE (TAZ) - The basic analysis unit into which all socio-economic, land use, and trip generation used to determine origin and destination of travel are summarized. Their development is based on land use, human activity, natural boundaries, and compatibility with the street system.

TRAFFIC ASSIGNMENT - The process of determining route or routes of travel and allocating the TAZ-to-TAZ trips to these routes.

TRAFFIC MODEL - See Travel Demand Forecast Model

TRANSPORTATION IMPROVEMENT PROGRAM (TIP) - A staged multi-year program of planned transportation improvement projects.

TRANSPORTATION SYSTEM MANAGEMENT (TSM) - Efforts undertaken to improve the efficiency of the existing transportation system.

TRAVEL DEMAND FORECAST MODEL (TDFM) - A series of computer programs used to analyze and evaluate motor vehicle travel on a highway network. It uses various data on the location and characteristics of a population and its employment to predict travel demand, which can ultimately be used to identify highway deficiencies.

TRAVELTIME - The time required to travel between two points, including the terminal time at both ends of the trip.

TRIP - A one-direction movement which begins at the origin at the start time, ends at the destination at the arrival time, and is conducted for a specific purpose.

TRIP DISTRIBUTION - The process by which the movement of trips between TAZs is estimated. The data for each distribution may be measured or be estimated by a growth factor process, or by synthetic model.

TRIP END - Either a trip origin or a trip destination.

TRIP GENERATION - A general term describing the analysis and application of the relationships which exists between the trip-makers, the urban area, and the trip making. It relates to the number of trip ends in any part of the urban area.

TRIP PURPOSE - The reason for making a trip. Normally, one of ten possible purposes each trip may have a purpose at each end. For example, home to work.

TRIP TABLE - A table showing trips between TAZs - either directionally or total two-way. The trips may be separated by mode, by purpose, by time period, by vehicle type or other classification.

URBAN AREA - An urban place as designated by the Bureau of the Census having a population of 50,000 or more and not within any other urbanized area.

URBAN AREA BOUNDARY - The boundaries of the area that encompass the entire urban place as designated by the U.S. Bureau of Census plus that adjacent area as agreed upon by local officials in cooperation with the State.

URBAN(IZED) AREA (UA) - An urban place containing a city (or twin cities) of 50,000 or more (central city) plus the surrounding closely settled incorporated area which meets certain criteria of population size or density, as designated by the Bureau of the Census, and not within any other urbanized area. As defined by minimum population density, the urbanized area can include the central city, suburbs, and the closely settled fringe of development.

VEHICLE HOURS OF TRAVEL - Generally used as an area-wide measure. May be calculated by dividing the product of average trip length (in miles) and number of vehicle trips by average speed (in mph).

VEHICLE-MILES OF TRAVEL - Generally used as an area-wide measure. May be calculated by summing data on a link basis or by multiplying average trip length (in miles) times the total number of vehicle trips.

VHT - Vehicle Hours of Travel

VMT - Vehicle-Miles of Travel

VOLUME - The number of vehicles using a facility.

VOLUME TO CAPACITY RATIO (V/C) - A measure of the level of service on a facility.

WHOLESALE TRADE (WHLSLE) - Inclusive of businesses primarily engaged in selling merchandise to retailers, or other wholesalers. Wholesalers may sometimes act as brokers or agents, buying or selling merchandise to bring companies or person togethers.

ZONE - A portion of the study area, delineated as such for particular land use and traffic analysis purposes. There may be two types of zones used in the traffic assignment process: 1) Survey Zone - A subdivision of the study area which is used during the data collection phase of the study; and 2) Traffic Analysis Zone (TAZ) - A subdivision of the study area.

CHAPTER I

EXECUTIVE SUMMARY

The Battle Creek Area Transportation Study (BCATS), as the Metropolitan Planning Organization (MPO) for the greater Battle Creek, Michigan area, is charged by the Federal Department of Transportation (DOT) with maintaining a continuing, comprehensive, and cooperative transportation planning program. At present, this charge includes the development of a transportation plan, with a minimum horizon of 20-years, that is fiscally constrained by reasonably available revenues, and meets the conditions of air quality conformity, where applicable.

The development and content of this plan is mandated by federal legislation, starting with the "Intermodal Surface Transportation Efficiency Act" (ISTEA) of 1991, followed by the Transportation Equity Act for the 21st Century" (TEA-21) in 1998, the "Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) legislation in 2005, the Moving Ahead for Progress in the 21st Century (MAP-21) in 2012 and finally the Fixing America's Surface Transportation Act (FAST Act) in 2015. Each of these pieces of legislation had accompanying implementing regulations. The last update of the BCATS transportation plan was approved locally in June, 2011. This current update of the transportation plan, with a horizon year of 2040 was not required to meet the air quality conformity requirements of the US EPA (see Chapter XVII of the *Plan* document). The *2040 Metropolitan Transportation Plan* was approved by the BCATS Policy Committee on November 30, 2016. A copy of the approving resolution is included as the last page of this *Executive Summary*.

GOALS & OBJECTIVES

An important first step in any planning effort is the development of goals & objectives to support and to provide direction for the planning work to come. Goals & objectives reflect the values and desires of the individuals setting them. Goals & objectives are also valuable in measuring the effectiveness and success of the plans that are developed. Some of the objectives may compete or conflict with one another. This is to be expected, as the goals & objectives are broad in nature and designed to deal with many issues. It is the responsibility of the policy decision-makers to weigh the trade-offs between the goals & objectives when evaluating the plans and programs developed to address the needs of the community. It must be recognized that BCATS by itself cannot implement projects or improvements to directly satisfy the stated goals & objectives; however, BCATS provides a forum for coordinated decisions to be made cooperatively in the best interests of the greater Battle Creek area.

In developing goals & objectives for the Plan, and for BCATS in general, several existing plans and policy statements were considered as input, including: BCATS' previously adopted Goals & objectives from the 2035 Long Range Transportation Plan, Michigan Department of Transportation goals for the MI Transportation Plan (see chapter IX), State of Michigan Strategic Highway Safety Plan for 2009-2012, and FHWA's MAP-21/FAST Act rules and regulations which could be utilized during Plan development.

MAP-21/FAST Act requires transportation plans which involve all levels of government and all surface transportation modes. The intent of MAP-21/FAST ACT is to improve transportation and provide for consideration of projects and strategies that:

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

The MPO plans are coordinated with the state plans (as noted above) and the statewide planning process. The following goals & objectives were reaffirmed by the BCATS Policy Committee as part of the plan update process to guide this minor update of the *2035 Transportation Plan* to a horizon year of 2040. A complete representation of the goals & objectives for the *Plan* is included in Chapter III of the full *2040 Metropolitan Transportation Plan* document.

GOAL 1: SAFETY

To minimize the loss of life, injuries, and property damage resulting from travel on all modes within the BCATS area

GOAL 2: ACCESSIBILITY

To provide all travelers in the community with reasonable access to important destinations such as: residence, employment, recreation, community facilities and commercial centers

GOAL 3: PRESERVATION

To preserve the investment in the area's transportation system

GOAL 4: EFFICIENCY

To achieve maximum efficiency, utilization, and performance from the transportation system

GOAL 5: FINANCIAL

To minimize the financial costs of the transportation system to travelers and the community as a whole

GOAL 6: COMPREHENSIVE PLANNING

To coordinate the planning and development of transportation facilities within the metropolitan area and in conjunction with countywide and statewide planning efforts

GOAL 7: PUBLIC INVOLVEMENT

To provide for public involvement in the planning and development of transportation facilities and services

GOAL 8: ENVIRONMENTAL IMPACTS

To avoid disrupting social and economic life or creating a less attractive or less healthy living environment for Battle Creek area residents due to unintended harmful effects of transportation on the immediate and global environment

GOAL 9: COMMUNITY IMPACT

To avoid and reduce conflicts between transportation facilities and land use

PUBLIC PARTICIPATION

MAP-21/FAST Act legislation continued the requirements of SAFETEA-LU relative to the public participation process for its predecessor legislation relative to the participation of the public and other interested parties in the transportation planning process. The metropolitan transportation planning regulations originating under SAFETEA-LU specify that:

> *"The MPO shall develop and use a documented participation plan that defines a process for providing citizens, affected public agencies, representatives of public transportation employees, freight shippers, providers of freight transportation services, private providers of transportation, representatives of users of pedestrian walkways and bicycle transportation facilities, representatives of the disabled, and other interested parties with reasonable opportunities to be involved in the metropolitan transportation planning process."*

To this end, BCATS developed the required "Participation Plan", which was approved by the BCATS Policy Committee on December 20, 2006. That original participation plan was updated and approved by the BCATS Policy Committee in July, 2014. A listing of interested parties included in the notification process is included in the full *2040 Metropolitan Transportation Plan* document, Chapter IV - Public Participation.

BCATS provided updates relative to plan development throughout the process, at its regular Committee meetings, online, with newsletters/flyers distributed by e-mail and regular mail and also made available at public facilities across the area, and

with a November 10, 2016 public notice in the *Battle Creek Enquirer*. Copies of the newsletter/flyers associated with the plan development, and the public notice are included in the full *2040 Metropolitan Transportation Plan* document, Chapter IV - Public Participation.

CONSULTATION

A requirement for the development of long range plans, since the implementing regulations of SAFETEA-LU back in 2005, is the aspect of "Consultation" with federal, state, and local entities that are responsible for the following:

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

The goal of this process is to eliminate or minimize conflicts with other agencies' plans and programs that impact transportation, or for which transportation decisions may impact them. A complete listing of contact agencies and organizations in included in the full *2040 Metropolitan Transportation Plan* document in Chapter V - Consultation.

BCATS received comments from some agencies when an initial contact letter was sent out in January, 2007 as part of the *2030 Transportation Plan* consultation process. The comments/issues generated by the 2007 letter that were still relevant were considered in this update of the 2035 plan to a 2040 horizon. The consultation mailing list received the same newsletter information about this plan update process as those on the public participation list. BCATS did not receive any new comments relative to the 2040 Plan update from those on the consultation list. This *Executive Summary*, as well as the full *2040 Metropolitan Transportation Plan* document are available on the BCATS website for consultation at any time.

INTERMODAL CONSIDERATIONS

Three chapters in the *2040 Metropolitan Transportation Plan* are devoted to the consideration of modes other than highways which are utilized for the movement of people and goods in the BCATS area. The modes reviewed included: aviation, rail, trucking, pedestrian, non-motorized, transit, taxicab, intercity bus, and ride-sharing. Transit provided information for the inclusion of transit projects in the overall Plan project listing. Ongoing work done in the planning & implementation of non-motorized projects by the local agencies is supported by BCATS within programming of its own long range transportation plan.

COORDINATION WITH THE STATE LONG RANGE PLAN & LONG RANGE PLANNING

Federal regulations require that BCATS' Plan coordinate with statewide long range plans required of the state. In July 2016, the Michigan Department of Transportation (MDOT) updated its own long range transportation plan, called the *MI Transportation Plan: Moving Michigan Forward - 2040 State Long-Range Transportation Plan*. The plan sets forth four goals that reflect the same focus as the BCATS Plan goals for the transportation system. Those goals are:

1. System Improvement: Modernize and enhance the transportation system to improve mobility and accessibility.
2. Efficient and Effective Operations: Improve the efficiency and effectiveness of the transportation system and transportation services and expand MDOT's coordination and collaboration with partners.
3. Safety and Security: Continue to improve transportation safety and ensure the security of the transportation system.
4. Stewardship: Preserve transportation system investments, protect the environment, and utilize public resources in a responsible manner.

MDOT also has updated its State Highway Safety Plan (SHSP), with the most current edition being the *State of Michigan Strategic Highway Safety Plan - 2013-2016.* The current Michigan Governor, Rick Snyder, has issued an energy policy statement that identifies actions and policies in regard to Michigan's energy future. The focus areas are affordability, adaptability, reliability, and protecting the environment. BCATS has taken these state plans and priorities into consideration in the development of the BCATS *2040 Metropolitan Transportation Plan*.

IDENTIFICATION OF RECOMMENDED PROJECTS FOR THE *2040 METROPOLITAN TRANSPORTATION PLAN*

Future capacity deficiencies on the BCATS roadway network have been identified utilizing a computerized Travel Demand Forecast Model (TDFM) maintained by MDOT. Socio-economic data (population, households, and employment) in the model base year of 2010 were used to develop a simulation of traffic volumes and conditions on the area's roadways which are compared to known volumes and conditions in the same base year. Once the two sets of information are in relative agreement ("calibrated"), the projection of future socio-economic data allows for future traffic volumes to be approximated on the roadway network and for locations of future congestion (too many vehicles for the road design) to be identified. There were no significant future traffic capacity issues identified for the BCATS area using the TDFM.

Safety-related concerns are routinely identified through periodic review of crash data and discussions with staff of the area road agencies & Battle Creek Transit. Typical safety-related projects are largely intersection related, but may also deal with signal progression & other operational issues along corridors, and usually are implemented as short-term operating improvements not specified in long-range plans. One prominent safety-related concern in the BCATS area is the high level of vehicle/deer crashes; this *Plan* includes a discussion of that topic and identification of specific road segments where the levels are significant, although there are no available mitigation techniques for this type of crash.

Pavement rehabilitation projects are listed as "preservation" on the project list for specific improvements which would not be considered "expansion" in nature. The road agencies use pavement management assessment to develop schedules for pavement rehabilitation.

Public transit projects are listed in the project list and represent on-going funding for transit operations, security projects, vehicle replacement, and other types of capital improvements.

OPERATIONAL AND MANAGEMENT STRATEGIES

Federal requirements dictate that BCATS include "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." To this end, BCATS has identified a number of transportation strategies that it participates in and/or promotes which will achieve these objectives. These strategies include: asset management, capital preventative maintenance, general maintenance, safety projects, intelligent transportation system activities, access management, pedestrian and non-motorized improvement, and optimization of public transit services.

FINANCIAL PLAN

The federal regulations require an extensive review of the financial feasibility of the improvements included in the long range plan. The BCATS *2040 Metropolitan Transportation Plan* must be financially constrained, which means that there must be sufficient and reasonably available funds to carry-out the projects recommended in the *Plan*. Adequate funding necessary to maintain the existing transportation system must also be shown to exist so that the existing system is preserved. The regulations also require that all revenues and costs be inflated to "year of expenditure dollars" to most accurately reflect the validity of the financial constraint calculated. BCATS has conducted a lengthy process to determine costs and revenues in future dollars. Costs for the operations and maintenance of the of the existing system have been developed and projected over the life of the *Plan*. Based on all of this analysis, tables were developed which summarize available revenue and available costs over the life of the *Plan*. For detail about the development of any figures in the following tables, please see Chapter XIV - Financial Plan of the full *2040 Metropolitan Transportation Plan* document.

Summary of Available Revenues for the BCATS *2040 Metropolitan Transportation Plan*

Projected Capital Revenues	Total $
Federal Transportation Funds for Construction of Local Roads	50,199,000
Federal & State Funding for State Controlled Roadways in BCATS area	153,771,000
Federal/State/Local Transit Funding (operating and capital)	120,292,000
State funding for Operations/Maintenance of State Controlled Facilities	160,800,000
State & Local Funding for Construction and Operations/Maintenance of Local Roads	273,197,000
TOTAL	758,259,000

Summary of *2040 Metropolitan Transportation Plan*
Operations/Maintenance & Capital Expenditures 2017-2040
(Individual Projects are described in a detailed listing in Chapter XVI)

Operations/Maintenance (O/M) Expenditures for Local & State Roads	Total $
Estimated Expenditures for O/M of Local Roads	**173,557,000**
Estimated Expenditures for O/M of State Roads	**160,800,000**
Planned Capital Expenditures	
Local Road Projects	
Improve/Expand (0 projects)	0
Preservation (17 projects - some multi-year)	33,389,026
Traffic Safety/Operations & Air Quality Improvements (9 projects)	1,891,284
Non-motorized Specific (0 projects)	0
Total	**35,280,310**
Transit Projects	
Preservation (operating expense projects) (2 multi-year projects)	115,526,976
All Transit Capital (vehicle replacement/addition or facility) (50 projects)	25,335,135
Security (annual) (1 project each year)	383,280
Total	**141,245,391**
State Projects	
Preservation (5 projects - some multi-year)	132,258,920
Traffic Safety/Operations & Air Quality Improvements (4 projects)	783,264
Bridges (9 projects)	37,281,000
Total	**170,323,184**
TOTAL CAPITAL EXPENDITURES	**346,848,885**
Total Expenditures	**681,205,885**

The total expenditures identified in the BCATS *2040 Metropolitan Transportation Plan* are within the total federal, state, and local revenues estimated for the *2040 Metropolitan Transportation Plan*. As shown in the following table, there is projected to be adequate revenue available for capital expenditures as well as for operations and maintenance expenditures for the transportation system. Therefore, the BCATS *2040 Metropolitan Transportation Plan* is financially constrained.

Demonstration of Financial Constraint for the
***2040 Metropolitan Transportation Plan* of the Battle Creek Area Transportation Study**

Total federal, state, and local revenues estimated to be available for road related construction, transit capital/operating and road related operations and maintenance of the major street/primary road system and state roadway system within the BCATS area	$758,259,000
Expenditures for Operations/Maintenance of Local & State Roads	($334,357,000)
Expenditures for Local Road Improvement Projects	($35,280,310)
Expenditures for Transit Improvement Projects	($141,245,391)
Expenditures for State Improvement Projects	($171,323,184)
REMAINING BALANCE	**$77,053,115**

ENVIRONMENTAL MITIGATION

Federal regulations require that BCATS include in its long range plan "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 goal of this process is to eliminate or minimize environmental impacts from the planned projects in the MPO's transportation plan. This applies primarily to the "improve and expand" type projects. However, addressing this issue in the transportation plan is not intended to be project specific. The owners of any future project are still required to meet all of the necessary requirements of the National Environmental Policy Act (NEPA) process.

In September, 2007, BCATS' Policy Committee adopted a set of guidelines for "Considering Environmental Issues in the Transportation Planning Process" for use by BCATS and the area's transportation agencies. The guidelines include areas of concern specifically identified by some of the agencies contacted under the "Consultation" efforts discussed above. These areas of concern include: farmlands, wetlands, drainage, flood plains, threatened and endangered species, impaired streams and other water bodies, air quality, and noise.

BCATS review of these issues led to the identification of environmental and cultural factors in the BCATS area which were reviewed relative to future transportation projects. The projects which have a specific location identified for them were assessed as to whether they may be in an area that might impact any of eleven selected factors. "Expansion" projects involving the location of a new roadway or widening of existing roads have the greatest potential for impacting multiple resource or cultural areas. There are currently no expansion projects included in the *2040 Plan* update.

The environmental guidelines and the assessment table and project overlay maps related to this issue are located in Chapter XV - Environmental Mitigation of the full *2040 Metropolitan Transportation Plan* document.

AIR QUALITY CONFORMITY

The Clean Air Act Amendments of 1990 (CAAA) established the mandate for better coordination between air quality and transportation planning. The CAAA requires that all transportation plans and transportation investments in non-attainment and maintenance areas be subject to an air quality conformity determination. The purpose of such a determination is to demonstrate that the *Metropolitan Transportation Plan (MTP)* and *Transportation Improvement Program (TIP)* conform to the intent and purpose of the State Implementation Plan (SIP). Effective July 20, 2013 the United States Environmental Protection Agency (USEPA) revoked the 1997 8-hour 0.080 parts per million (ppm) ozone standard for the purposes of regional transportation conformity. On July 20, 2013, the USEPA also issued designations for a new 8-hour 0.075ppm ozone standard. This resulted in the Kalamazoo/Battle Creek, MI area being designated attainment under that standard at the present time.

Therefore, no air quality conformity determination needs to be made on the BCATS *MTP* or *TIP* until changes are forthcoming from the USEPA. The status of the BCATS area will be monitored relative to air quality to determine if a conformity determination will need to be made on the *MTP* before the next regular update of the *Plan*.

ENVIRONMENTAL JUSTICE

In accordance with federal guidelines on Environmental Justice (EJ) that amplify Title VI of the Civil Rights Act, attention has been placed on the need to incorporate environmental justice principles into the processes and projects of transportation planning. Therefore, it is a regular component of the BCATS' plans and TIPs to evaluate the potential of planned improvements relative to negative impacts on areas with racial minorities, Hispanic populations, and populations with income below the poverty level.

The analysis completed for this component, which is included in detail in Chapter XVIII - Environmental Justice Analysis in the full *2040 Metropolitan Transportation Plan* document, shows that there will be impacts to non-minority as well as minority and low-income populations as a result of the projects recommended in the *2040 Metropolitan Transportation Plan*. However, none of the recommended projects involve residential displacements. Other construction related project impacts, such as noise, dust, and access inconvenience will be short-lived and confined to the traditional construction season. When looking at the most directly impacted residents (those within .10 mile of the recommend improvements) there is no glaring disproportional impact to any of the identified groups as compared to the area as a whole.

RECOMMENDED *2040 METROPOLITAN TRANSPORTATION PLAN* IMPROVEMENTS

Nearly $346.9 million in "year of expenditure dollars" would be expended through implementation of the 221 improvement "projects" recommended in the *Plan*. The 44 projects at specific locations where an improvement is proposed are listed in a table,and also displayed on a map, at the end of this *Executive Summary*. The "BCATS 2040 MTP ID" project numbers correspond to the mapped locations.

For discussion and evaluation, the proposed projects were designated one or more of ten "Project Types":

1. Non-motorized
2. Expansion (new or widened roads)
3. Preservation (of pavement)
4. Security (generally for transit)
5. Safety-Related
6. Traffic Operations
7. Transit Operating
8. Transit Capital
9. Bridges
10. Air Quality

For projects of multiple "Type", the first category listed is the predominant focus of the project and the category used in tabulating numbers of projects and total project costs by category. Following the map at the end of this *Executive Summary* is a graphic breakdown by project type, by the number of projects and by the total estimated costs of projects in each category.

Other road projects not on the list of "Site-Specific Recommended Improvements",as proposed in this *Plan*, include annual general projects to address pavement preservation on both "local" (non-State) and State trunkline roadways. Specific work for the "Preserve Strategy" projects are typically identified two or three years in advance and programmed accordingly into the Transportation Improvement Program (TIP) for implementation.

Both operating and capital expenditures for public transit are listed as "projects" in this *Plan*. Battle Creek Transit's (BCT's) annual operating cost, annual State "Specialized Services Operating Assistance" funds "passed through" BCT to local social service agencies, and an annual transit security capital improvement project (required by the Federal Transit Administration), are recommended as "projects" in each *Plan* year. Other BCT capital projects over the twenty-five years of the *Plan* inlcude replacement of 82 vehicles, most for BCT but several for the local social service agencies, adding new & replacing bus passenger shelters, periodic upgrades of the electronic farebox system and the automatic vehicle locator/computer aided dispatch (AVL/CAD) system, and periodic renovation of BCT's maintenance garage & administrative offices.

Thirty "illustrative" projects are also referenced in the *2040 MTP*, as discussed in Chapter XII - Transportation Deficiencies & Alternatives, and listed at the end of that chapter, and also below. "Illustrative" projects are generally less developed, without cost estimates or likely funding, but are identified in this *Plan* as options to be further developed over the next five years for possible recommendation in the next plan, to provide alternatives for situations considered "deficient" now or into the future, and to highlight conditions to be more closely monitored. Note these "illustrative" projects have no estimated costs or years of implementation, and were not included in the financial plan and determination of fiscal constraint presented in Chapter XIV.

2040 MTP "Illustrative" Projects

A. **I-94 widening** (one additional thru lane in each direction), from Sprinkle Rd (I-94 exit 80 in Kalamazoo County) eastward across the BCATS metropolitan area to I-69 at I-94 exit 108 near Marshall.

B. **I-94 eastbound loop exit ramp to M-311** (Wheatfield/11 Mile Rd) at I-94 exit 104; reconstruct & add capacity as warranted, with appropriate safety improvements..

C. **M-311 (Wheatfield/11 Mile Rd),** from M- 96 (Michigan Ave) northward to the intersection with Wheatfield Parkway & the westbound I-94 exit & entrance ramps; improve lane delineation, with widening & added turn lanes as necessary, including the 2 thru lane bridge over I-94 (listed as a separate "illustrative" bridge project).

D. **M-96 (Michigan Ave E),** from M-311 (Wheatfield/11 Mile Rd) eastward past Firekeepers' Casino to metropolitan planning area (MPA) boundary (12 Mile Rd), and further towards Marshall as warranted. Add thru lanes & turn lanes pending nearby future commercial development & increased traffic.

E. **M-66 (southbound),** from I-94 southward to Beckley Rd; add capacity as warranted.

F. **M-294 (Main St/6.5 Mile Rd Beadle Lake Rd),** from M-96 (Columbia Ave) southward to the Main St split; widen as warranted, improve M-294/M-96 intersection with turn lanes on each approach as appropriate and traffic signal modernization.

G. **I-194/M-66 southbound Exit 2 off ramp** to M-96 (Columbia Ave); extend two-lane section at M-96 intersection northward down ramp to add capacity as warranted.

H. **M–96 (Dickman Rd & Columbia Ave) Traffic Signals,** optimize/modernize/upgrade numerous traffic signals along 12.4 miles of M-96 in Calhoun County.

I. **M-89 (Michigan Ave) @ Augusta Dr,** reconfigure geometry & traffic control signing to favor southeast-bound thru traffic on state trunkline M-89.

J. **M-89 (Michigan Ave) @ VanBuren St,** reconfigure geometry & traffic control signing to favor northwest-bound thru traffic on state trunkline M-89.

K. **M-96 (Dickman Rd W) @ Armstrong Rd.** Extend the right-turn approach lanes on westbound M-96 and on southbound Armstrong Rd, add center left-turn lane on the eastbound M-96 approach. Consider full signalization & related geometric improvements pending possible development of US Dept of Defense missile base at Fort Custer Training Center, discussed in this chapter under "Needs Related to Economic Development".

L. **Avenue A @ 20th St.** Modernize & upgrade traffic signal(s) ,including interconnection to the control/warning signals at the railroad crossing of 20th St south of Avenue A.

M. **20th St @ I-94BL (Dickman Rd).** Remove southwest-bound diagonal crossover in the southeast quadrant of this intersection to shift travel from westbound Dickman Rd to southbound 20th St to the intersection itself.

N. **I-94 Rest Area**. Reconstruction of Battle Creek Rest Area #703 on eastbound I-94,between Helmer Rd & Capital Ave, including replacement of existing building, parking lot improvements, sidewalks, ADA ramps, & associated site work.

O. **M-311 (Wheatfield/11 Mile Rd) bridge over I-94,** at I-94 exit 104. Replace functionally obsolete 2-thru lane bridge with wider bridge aligned with widened approaches suggested as part of an "illustrative" capacity project.

P. **Helmer Rd bridge over I-94,** at I-94 exit 95. Replace functionally obsolete 2-thru lane bridge with wider bridge to add non-motorized access and capacity as warranted, and consider geometric changes to improve sight lines at the bridge approaches' intersections with both I-94 exit ramps.

Q. **Comprehensive Non-Motorized Transportation Plan for BCATS Metropolitan Area**. Prepare planning document with mapped current and proposed future non-motorized transportation network.

R. **M-96 (Dickman Rd) Trail**. Rehabilitate existing shared-use asphalt path along north side of M-96 (Dickman Rd), from Evergreen Rd/American Legion Dr intersection (just north of M-96 near former location of Avenue A intersection with M-96) westward into Kalamazoo County, to Fort Custer National Cemetery, and from there extend new path along M-96 to meet the existing Kalamazoo River Valley Trail (www.krvtrail.com) near Galesburg.

S. **Battle Creek Linear Park**. Enhance Linear Park (www.bcparks.org/134/Linear-Park) west trailhead on the north side of M-96 (Dickman Rd) at Brady Rd, and improve signing along Linear Park.

T. **Stringham Rd Non-Motorized Connector**. Modify Stringham Rd from Jackson St north to M-89 (Michigan Ave) to accommodate shared-use off-road path, connecting Linear Park to M-89 (Michigan Ave W).

U. **Watkins Rd Corridor Non-Motorized Connector**. Develop new non-motorized facilities aligned along Watkins Rd corridor to connect existing non-motorized facilities on Helmer Rd & Capital Ave SW.

V. **Pennfield Township Non-Motorized Connections**. Identify & develop non-motorized facilities in Pennfield Township to connect southward to existing City of Battle Creek non-motorized facilities.

W. **Helmer Rd Non-Motorized Crossing over I-94**. Provide non-motorized access over I-94 on Helmer Rd (also part of "illustrative" bridge project to replace the "functionally obsolete" Helmer Rd bridge over I-94).

X. **Calhoun County Trailway**. Extend existing Calhoun County Trailway from terminus at Historic Bridge Park eastward ~30 miles to to meet the Falling Waters Trail near Concord in Jackson County.

Y. **Battle Creek BCycle**. Promote local bicycle sharing program (https://battlecreek.bcycle.com/).

Z. **I-94 exit 92 interchange**, @ I-94BL/M-37 (Columbia Ave W). Traffic signalization at the exit ramp intersections and geometric improvements such as minor widening for turn lanes, for possible increased traffic with potential location of a new US Dept of Defense Missile Defense Agency (MDA) Continental Interceptor Site (CIS) at the nearby Fort Custer Training Center.

AA. **I-94BL/M-37 (Columbia Ave) @ Skyline Dr**. Increased traffic from the potential MDA CIS will necessitate signal timing modifications, and, should the main CIS entrance be located westward from the intersection, significant geometric revisions.

BB. **M-96 (Dickman Rd) @ Hill Brady Rd**. Signal timing modifications for increased traffic from the potential MDA CIS.

CC. **M-96 (Dickman Rd) @ Armstrong Rd**. Add new signalization & turn lanes at M-96 (Dickman Rd)/Armstrong Rd (identified previously as a "safety-related" illustrative project) for increased traffic from the potential MDA CIS.

DD. **Hill Brady Rd-Logistics Dr @ Skyline Dr**. Revise signalization and geometry at Hill Brady Rd-Logistics Dr/Skyline Dr (to favor the typical traffic movement following Hill Brady Rd and Skyline Dr, with very limited traffic approaching the intersection westbound from Logistics Dr), for increased traffic from the potential MDA CIS.

CONCLUSION

This *Executive Summary* provides a very cursory review of the contents of the Battle Creek Area Transportation Study's *2040 Metropolitan Transportation Plan* in an effort to have a succinct summary for interested individuals and the general public at-large. The full *2040 Plan* document is a lengthy document. Specifics regarding any of the information contained in this *Executive Summary* can be found in the complete *Plan* document.

This *Executive Summary* is included at the beginning of, and as part of, the full *Plan* document. It is also available as a stand alone report. The full document is available as a pdf document online at BCATS' website at http://www.bcatsmpo.org. The document can also be obtained by contacting the BCATS staff office at 601 Avenue A, Springfield, MI 49037, 269/963-1158, or contacting BCATS by e-mail at bcats@bcatsmpo.org. A fee may be charged for a paper copy of the full document.

BCATS

Battle Creek Area Transportation Study

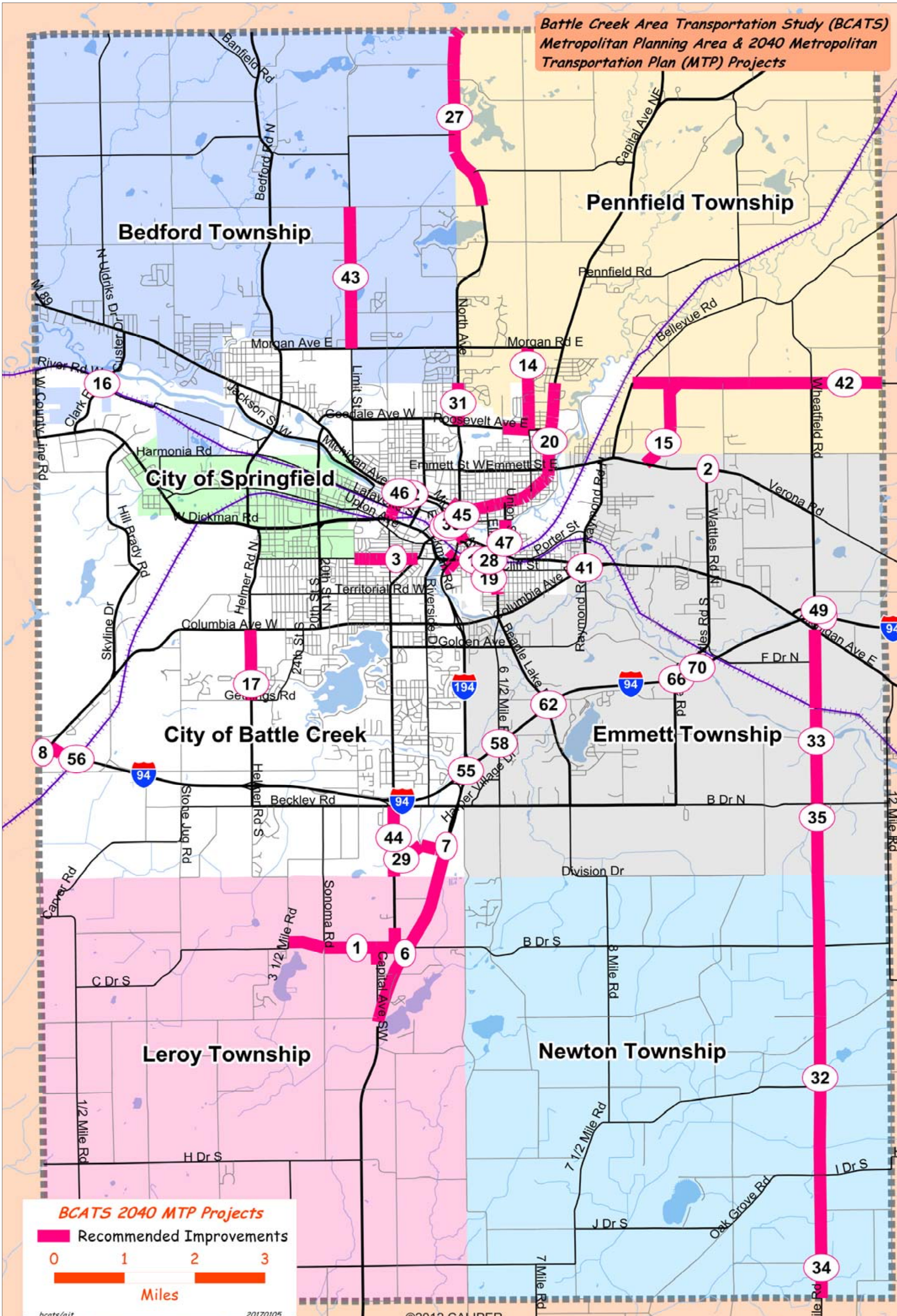
2040 Metropolitan Transportation Plan

Site-Specific Recommended Improvements

YEAR	BCATS 2040 MTP ID #	NAME	LIMITS	DESCRIPTION	COST ($)	AGENCY	PROJECT TYPE*
2017	*1*	B Dr S and Capital Ave SW	B Dr S from 3.5 Mile Rd eastward to M-66 (1.7 mi); Capital Ave SW, 0.25 mi north & south of B Dr S	Resurfacing	$ 700,000	CCRD	Preservation
2017	*2*	Intersection Geometrics Improvement - Wattles Rd (9.5 Mile Rd) @ Verona Rd	Wattles Rd @ Verona Rd intersection & approaches, in Emmett Twp	Add dedicated left turn lanes on westbound Verona Rd approach and northbound Wattles Rd approach. Intersection is a "T", with northbound Wattles Rd ending at Verona Rd.	$ 168,354	CCRD	Traffic Safety/Operations & Air Quality
2017	*3*	Goguac St, McCamly St, & Roosevelt Ave	Goguac: from Capital Ave SW westward to Carl Ave, 4750'. McCamly: from VanBuren St northward to North Ave, 620'. Roosevelt: from East Ave westward to Garrison Ave, 1996'.	Resurfacing (2" mill & overlay) with spot sidewalk & ramp replacement	$ 445,180	City of Battle Creek	Preservation
2017	*6*	M-66 - CON/1	from south of D Dr S northward to north of Glenn Cross Rd	3/4" mill & 1.5" overlay	$ 635,027	MDOT	Preservation
2017	*7*	M-66 - CON/2	from 0.10 mi north of Glenn Cross Rd to Glenn Cross Rd	add right turn lane on southbound approach to Glenn Cross Rd	$ 93,052	MDOT	Traffic Safety/Operations & Air Quality
2017	*8*	Wrong-Way Crash Reduction at Ramp Terminals (CON)	interchange ramps at I-94 exits 92 & 104, and I-194 exit 3	Improvements to reduce potential for wrong-way entry to freeway ramps	$ 31,952	MDOT	Traffic Safety/Operations
2017	*10*	Community Action (formerly Community Action Agency) Capital Assistance - Computers & Office Furniture	in Community Action central office, 175 Main St (east side of Main St just north of Dickman Rd E & railroad tracks).	Replacement of computers & furniture at 3 workstations in Community Action central office.	$ 6,226	Transit - City of Battle Creek	Transit Capital
2018	*14*	East Ave	from Roosevelt Ave northward to Morgan Rd	Resurfacing	$ 325,000	CCRD	Preservation
2018	*15*	McAllister Rd	from Verona Rd northward to N Dr N	Resurfacing	$ 335,000	CCRD	Preservation
2018	*16*	Clark Rd @ River Rd	Intersection of Clark Rd/Custer Dr N @ River Rd W, & all four approaches	installation of intersection control beacon & supports for span wire mount	$ 24,080	City of Battle Creek	Traffic Safety/Operations
2018	*17*	Helmer Rd	from Gethings Rd northward to Columbia Ave	Resurfacing with spot sidewalk & ramp replacement	$ 368,900	City of Battle Creek	Preservation & Non-Motorized
2018	*18*	Intersection Signal Modernization - Capital @ Jackson	Capital Ave @ Jackson St	Upgrade/modernize signal & interconnection to nearby signals and City's Traffic Management Center	$ 325,000	City of Battle Creek	Traffic Safety/Operations & Air Quality
2018	*19*	Main St	from Mary St southward to south city limits (~200' south of Kingman Ave), ~0.5 mi; and from M-66 (Division St) southward to Hamblin Ave, ~0.1 mi.	Resurfacing (2" mill & overlay)	$ 194,090	City of Battle Creek	Preservation
2018	*20*	M-66 (Capital Ave NE)	M-66 from Capital Ave/Division St intersection northward to Frey Dr	1.5" mill & 1.5" overlay with ADA ramps	$ 1,452,123	MDOT	Preservation
2018	*22*	Ancillary Equipment - Transit	BCT facilities, 339 W Michigan Ave, in southwest quadrant of M-89 (Michigan Ave) / Cass St intersection, and on-board vehicles	Computers and vehicle technology	$ 120,000	Transit - City of Battle Creek	Transit Capital
2019	*27*	North Ave, Pennfield Twp	from Halbert Rd northward to Calhoun County limits	Resurfacing	$ 650,000	CCRD	Preservation
2019	*28*	Elm St	from Mary St northward to Michigan Ave	Resurfacing with spot sidewalk & ramp replacement	$ 102,420	City of Battle Creek	Preservation & Non-Motorized
2019	*29*	Glenn Cross Rd	from Capital Ave eastward to M-66	Resurfacing	$ 260,580	City of Battle Creek	Preservation
2019	*30*	Intersection Signal Modernization - Capital @ Michigan	Capital Ave @ Michigan Ave	Upgrade/modernize signal & interconnection to nearby signals and City's Traffic Management Center	$ 325,000	City of Battle Creek	Traffic Safety/Operations & Air Quality
2019	*31*	North Ave, City of BC	from Roosevelt Ave northward to Coolidge Ave (city limits)	Resurfacing with spot sidewalk & ramp replacement	$ 240,000	City of Battle Creek	Preservation & Non-Motorized
2019	*32*	M-311 (11 Mile/Wheatfield Rd) - CON	from BCATS southern Metropolitan Planning Area (MPA) boundary line btwn Newton & Burlington Twps northward to I-94 BL (Michigan Ave)	Multi-course HMA overlay	$ 4,347,668	MDOT	Preservation
2019	*33*	M-311 (11 Mile/Wheatfield Rd) Bridge over Kalamazoo River - CON	1/4 mile N+S of Kalamazoo River at M-311 (11 Mile/Wheatfield Rd), just north of D Dr N, including bridge.	Construction to replace bridge & rehabilitate approaches	$ 3,407,000	MDOT	Bridges

Battle Creek Area Transportation Study
2040 Metropolitan Transportation Plan
Site-Specific Recommended Improvements

YEAR	BCATS 2040 MTP ID #	NAME	LIMITS	DESCRIPTION	COST ($)	AGENCY	PROJECT TYPE*
2019	*34*	M-311 (11 Mile/Wheatfield Rd) CON/1	from BCATS southern Metropolitan Planning Area (MPA) boundary line btwn Newton & Burlington Twps northward to B Drive S	fixed object removal - tree removal and culvert replacement	$ 522,760	MDOT	Traffic Safety/Operations
2019	*35*	M-311 (11 Mile/Wheatfield Rd) CON/2	from B Drive S northward to I-94 BL (Michigan Avenue)	fixed object removal - tree removal	$ 135,500	MDOT	Traffic Safety/Operations
2020	*41*	Intersection Signal Modernization - Cliff @ Raymond	Cliff St @ Raymond Rd, Emmett Twp	Modernization & upgrade of traffic signal(s) at intersection	$ 200,000	CCRD	Traffic Safety/Operations & Air Quality
2020	*42*	N Dr N (Gorsline Rd)	from Bellevue Rd eastward to 12 Mile Rd	Resurfacing	$ 760,000	CCRD	Preservation
2020	*43*	Waubascon Rd	from Morgan Rdd northward to Halbert Rd	Resurfacing	$ 490,000	CCRD	Preservation
2020	*44*	Capital Ave SW	from south city limits northward to Beckley Rd	Resurfacing with spot sidewalk & ramp replacement	$ 372,050	City of Battle Creek	Preservation & Non-Motorized
2020	*45*	Intersection Signal Modernization - Capital @ VanBuren	Capital Ave @ VanBuren St	Upgrade/modernize signal & interconnection to nearby signals and City's Traffic Management Center	$ 325,000	City of Battle Creek	Traffic Safety/Operations & Air Quality
2020	*46*	Kendall St	from Dickman Rd northward to Michigan Ave	Resurfacing with spot sidewalk & ramp replacement	$ 168,600	City of Battle Creek	Preservation & Non-Motorized
2020	*47*	Union St	from Michigan Ave northward to VanBuren St	Resurfacing with spot sidewalk & ramp replacement	$ 176,120	City of Battle Creek	Preservation & Non-Motorized
2020	*49*	I-94 WB entrance ramp at Exit 104 interchange CON	I-94 WB entrance ramp from I-94BL/M-311 (11 Mile/Wheatfield Rd) east-south-westward to I-94	Reconstruction of the loop entrance ramp	$ 1,123,000	MDOT	Preservation, & Traffic Safety/Operations
2021	*55*	I-194/M-66 over I-94	I-194 / M-66 north+southbound bridges over I-94	Bridge railing replacement, Epoxy overlay, Concrete deck patching, Zone Paint, Reseal Joints, Concrete surface coating	$ 1,778,000	MDOT	Bridges
2021	*56*	I-94 over CN/GTW railroad	I-94 east+westbound bridges over CN/GTW railroad, ~0.5 mi east of I-94BL exit 92	minor widening and rehabilitation	$ 3,668,000	MDOT	Bridges
2023	*58*	I-94 over 6 1/2 Mile Rd	I-94 east+westbound bridges over 6 1/2 Mile Rd, ~0.6 mi east of I-194/M-66 exit 98	minor widening and rehabilitation	$ 4,618,000	MDOT	Bridges
2025	*62*	I-94 over M-294 (Beadle Lake Rd)	I-94 east+westbound bridges over M-294 (Beadle Lake Rd), at exit 100	minor widening and rehabilitation of bridge, with allowances for future widening of M-294 under bridge	$ 3,884,000	MDOT	Bridges
2027	*66*	I-94 over 9 Mile Rd	I-94 east+westbound bridges over 9 Mile Rd, ~2.1 mi west of M-311/11 Mile Rd exit 104	minor widening and rehabilitation	$ 4,162,000	MDOT	Bridges
2030	*70*	I-94 over Kalamazoo River	I-94 east+westbound bridges over Kalamazoo River, ~1.8 mi west of M-311/11 Mile Rd exit 104	replacement of bridges	$ 15,764,000	MDOT	Bridges
2030	*72*	Transit facility renovation	for Battle Creek Transit, at location of project #22	renovation of facilities	$ 1,457,000	Transit - City of Battle Creek	Transit Capital
2033	*76*	Transit Computer System Upgrade	for Battle Creek Transit, at location of project #22	upgrade/replacement of transit computer system	$ 250,000	Transit - City of Battle Creek	Transit Capital
2035	*79*	Ancillary Equipment - Transit	BCT facilities, 339 W Michigan Ave, in southwest quadrant of M-89 (Michigan Ave) / Cass St intersection, and on-board vehicles, at location of project #22	Computers, vehicle technology, & furniture (replacement)	$ 250,000	Transit - City of Battle Creek	Transit Capital
2035	*80*	Automatic Vehicle Locator/Computer-Aided Dispatch (AVL/CAD) System Upgrade	for Battle Creek Transit, at location of project #22	upgrade AVL/CAD system	$ 161,000	Transit - City of Battle Creek	Transit Capital
2039	*86*	Ancillary Equipment - Transit	BCT facilities, 339 W Michigan Ave, in southwest quadrant of M-89 (Michigan Ave) / Cass St intersection, and on-board vehicles, at location of project #22	Computers and vehicle technology	$ 250,000	Transit - City of Battle Creek	Transit Capital
2040	*89*	Transit facility renovation	BCT facilities, 339 W Michigan Ave, in southwest quadrant of M-89 (Michigan Ave) / Cass St intersection, at location of project #22	renovation of facilities	$ 1,700,000	Transit - City of Battle Creek	Transit Capital


Battle Creek Area Transportation Study (BCATS) Metropolitan Planning Area & 2040 Metropolitan Transportation Plan (MTP) Projects
Bedford Township
Pennfield Township
City of Springfield
City of Battle Creek
Emmett Township
Leroy Township
Newton Township
BCATS 2040 MTP Projects
Recommended Improvements
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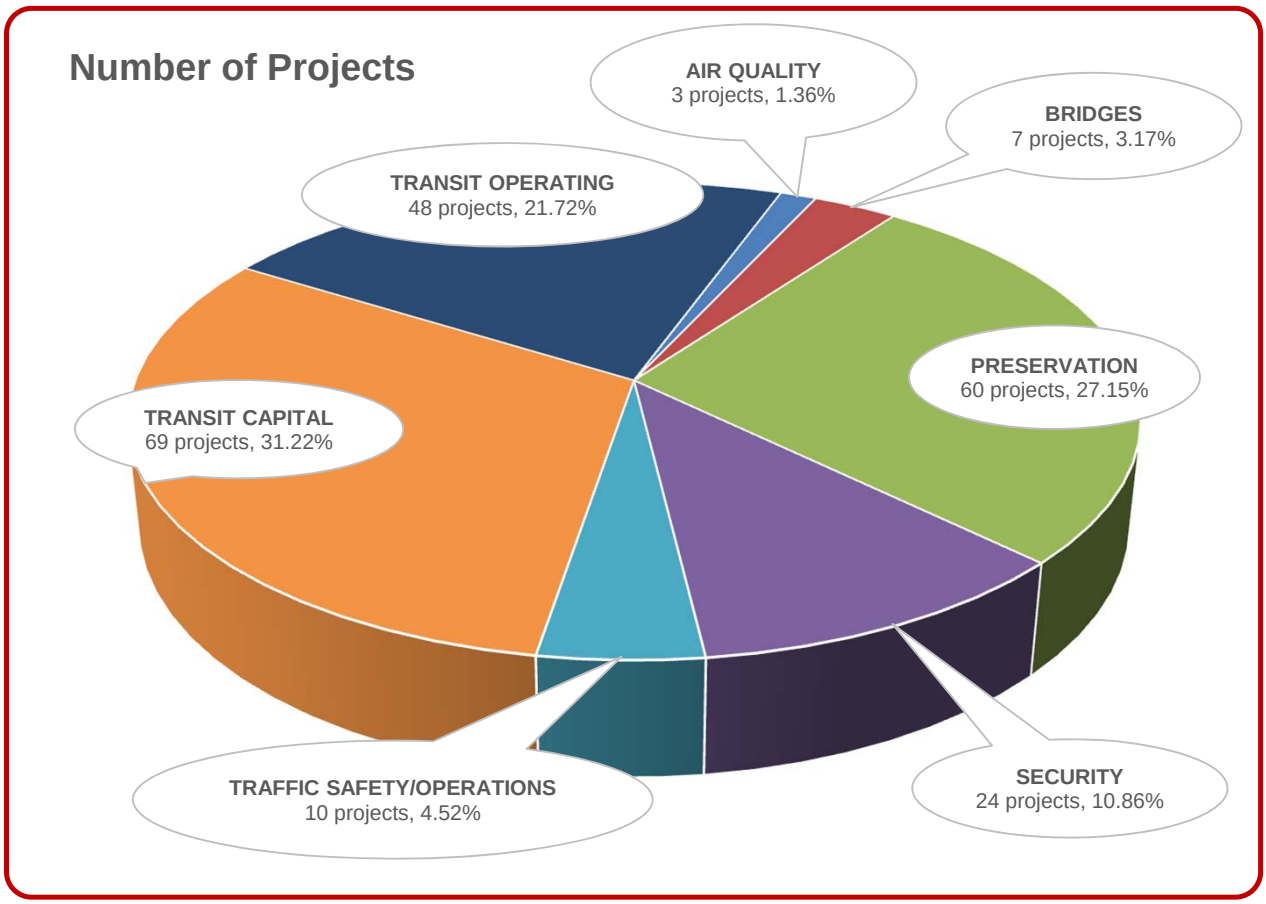
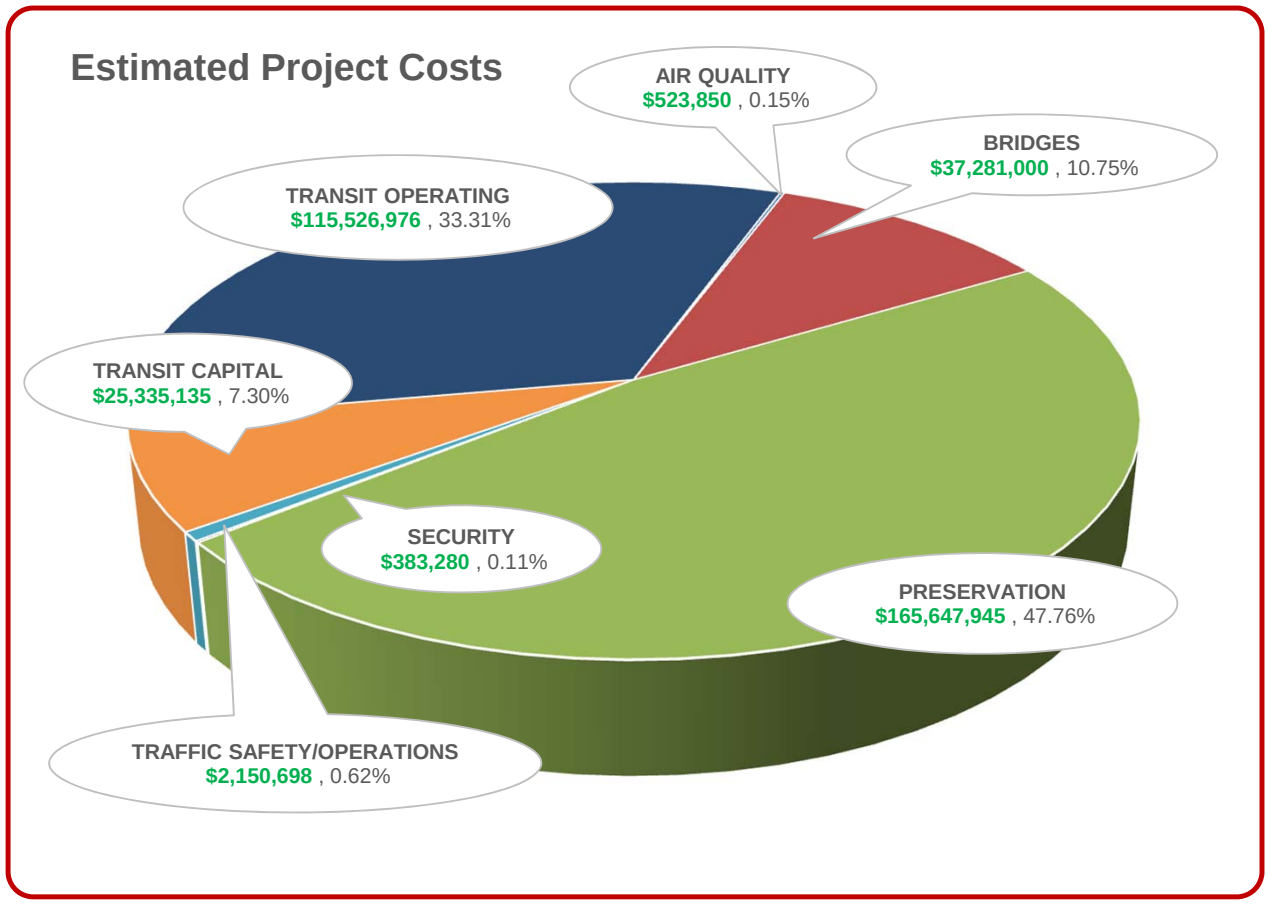
2040 Metropolitan Transportation Plan

Recommended Projects by Type





BCATS
BATTLE CREEK AREA TRANSPORTATION STUDY
601 Avenue A ● Springfield, MI 49037 ● 269-963-1158 ● Fax 269-963-4951

Resolution #16-49
Resolution to Approve the *2040 METROPOLITAN TRANSPORTATION PLAN* for the Battle Creek Area Transportation Study

WHEREAS, the Battle Creek Area Transportation Study (BCATS) is the designated Policy Committee and Metropolitan Planning Organization (MPO) for the Battle Creek, Michigan urban area; and

WHEREAS, the development of a long range transportation plan is a requirement of both the Federal Highway Administration and the Federal Transit Administration; and

WHEREAS, the BCATS *2040 Metropolitan Transportation Plan* as been developed pursuant to USC 23 Section 134, as amended by the Moving Ahead for Progress in the 21st Century (MAP-21) and subsequent Fixing America's Surface Transportation (FAST) Act federal transportation legislation, with a planning horizon of at least 20 years; and

WHEREAS, the BCATS *2040 Metropolitan Transportation Plan* identifies transportation facilities that should function as an integrated metropolitan transportation system; and

WHEREAS, the BCATS *2040 Metropolitan Transportation Plan* includes a financial analysis that demonstrates how the projects that have been identified will have adequate funding, and indicates the resources that are reasonably expected to be made available to carry out the Plan; and

WHEREAS, the BCATS *2040 Metropolitan Transportation Plan* recognizes the necessity of preserving the existing transportation system and includes projects that will enhance the efficiency of the existing transportation system to relieve vehicular congestion and improve the mobility of people and goods; and

WHEREAS, the BCATS *2040 Metropolitan Transportation Plan* was developed through a process that included input from private citizens, private providers of transportation, affected public agencies, and other interested parties; and

WHEREAS, the BCATS *2040 Metropolitan Transportation Plan* was developed utilizing a consultation process taking into consideration the plans and programs of other agencies; and using information obtained through the consultation process, recognizes potential environmental mitigation needs as related to projects in the Plan; and

WHEREAS, this Plan can be amended periodically upon request and with appropriate documentation supporting such a request;

NOW THEREFORE BE IT RESOLVED, that the Policy Committee of the Battle Creek Area Transportation Study finds the *2040 Metropolitan Transportation Plan* to be compliant with federal requirements and approves its submission to the Michigan Department of Transportation, the Federal Highway Administration, and the Federal Transit Administration.

ATTEST: Angela Kline
Angela Kline
Vice-Chair, BCATS Policy Committee

Date: November 30, 2016

Adopted by the Battle Creek Area Transportation Study Policy Committee at its meeting of November 30, 2016

BCATS

CHAPTER II

INTRODUCTION

BCATS ORGANIZATION

The purpose of the Battle Creek Area Transportation Study (BCATS), as the Metropolitan Planning Organization (MPO) for the greater Battle Creek area, is to establish and maintain a continuous, cooperative, and comprehensive transportation planning process. While meeting the appropriate Federal and State requirements, this process promotes the development of a safe, effective, efficient, and environmentally sensitive multi-modal transportation system for moving people and goods in the metropolitan area, while promoting livability, sustainability, reliability and resiliency.

The Study lies in the northwest corner of Calhoun County, Michigan (Figure II-1). The Study area (or Metropolitan Planning Area (MPA)) is comprised of a land area of approximately 216 square miles and includes the Cities of Battle Creek and Springfield, the Charter Townships of Bedford, Emmett and Pennfield and the non-charter Townships of Leroy and Newton. The study area, shaded in Figure II-2, includes areas anticipated to have the potential to become urbanized over the time period covered by this long range Plan. The population trends from the 2000 U.S. Census resulted in extensions of the "urbanized area" that showed growth primarily to the south of the pre-2000 urbanized area. Results of the 2010 U.S. Census showed very little growth over the previous decade. However, the 2010 Census urbanized area boundary extended the Battle Creek urbanized area along an unpopulated corridor for approximately two miles to the west to include some of the Village of Augusta and a very small portion of Ross Township. However, since Augusta is located within Kalamazoo County and has political and social ties to the Kalamazoo area, a Memorandum of Understanding (MOU) was developed with the Kalamazoo Area Transportation Study (KATS) regarding transportation planning responsibilities for the urbanized area associated with the Village of Augusta and the immediately surrounding land. While this area is in the KATS countywide MPA, it is not located within the Kalamazoo urbanized area. Since the recession of 2008, urban growth in the metropolitan area has been near non-existent. Housing starts remain very sluggish in 2016. Therefore, BCATS does not see any justification for expanding its Metropolitan Planning Area at this time.

Relative to the development and adoption of the BCATS *2040 Metropolitan Transportation Plan*, the decision-making body of BCATS is the Policy Committee. The Policy Committee, an Intermunicipality Committee formed under Act 200 of the Michigan Public Acts of 1957, has final local approval and authority on all major transportation decisions, policies, and programs of BCATS.

BCATS also maintains a Technical Committee which provides advice to the Policy Committee and staff on technical methods, procedures, and standards that are used in the development of transportation plans and programs. The coordination and management of BCATS' activities is the responsibility of the BCATS staff. The staff also conducts the majority of the technical studies of the BCATS program. Listings of the current Committee memberships and staff are included in the Appendix of this document.

LONG RANGE PLAN BACKGROUND

The first long range transportation plan (LRTP) for the BCATS area was developed in the late 1970's and early 1980's and was adopted by the BCATS Policy Committee in June, 1983. The Plan contained specific recommendations for improvements to the highway system which addressed safety-related and capacity deficiencies. Other modes of transportation, such as public transportation and parking, were dealt with in a cursory manner in the Plan and were addressed in subsequent separate studies to determine the optimal role for each in the transportation network.

The 1983 LRTP listed 30 major roadway improvements in three phases of implementation. Many of these improvements had been completed by the time an updated planning process was utilized to develop the *2015 Long Range Transportation Plan*. This totally new *Plan* was adopted by the BCATS Policy Committee in 1995. The *1995 Plan* contained recommendations for approximately sixty-eight (68) projects for both highways and transit. Of the forty-five (45) projects scheduled from 1995 to 1999, thirty-five (35) were completed on-time. The completion of these projects was beneficial to the transportation network and to the mobility of the community as a whole.

The "Intermodal Surface Transportation Efficiency Act" (ISTEA) which was signed into law on December 18, 1991 changed many aspects of the way transportation plans were to be developed and dramatically influenced the preparation of the 2015 Plan. ISTEA added many more factors and facets to the long range planning process. Specifically, the Federal Highway Administration regulations implementing ISTEA (October 28, 1993) stated:

> *"The metropolitan transportation planning process shall include the development of a transportation plan addressing at least a twenty-year planning horizon. The plan shall include both long-range and short-range strategies/actions that lead to the development of an integrated intermodal transportation system that facilitates the efficient movement of people and goods...."*

In addition, the regulations identified eleven specific areas that were to be addressed within the plan process. It also provided for public involvement and air quality conformity requirements. The next federal legislation, titled "Transportation Equity Act for the 21st Century" (TEA-21), distilled the "factors" to seven.

In 1999, BCATS undertook an update of the 2015 long range plan. The resulting 2025 Plan was adopted by the BCATS Policy Committee in September, 2000.

The Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) federal legislation was passed by Congress and signed into law by President Bush on August 10, 2005. New final rules to implement the SAFETEA-LU legislation were published by FHWA and FTA on February 14, 2007. The new regulations still required a 20-year horizon for the long range plan. The stated goal of such plans was modified slightly as follows:

> *"The transportation plan shall include both long-range and short-range strategies/actions that lead to the development of an integrated multi-modal transportation system to facilitate the safe and efficient movement of people and goods in addressing current and future transportation demand.*

Figure II-1
Location of BCATS Metropolitan Area in Calhoun County, Michigan

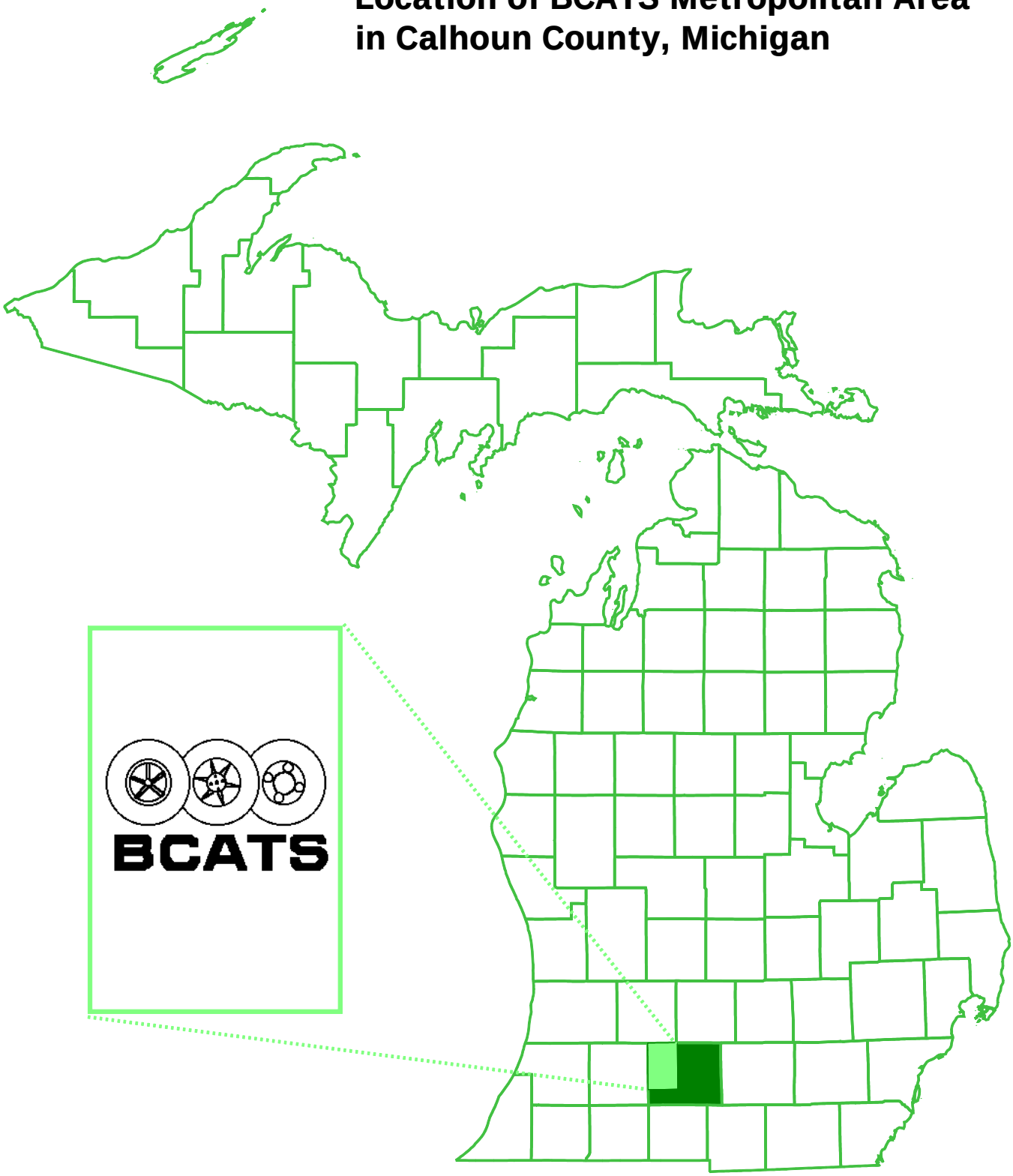
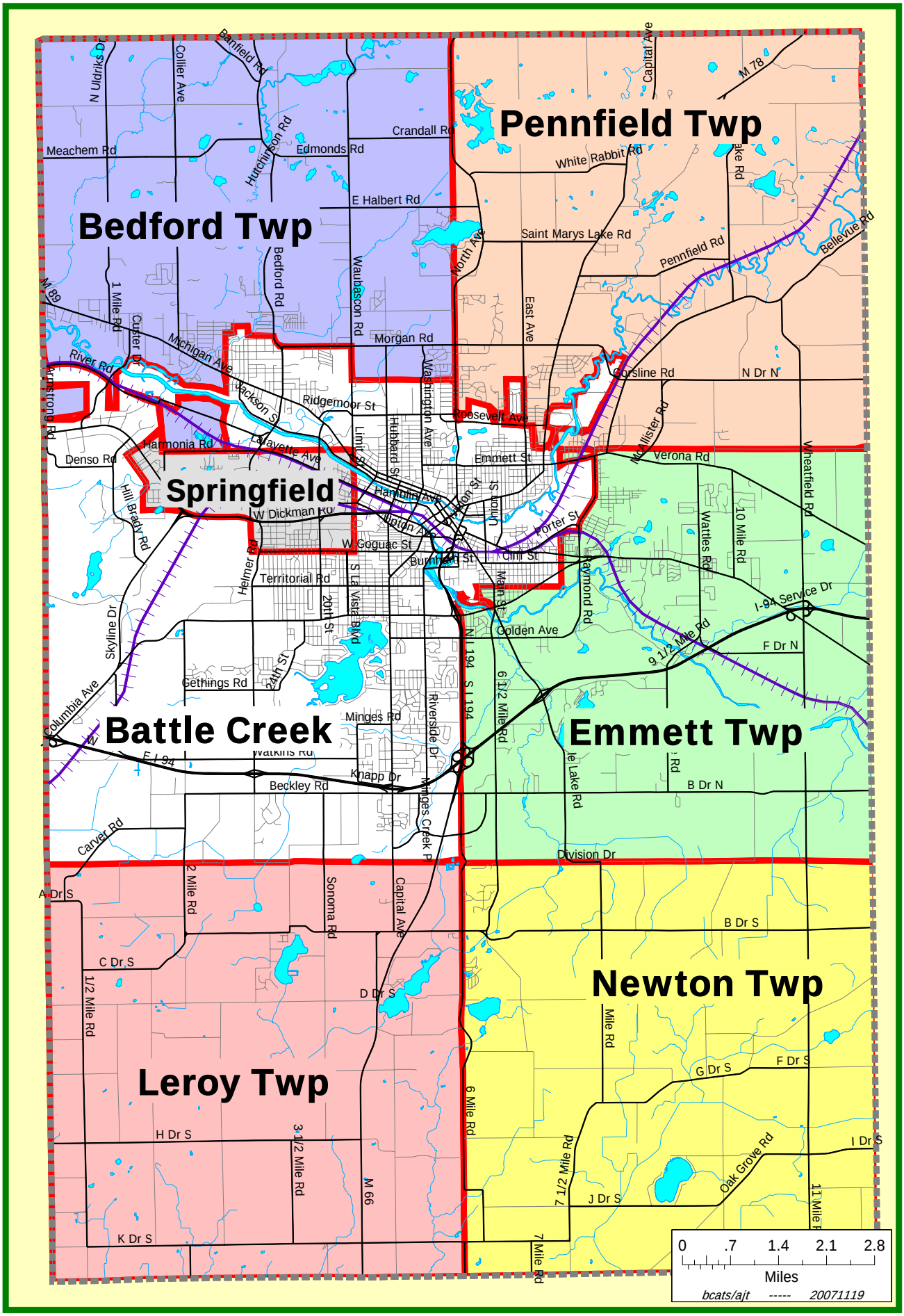


Figure II-2
BCATS Metropolitan Area & Jurisdictional Boundaries



The regulations set the time for updating a long range plan at a minimum of every four to five years (depending upon air quality status) to confirm the plan's continuing relevance to actual developments. At the time of any update, the plan horizon is to be extended to again cover at least a 20-year period into the future.

SAFETEA-LU expanded the planning factors back to eight by breaking out "security" as its own factor.

The eight considerations were consistent with the goals for the long range plans that were adopted subsequently by BCATS. The Plan components still had to meet a financial constraint requirement first prescribed under ISTEA. For the first time, the SAFETEA-LU legislation allowed for the identification of "illustrative projects" which did not have to meet the strict fiscal constraint requirements. However, these projects were not considered available for programming until funding was identified and they were programmed into the constrained portion of the Plan. This option remains currently.

BCATS updated the 2025 Plan to a 2030 horizon year with adoption of a new Plan by the BCATS Policy Committee in November, 2007. The next update to a 2035 time horizon for the Plan was considered a minor update since the previous major update had been completed only three years prior. The goals and objectives were reaffirmed, and minor changes were made to reflect a federal emphasis on liveability, sustainability, and climate change. The *2035 Metropolitan Transportation Plan* for BCATS was approved by the BCATS Policy Committee in June, 2011.

In July, 2012, the Moving Ahead for Progress in the 21st Century Act (MAP-21) was signed into law to replace SAFETEA-LU. This legislation included a specific focus on performance-based planning and the development of systems to support that planning. MAP-21 was only a 2-year bill and when it expired in 2014, it was extended until a new 5-year bill was passed in December, 2015. The new legislation is termed the Fixing America's Surface Transportation Act (FAST Act) and it continues the provisions of MAP-21 as far as the emphasis on performance-based planning. Some of the DOT regulations to implement many of the provisions of MAP-21/FAST Act have been finalized, including the planning provisions, but others have not yet been published. The planning rules were not published until May, 2016, at the point that this current update of the Plan was nearing completion. The May, 2016 planning rules added two new planning factors to the eight previously identified for consideration in the metropolitan planning process. The transportation planning factors now are:

1. Support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency;
2. Increase the safety of the transportation system for motorized and non-motorized users;
3. Increase the security of the transportation system for motorized and non-motorized users;
4. Increase accessibility and mobility of people and freight;
5. Protect and enhance the environment, promote energy conservation, improve the quality of life, and promote consistency between transportation improvements and State and local planned growth and economic development patterns;
6. Enhance the integration and connectivity of the transportation system, across and between modes, for people and freight;
7. Promote efficient system management and operation;
8. Emphasize the preservation of the existing transportation system;
9. Improve the resiliency and reliability of the transportation system and reduce or mitigate stormwater impacts of surface transportation; and
10. Enhance travel and tourism

CURRENT PLAN UPDATE

The April, 2010 U.S. Census data was available and was used for the travel demand forecast model analysis conducted for the 2040 plan update. Due to the stagnant nature of socio-economic conditions in the BCATS area, and the lack of all of the final regulations implementing the MAP-21/FAST Act legislation at the time that most work on the new Plan took place, the BCATS *2040 Metropolitan Transportation Plan* update is also being considered a minor update.

The results of the current Plan update will be the guide for the development of future Transportation Improvement Program (TIP) documents. The TIP is a four-year programming document for Federal transportation funds. The TIP has generally been updated in Michigan every two to three years. The current TIP includes the fiscal years 2017-2020 and was adopted locally in May, 2016. All projects in the BCATS area receiving Federal transportation funds must be included in the TIP.

As of May 12, 2012, the United States Environmental Protection Agency (USEPA) revoked the 1997 8-hour 0.080 ppm ozone standard for the purposes of regional transportation conformity. On May 21, 2012, the USEPA issued designations for the new 2008 8-hour 0.075 ppm ozone standard. This resulted in the Kalamazoo-Battle Creek, MI area being designated attainment under the 2008 standard. This Attainment/Maintenance area includes the counties of Kalamazoo, Calhoun and Van Buren.

Effective July 21, 2013, the Kalamazoo-Battle Creek, MI attainment/maintenance area is no longer required to demonstrate regional transportation conformity of Long Range Plans or Transportation Improvement Programs (TIPs) until such a time as the EPA publishes a notice designating the area as non-attainment again. Therefore, the *2040 Metropolitan Transportation Plan* for BCATS does not include an air quality conformity analysis.

The USEPA has announced new standards (0.700 ppm ozone) that will likely impact the development of future MPO Plans and TIPs. However, the implementation time frame for the new standard is a couple of years into the future and does not impact the develop of the current Plan update. In addition, the Kalamazoo and Battle Creek metropolitan statistical areas are now considered two separate areas for air quality, and may not be tied together for future air quality determinations.

FUTURE PLAN DEVELOPMENT

It is expected that the Plan will be updated next in the 2019-2020 time period. That update will be based on the requirements of the federal legislation, and rules and regulations, in effect at that point in time.

CHAPTER III
GOALS AND OBJECTIVES

An important first step in any planning effort is the development of goals and objectives to support and to provide direction for the planning work to come. Goals and objectives reflect the values and desires of the individuals setting them. Goals and objectives are also valuable in measuring the effectiveness and success of the plans that are developed. Some of the objectives may compete or conflict with one another. This is to be expected, as the goals and objectives are broad in nature and designed to deal with many issues. It is the responsibility of the policy decision-makers to weigh the trade-offs between the goals and objectives when evaluating the plans and programs developed to address the needs of the community. It must be recognized that BCATS by itself cannot implement projects or improvements to directly satisfy the stated goals and objectives; however, BCATS provides a forum for coordinated decisions to be made cooperatively in the best interests of the greater Battle Creek area.

In developing goals and objectives for the Plan, and for BCATS in general, several existing plans and policy statements were considered as input, including: BCATS' previously adopted Goals and Objectives from the 2035 Long Range Transportation Plan, Michigan Department of Transportation goals for the MI Transportation Plan (see chapter VI), State of Michigan Strategic Highway Safety Plan for 2013-2016, and FHWA's MAP-21/FAST Act rules and regulations.

MAP-21/FAST Act require transportation plans which involve all levels of government and all surface transportation modes. The regulations implementing the Acts state that "the metropolitan planning process shall be continuous, cooperative and comprehensive, and provide for consideration and implementation of projects, strategies, and services that will address the transportation planning factors as outlined in Chapter II and restated below:

(1) support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency
(2) increase the safety of the transportation system for motorized and non-motorized users
(3) increase the security of the transportation system for motorized and non-motorized users
(4) increase accessibility and mobility of people and freight
(5) protect and enhance the environment, promote energy conservation, improve the quality of life, and promote consistency between transportation improvements and State and local planned growth and economic development patterns
(6) enhance the integration and connectivity of the transportation system, across and between modes, for people and freight
(7) promote efficient system management and operation
(8) emphasize the preservation of the existing transportation system
(9) improve the resiliency and reliability of the transportation system and reduce or mitigate stormwater impacts of surface transportation
(10) enhance travel and tourism

The MPO plans are coordinated with the state plans (as noted above) and the statewide planning process.

The following goals and objectives were updated to guide this minor update of the *2035 Metropolitan Transportation Plan* to a horizon year of 2040.

GOAL 1: SAFETY

To minimize the loss of life, injuries, and property damage resulting from travel on all modes within the BCATS area

OBJECTIVES:

1a: The transportation system should minimize traffic crashes and the severity of crashes

1b: Standard traffic control devices in the transportation system should be used to increase efficiency and safety whenever possible

1c: The transportation system should minimize rail/auto/transit conflicts and commercial/non-commercial vehicle conflicts

1d: The transportation system should minimize motorized/non-motorized conflicts

1e: The transportation system should maximize the safety and security of its users

1f: Safety management systems should be encouraged at all levels within the BCATS area and the outputs used in the needs assessment component of the planning process

GOAL 2: ACCESSIBILITY

To provide all travelers in the community with reasonable access to important destinations such as: residence, employment, recreation, community facilities and commercial centers

OBJECTIVES:

2a: The transportation system should provide appropriate access, via motorized or non-motorized transportation, to and from major land uses and attractions within the BCATS area and within the region as a whole

2b: The transportation system should minimize transportation barriers which put at a disadvantage the physically challenged, senior citizens, and persons who do not have automobiles available, or have limited economic means

GOAL 3: PRESERVATION

To preserve the investment in the area's transportation system

OBJECTIVES:

3a: The existing transportation infrastructure system should be preserved and maintained at the highest possible level - levels to be based on the policies and goals of all implementing jurisdictions

3b: Management systems which foster preservation should be implemented and coordinated at all levels within the BCATS area and the outputs used in the needs identification component of the planning process

GOAL 4: EFFICIENCY

To achieve maximum efficiency, utilization, and performance from the transportation system

OBJECTIVES:

4a: Transportation projects which reduce distance and time spent traveling should be promoted

4b: Intelligent Transportation System (ITS) and transportation management system techniques should be utilized to improve the operating efficiency and effectiveness of the transportation system

4c: Increasing vehicle occupancy should be encouraged for all motorized modes

4d: The movement of goods and persons should be coordinated for maximum efficiency

GOAL 5: FINANCIAL

To minimize the financial costs of the transportation system to travelers and the community as a whole

OBJECTIVES:

5a: Transportation improvements should be cost-effective and should maximize the long-term benefits by considering overall life-cycle costs whenever possible

5b: Transportation improvements, for all modes, should minimize capital and operating costs

5c: The scale and character of transportation improvements should be consistent with the ability to finance such improvements

5d: The private sector should be encouraged to invest in the transportation system and partnering projects should be encouraged

GOAL 6: COMPREHENSIVE PLANNING

To coordinate the planning and development of transportation facilities within the metropolitan area and in conjunction with countywide and statewide planning efforts

OBJECTIVES:

6a: The development of the transportation system should be consistent with area land use plans, housing plans, recreation/open space plans, other relevant plans and economic development initiatives

6b: The transportation system should be multi-modal and intermodal in nature, providing a smooth interface between different modes

6c: Local land use policies and practices should encourage appropriate access management and right-of-way preservation to meet the future needs of the transportation system

GOAL 7: PUBLIC INVOLVEMENT

To provide for public involvement in the planning and development of transportation facilities and services

OBJECTIVE:

7a: Provide maximum opportunity for the involvement of all segments of the community in the development of BCATS' plans and programs through multiple outlets

GOAL 8: ENVIRONMENTAL IMPACTS

To avoid disrupting social and economic life or creating a less attractive or less healthy living environment for Battle Creek area residents due to unintended harmful effects of transportation on the immediate and global environment

OBJECTIVES:

8a: The transportation system should minimize the energy resources consumed for, and green house gases emitted from, transportation

8b: The use of alternative fuels by all transportation modes should be encouraged

8c: Air pollutant emissions and concentrations (including greenhouse gases) should be minimized

8d: Noise emissions and concentrations should be minimized

8e: The transportation system and providers should encourage the use of public transportation and ride-sharing where feasible

GOAL 9: COMMUNITY IMPACT

To avoid and reduce conflicts between transportation facilities and land use

OBJECTIVES:

9a: Improvements to the transportation system should minimize, to the extent possible, negative effects on commercial and industrial facilities as well as recreational, cultural, religious and educational activities

9b: The transportation system should minimize, to the extent possible, interference with existing households and disruption of neighborhoods

CHAPTER IV

PUBLIC PARTICIPATION

SAFETEA-LU PUBLIC INVOLVEMENT REQUIREMENTS

The March, 2007 metropolitan transportation planning rules and regulations that implemented SAFETEA-LU continued the provisions contained in the ISTEA and TEA-21 legislation that proceeded it. However, SAFETEA-LU expanded upon the process of the prior legislation in many respects relative to the participation of the public and other interested parties in the transportation planning process. Specifically:

> *"The MPO shall develop and use a documented participation plan that defines a process for providing citizens, affected public agencies, representatives of public transportation employees, freight shippers, providers of freight transportation services, private providers of transportation, representatives of users of pedestrian walkways and bicycle transportation facilities, representatives of the disabled, and other interested parties with reasonable opportunities to be involved in the metropolitan transportation planning process".*

The MAP-21/FAST Act regulations continue with specific things that the MPO should include, or do, as part of the public participation process. These include:

- provide adequate public notice and time for public review
- provide timely notice and reasonable access to information
- employ visualization techniques for conveying information about Plans and TIPs
- make information available in electronically accessible formats/means
- hold public meetings at accessible places and times
- demonstrate consideration of comments received during public input for the Plan and the TIP
- seek out and consider the needs of the traditionally under-served
- provide additional public input opportunities when plans or programs change significantly from the versions originally offered for public comment
- coordinate with statewide transportation planning public involvement and consultation efforts
- periodically review effectiveness of the transportation participation plan

Throughout the BCATS' long range plan update process, consideration was given to public participation so that citizens, affected public agencies, transportation agency employees, private providers of transportation, and other interested parties have had an opportunity to comment on the developing Transportation Plan. As of July, 2014, BCATS updated its Transportation Participation Plan (TPP) to guide involvement of the public and other interested parties. The TPP outlines who will be notified of BCATS activities. The listing of applicable interested parties in the BCATS area is as follows:

- eight City of Battle Creek Neighborhood Planning Councils
- Urban League of Southwest Michigan
- Battle Creek NAACP
- The ARC
- Battle Creek Area Chamber of Commerce
- Battle Creek Unlimited (includes major employers in Fort Custer Industrial Park)
- Community Action Agency
- Burnham Brook Senior Center
- Battle Creek Bicycle Club

- all area schools (intermediate school district plus 5 districts, and charter and private schools)
- local taxi cab operators
- unions for Battle Creek Transit drivers, mechanics and office staff
- W.K Kellogg Regional Airport
- Calhoun County Parks
- North Country Trail
- Disability Resource Center
- Norfolk Southern Railroad
- Canadian National Railroad
- City of Battle Creek Fire Department
- City of Battle Creek Police Department
- City of Springfield Public Safety
- City of Battle Creek Environmental Department
- Bedford Township Fire Department
- Leroy Township Fire Department
- Emmett Township Public Safety Department
- Calhoun County Sheriff Department
- Michigan State Police
- Calhoun County Human Services Department
- Calhoun County Senior Services
- Marian Burch Adult Day Care Center/Calhoun County Medical Care Facility
- Calhoun County Work First
- Calhoun Soil Conservation District
- Battle Creek Calhoun County Visitor & Convention Bureau
- Battle Creek Health System
- Southwest Regional Rehabilitation Center
- Behnke, Inc. (trucking)
- Kellogg Corporation
- General Foods/Post
- Kellogg Community College
- Miller College
- Western Michigan University Kendall Center
- Western Michigan University College of Aviation
- Department of Defense Hart/Dole/Inouye Center
- Willard Public Library Central
- Willard Public Library Helen Warner Branch
- AAA Insurance Branch Office Battle Creek

The TPP also provides an outline for participation activity within the context of the development of the Transportation Plan, the TIP and for planning and corridor studies.

Various means were used to seeking public input in the development of the *2040 Metropolitan Transportation Plan*. BCATS' periodic newsletter, "The Signal", promotes the planning process and the opportunity for public input. Since this was a minor update of the *Plan* completed in 2011, a full-fledged general opinion survey (such as was conducted for the *2030 Plan*) was not deemed necessary at this time.

Copies of the newsletters published in June 2015, January 2016, and September 2016, that each had information about the *2040 Plan* development, are included at the end of this chapter. BCATS also makes copies of its newsletter informational pieces available to the local units of government and the local libraries for public distribution.

On November 10, 2016 BCATS published a formal notice of "request for comments" on the draft *2040 Metropolitan Transportation Plan*. This update did not require air quality conformity analysis, nor a notice regarding this type of analysis, such as was required with the last *Plan* update. This is due to the fact that the Battle Creek Metropolitan Statistical Area is currently categorized by the U.S. EPA as "in attainment" for ozone in the realm of air quality. The formal notice about the *Plan* was published in the general circulation daily newspaper, the *Battle Creek Enquirer*. The public notice listed the dates of the BCATS' Committee meetings in November, 2016 as opportunities to comment as well. Following is the text of the notice:

THE BATTLE CREEK AREA TRANSPORTATION STUDY (BCATS) HEREBY GIVES NOTICE of opportunity for public involvement in the first amendment to its current *Transportation Improvement Program (TIP)* for fiscal years (FYs) 2017-2020 (10/1/16–9/30/20), and in adoption of its *2040 Metropolitan Transportation Plan (MTP)* for the BCATS' area, comprised of the Cities of Battle Creek & Springfield, and the townships of Bedford, Pennfield, Emmett, Newton, & Leroy. The *Plan* identifies future transportation (including transit & non-motorized transportation) needs & appropriate projects for 2017–2040. The proposed TIP amendment includes the following: **1)** adding

a Michigan Dept of Transportation (MDOT) 2017 asphalt crack treatment on parts of M-66 (Division), I-94BL (Columbia), & I-94BL (Dickman), total ~2.7 miles. Total cost ~$59,000, 81.85% Fed Surface Transportation Program (STP) funds, 18.15% State Michigan Betterment (M) funds; **2)** deleting replacement of two large heavy duty, low floor, Americans with Disabilities Act (ADA) fully equipped buses for Battle Creek Transit's fixed-route service, one in 2016 ($425,000) & one in 2017 ($433,500), given Federal Transit Administration (FTA) policy to not allow FTA Sec 5339(b) discretionary projects in TIP until funding is officially awarded; **3)** deleting a 2017 project of Community Action to replace two small light duty vans, with FY17 FTA Sec 5310 "Enhanced Mobility of Seniors & Individuals with Disabilities" funds, as $91,000 project fully funded in FY16; **4)** adding MDOT's 2017 preliminary engineering & construction to add a 0.10 mile right turn lane on the M-66 southbound approach to Glenn Cross Rd. Total cost $131,284, funded 81.85% Fed Congestion Mitigation Air Quality (CMAQ) funds, 18.15% State M funds; and **5)** adding 2017 MDOT right-of-way (ROW) work with State M funds: $15,000 for ROW related to the 2018 $1.5M resurfacing of M-66 (Capital Ave NE) from Capital Ave/Division St intersection northward to Frey Dr, and $25,000 for ROW related to the 2019 $3.4M construction to replace the M-311 (11 Mile/Wheatfield Rd) bridge over the Kalamazoo River & rehabilitate approaches. Details of the above listed projects, and of administrative modifications that may be presented with the TIP amendment, can be provided upon request. Additional TIP & amendment information is available online at *www.bcatsmpo.org.* Draft chapters of the *2040 Metropolitan Transportation Plan*, as Adobe "pdf" files, are being posted online at *www.bcatsmpo.org* as completed, with the intent of the full draft *Plan* document being available by November 16, 2016 for review online, or paper copy upon request. Discussion & action regarding both the TIP amendment and the *2040 Metropolitan Transportation Plan* will be conducted at the regular meetings of BCATS' Technical Committee (Wednesday, 11/16/16) & Policy Committee (Wednesday, 11/30/16). Both meetings begin at 1:30 pm in the Council Chambers of Springfield City Hall at 601 Avenue A. Public comment on either item is encouraged before or at those meetings; BCATS' regular meetings are open to the public. Comments will be accepted up to Policy Committee action on 11/30/16. Direct questions and/or comments to: BCATS, 601 Avenue A, Springfield, MI 49037; ph 269/963-1158, fax 269/963-4951, e-mail *bcats@bcatsmpo.org*.

A copy of the newspaper page containing the notice is included on the following page. BCATS made draft material of the *Plan* document available to the public for review on its website as pdf documents at the time the public notice was published. **No comments were received as a result of the public notice.**

At least 7 die in London tram crash

DOUG STANGLIN
USA TODAY

A least seven people were killed Wednesday when a two-car tram jumped the rails on a sharp curve in south London and rolled on its side, according to British rail investigators and media reports.

The Rail Accident Investigation Branch said the tram was negotiating a "sharp, left-hand curve with a speed limit of 12 mph" when it tipped over.

"The derailment occurred on the curve and initial indications suggest that the tram was traveling at a significantly higher speed than is permitted," the RAIB said in a statement.

Police said more than 50 people were injured in the accident that occurred next to an underpass in the Croydon area. Emergency workers labored for hours to free five people trapped in the wreckage.

Authorities arrested the 42-year-old driver of the London Tramlink two-car vehicle, according to Sky News.

Martin Bamford, 30, a passenger, said the train sped up and "everyone just literally went flying," the Associated Press reported.

"There was a woman that was on top of me ... I don't think she made it at all," Bamford said outside Croydon University Hospital, where he was treated for rib injuries. "She wasn't responsive. There was blood everywhere."

Bamford said the driver told him that "he thinks he blacked out."

The British capital's only tram network operates in the southern end of the city, serving 27 million passengers in the past year.

RAIB VIA AP

Seven people were killed and more than 50 injured when a tram derailed in south London during a rainstorm, police said.

Trump win elicits fears, some cheers around globe

Russians happy; Cubans, Mexicans worried

JIM HEINTZ AND GREGORY KATZ
ASSOCIATED PRESS

MOSCOW - World leaders struggled Wednesday to come to grips with a new reality — Donald Trump will be the next U.S. president — and an as yet unanswerable question: How many of his campaign pledges will he actually act on?

The remarkable triumph of the politically untested businessman was welcomed in some countries, such as Russia, while in others it was a major shock.

When Trump takes office in January, world leaders will confront a man whose stated views represent a sharp break with U.S. foreign policy orthodoxy. He has cozied up to Russian President Vladimir Putin, warned stunned NATO allies they may have to pay for their own protection, floated a ban on Muslims entering the U.S. and vowed to make the Mexican government finance a multibillion-dollar border wall.

These changes, and others, have the potential to radically remake U.S. policy — a prospect that has given stability-loving partners the jitters.

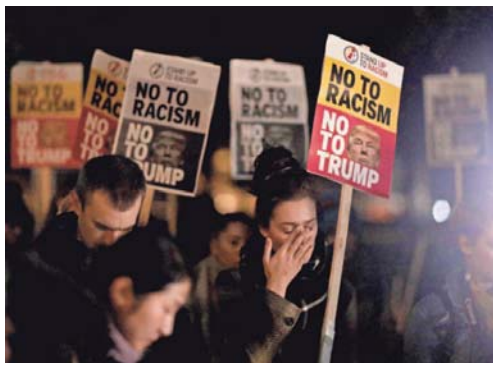
Trump's victory was hailed in Russia, which has taken an increasingly aggressive stance toward the West in recent months. Putin sent Trump a congratulatory telegram Wednesday and made a televised statement expressing the hope that frayed U.S.-Russian relations could be put back on track.

"We are aware that it is a difficult path, in view of the unfortunate degradation of relations between the Russian Federation and the United States," the Russian leader said, adding: "It is not our fault that Russian-American relations are in such a state."

Russia became a focal point during the presidential campaign, with government officials and Hillary Clinton supporters suggesting Moscow was involved in hacking Democratic campaign's emails. Trump raised eyebrows when he expressed admiration for Putin and his tough leadership style, and some Clinton backers questioned Trump's business dealings with Russia.

ALEXEI DRUZHININ/ SPUTNIK, KREMLIN POOL PHOTO VIA AP

Russian President Vladimir Putin congratulated U.S. President-elect Donald Trump on Wednesday and expressed hope that U.S.-Russian relations would improve.



MATT DUNHAM/AP

A woman takes part in a protest against President-elect Donald Trump winning the American election Wednesday in London.

There is anxiety in Europe among allies who are waiting to see if Trump follows through on suggestions the U.S. will look at whether they have paid their proper share to fund NATO in considering whether to come to their defense.

That rhetoric has challenged the strategic underpinning of the NATO alliance — in which an attack on one NATO nation is considered an attack on all — at a time when Russia has been confrontational.

"As a candidate, Trump called into question NATO and trade agreements, and reached out to Moscow," said Daniela Schwarzer, an expert on trans-Atlantic relations at the German Council on Foreign Relations.

"Even if President Trump doesn't implement everything," Schwarzer said, "Germany and Europe can't rely on the trans-Atlantic partnership as usual, and will have to stand up for Western values themselves."

Trump's win also caused trepidation in Mexico, his remarks calling Mexicans criminals and rapists insult to national pride. He suggested slapping a tax on automobiles and auto parts U.S. companies in Mexico, analysts have predicted a Trump could threaten billions of dollars in cross-border trade.

Trump's victory is "as close to a national emergency as Mexico has faced in many decades," Mexican analyst Alejandro Hope said.

It also caused concern in Cuba, over Trump's threat to roll back President Barack Obama's normalization of relations unless Cuban President Raul Castro agrees to more political freedoms.

"If he reverses it, it hurts us," taxi driver Oriel Iglesias Garcia said. "You know tourism will go down."

Trump's electoral triumph was also felt strongly in the Middle East. One major concern is Trump's vehement opposition to the agreement between Iran and world powers under which Iran has curbed its nuclear program in exchange for a gradual lifting of international sanctions.

In Iran, leaders emphasized the need to keep the agreement on track despite Trump's victory. The deal "cannot be overturned by a single government," Iranian President Hassan Rouhani said.

Israel's leader, Prime Minister Benjamin Netanyahu, indicated a high comfort level with the next president, hailing Trump as a "true friend of the state of Israel."

Iraqi Prime Minister Haider al-Abadi also congratulated Trump and expressed hope the "world and the United States will continue to support Iraq in fighting terrorism."

REQUEST FOR COMMENTS ON TRANSPORTATION PROJECTS

THE BATTLE CREEK AREA TRANSPORTATION STUDY (BCATS) HEREBY GIVES NOTICE of opportunity for public involvement in the first amendment to its current Transportation Improvement Program (TIP) for fiscal years (FYs) 2017-2020 (10/1/16–9/30/20), and in adoption of its 2040 Metropolitan Transportation Plan (MTP) for the BCATS' area, comprised of the Cities of Battle Creek & Springfield, and the townships of Bedford, Pennfield, Emmett, Newton, & Leroy. The Plan identifies future transportation (including transit & non-motorized transportation) needs & appropriate projects for 2017–2040. The proposed TIP amendment includes the following: **1)** adding a Michigan Dept of Transportation (MDOT) 2017 asphalt crack treatment on parts of M-66 (Division), I-94BL (Columbia), & I-94BL (Dickman), total ~2.7 miles. Total cost ~$59,000, 81.85% Fed Surface Transportation Program (STP) funds, 18.15% State Michigan Betterment (M) funds; **2)** deleting replacement of two large heavy duty, low floor, Americans with Disabilities Act (ADA) fully equipped buses for Battle Creek Transit's fixed-route service, one in 2016 ($425,000) & one in 2017 ($433,500), given Federal Transit Administration (FTA) policy to not allow FTA Sec 5339(b) discretionary projects in TIP until funding is officially awarded; **3)** deleting a 2017 project of Community Action to replace two small light duty vans, with FY17 FTA Sec 5310 "Enhanced Mobility of Seniors & Individuals with Disabilities" funds, as $91,000 project fully funded in FY16; **4)** adding MDOT's 2017 preliminary engineering & construction to add a 0.10 mile right turn lane on the M-66 southbound approach to Glenn Cross Rd. Total cost $131,284, funded 81.85% Fed Congestion Mitigation Air Quality (CMAQ) funds, 18.15% State M funds; and **5)** adding 2017 MDOT right-of-way (ROW) work with State M funds: $15,000 for ROW related to the 2018 $1.5M resurfacing of M-66 (Capital Ave NE) from Capital Ave/ Division St intersection northward to Frey Dr, and $25,000 for ROW related to the 2019 $3.4M construction to replace the M-311 (11 Mile/Wheatfield Rd) bridge over the Kalamazoo River & rehabilitate approaches. Details of the above listed projects, and of administrative modifications that may be presented with the TIP amendment, can be provided upon request. Additional TIP & amendment information is available online at www.bcatsmpo.org. Draft chapters of the 2040 Metropolitan Transportation Plan, as Adobe "pdf" files, are being posted online at www.bcatsmpo.org as completed, with the intent of the full draft Plan document being available by November 16, 2016 for review online, or paper copy upon request. Discussion & action regarding both the TIP amendment and the 2040 Metropolitan Transportation Plan will be conducted at the regular meetings of BCATS' Technical Committee (Wednesday, 11/16/16) & Policy Committee (Wednesday, 11/30/16). Both meetings begin at 1:30 pm in the Council Chambers of Springfield City Hall at 601 Avenue A. Public comment on either item is encouraged before or at those meetings; BCATS' regular meetings are open to the public Comments will be accepted up to Policy Committee action on 11/30/16. Direct questions and/or comments to: BCATS, 601 Avenue A, Springfield, MI 49037; ph 269/963-1158, fax 269/963-4951, e-mail bcats@bcatsmpo.org.

LJ-0100358106

The Newsletter of the Battle Creek Area Transportation

BCATS

June, 2015

The Signal Special Edition!

601 Avenue A, Springfield, MI 49037 (269) 963-1158 fax: (269) 963-4951
e-mail: bcats@bcatsmpo.org website: www.bcatsmpo.org

Long Range Transportation Plan being Updated

The Battle Creek Area Transportation Study (BCATS) is working on the update process for its long range planning document that will outline future transportation improvements in the BCATS area. The current Plan has a horizon of 2035, the update of the Plan will take that horizon year to 2040. The Plan takes a 20-year-plus look at areas for improvement. Some projects require many advance years of planning, design, right-of-way purchase, and/or environmental work before they can actually be implemented.

Public Input is welcomed during the Plan Update Process

Step 1: Review Goals and Objectives for the Plan to make sure that the goals from the current Plan are still providing the right direction (see back of this sheet)

Step 2: Use existing data about traffic counts, location of housing and employment, along with information about planned future residential, commercial and industrial development, to develop projections of future traffic levels - and places for future congestion on the roadways—this process is underway.

Step 3: Evaluate needs for: safety improvements (such as intersection changes, traffic signal upgrades, signs, guardrail, etc.); transit; non-motorized; pedestrian; rail crossings; bridges; and freight movement.

Step 4: Using computer modeling software, look at the effect of alternative future improvements on the operation of the transportation system.

Step 5: Select a set of improvements that provides the most effective solution for future needs, while also not negatively impacting air quality, the physical environment, or the community, while staying within estimates of future transportation funding.

The purpose of this newsletter is to provide the public with information regarding the activities of the Battle Creek Area Transportation Study (BCATS). BCATS' newsletters may also include other local, regional, state, and national news affecting transportation in the Battle Creek area. The public is encouraged to contact BCATS at the above address or telephone (269) 963-1158, fax (269) 963-4951 or e-mail: bcatmpo@aol.com concerning issues in *The Signal* or other transportation matters.

Long Range Plan Goals and Objectives

BCATS

Goal #1: Safety - to minimize the loss of life, injuries, and property damage resulting from travel on all modes within the BCATS area

Goal #2: Accessibility - to provide all travelers in the community with reasonable access to important destinations such as: residence, employment, recreation, community facilities, and commercial centers

Goal #3: Preservation - to preserve the investment in the area's transportation system

Goal #4: Efficiency - to achieve maximum efficiency, utilization, and performance from the transportation system

Goal #5: Financial - to minimize the financial costs of the transportation system to travelers and the community as a whole

Goal #6: Comprehensive Planning - to coordinate the planning and development of transportation facilities within the metropolitan area and in coordination with countywide and statewide planning efforts

Goal #7: Public Involvement - to provide for public involvement in the planning and development of transportation facilities and services

Goal #8: Environmental Impact - to avoid disrupting social and economic life or creating a less attractive or less healthy living environment for Battle Creek area residents due to unintended harmful effects of transportation on the immediate and global environment

Goal #9: Community Impact - to avoid and reduce conflicts between transportation facilities and land use.

Overview

These goals are being reviewed in consideration of: the requirements of the federal regulations (MAP-21) and rules which prescribe the development of the long range transportation plan; prior BCATS plans; Michigan Department of Transportation plans; the State Strategic Highway Safety Plan; and others.

If your organization has any future plans, programs or projects which may impact transportation needs or the transportation system in the greater Battle Creek area, please forward that information to BCATS as soon as possible for consideration in the long range plan development process.

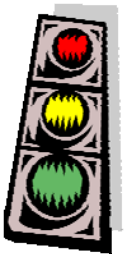
Please provide BCATS with any comments you may have on these goals, or any organization plans you may have, by contacting staff at: bcats@bcatsmpo.org or (269) 963-1158 or at BCATS 2040 Plan, 601 Avenue A, Springfield, MI 49037

Battle Creek Area Transportation Study (BCATS)

Newsletter of the Battle Creek Area Transportation Study

BCATS

February, 2016



"The Signal" BCATS 2040 Transportation Plan

601 Avenue A, Springfield, MI 49037 (269) 963-1158
fax (269) 963-4951 e-mail: bcats@bcatsmpo.org
website: www.bcatsmpo.org

Remember: All BCATS Committee meetings are open to the public. Contact the staff office for details.

BCATS Provides Update on 2040 Long Range Transportation Plan

The Battle Creek Area Transportation Study (BCATS) is moving forward with the updating of its 20-year long range transportation plan. The current plan, approved in 2011, has a horizon year of 2035. The updated plan will have a horizon year of 2040. The 2040 Plan is a minor update to the 2035 Plan. The Plan includes anticipated and expected improvements to the roads, transit, bicycle and pedestrian facilities, safety related projects (such as traffic signal upgrades), and other transportation related areas. BCATS has looked at the Plan's goals and objectives, developed projections of future population, employment, and traffic levels, and is determining what levels of funding may be available to address future transportation needs. The development of a final 2040 Plan document over the next several months will complete the update process.

The BCATS Policy Committee reaffirmed, with only minor changes, the goals to guide the development of the long range plan update, as follows:

1. **Safety** - to minimize the loss of life, injuries, and property damage resulting from travel on all modes within the BCATS area.
2. **Accessibility** - to provide all travelers in the community with reasonable access to important destinations such as: residence, employment, recreation, community facilities, and commercial centers
3. **Preservation** - to preserve the investment in the area's transportation system
4. **Efficiency** - to achieve maximum efficiency, utilization, and performance from the transportation system
5. **Financial** - to minimize the financial costs of the transportation system to travelers and the community as a whole
6. **Comprehensive Planning** - to coordinate the planning and development of transportation facilities within the metropolitan area and in conjunction with countywide and statewide planning efforts
7. **Public Involvement** - to provide for public involvement in the planning and development of transportation facilities and services
8. **Environmental Mitigation** - to avoid disrupting social and economic life or creating a less attractive or less healthy living environment for Battle Creek residents due to unintended harmful effects of transportation on the immediate and global environment
9. **Community Impact** - to avoid and reduce conflicts between transportation facilities and land use.

Since the last Plan update was adopted in 2011, almost all of the 2011-2013 projects that were identified in the Plan have been implemented. This includes road, transit, non-motorized, bridge and safety projects in the BCATS area. During those years, a total of approximately $25.5 million in federal funding, which was matched with state and local funding, was committed to projects within the metropolitan area (see the annual "Obligated Projects Report" for each year on the BCATS' website).

Public input is welcomed in the development of the updated 2040 Plan. CHECK OUT THE BCATS WEBSITE: **www.bcatsmpo.org** for further information.

The purpose of this newsletter is to provide the public with information regarding the activities of the Battle Creek Area Transportation Study (BCATS). The public is encouraged to contact BCATS at the above address or telephone (269) 963-1158, fax (269) 963-4951 or e-mail: bcats@bcatsmpo.org concerning issues in *The Signal* or other transportation matters.

2040 Plan - Proposed Projects

The Major Road, Transit, Non-Motorized, and Other Projects included in the proposed listing for the 2040 Transportation Plan update at the present time are as follows:

2017 - **Beckley Road/B Drive N** (from M-66 eastward to 6 1/2 Mile Rd. - resurface and potential intersection projects along corridor)
Calhoun County Trailway Phase 1/Segment 1 (new multi-use trailway in Emmett Township in area of the Ott Preserve)
20th Street Bridge over the Kalamazoo River (rehabilitation)
20th Street (from Goguac St. to Columbia Ave. - resurface)
Capital Avenue SW (from Fairfield to Weeks and Cascade to Rebecca - resurface)
Helmer Road (from Beckley Rd. to Gethings Rd. - resurface)
North Avenue (from Capital Ave. NE to Roosevelt Ave. - resurface)
Two 10-Passenger Transit Vans (replacement)
I-94 Interchange at 11 Mile Rd. (modify lanes for turning traffic and complete modifications to one ramp)
M-37 (from Creekview Dr. to north County line - resurface)

2018 - **B Drive N** (from 8 1/2 Mile Rd. to 11 Mile Rd. - resurface)
Capital Avenue SW Phase 2 (from Weeks south to Cascade - resurface)
Jackson/Stringham (from Bedford Rd west and north to M-89/Michigan Ave. - resurface
20th Street/I-94 BL (W. Dickman Road) Intersection (redesign and reconstruct intersection, upgrade signals)
I-94BL/M-96/E. Michigan Ave. (from M-311/11 Mile Road to Wattles Road) (widen for 1/2 Mile west of M-311, resurface and restripe entire length for 3 lanes to tie into 3 lanes at either end of segment)

2019 - **B Drive S** (from 8 1/2 Mile Rd. east to 12 Mile Rd. - resurface)
Beckley Road (from Minges east to M-66 - resurface)
One 10-Passenger Transit Van - (replacement)
Farebox System Upgrade (update and upgrade transit farebox system)
Goguac Street (from Helmer Rd. east to Carl Ave. - resurface)
I-94/I-194 Intelligent Transportation System Message Signs (installation in Calhoun County along interstates)
Upton Avenue/Avenue A (Upton from Avenue A east to City limits and Avenue A from 20th St. east to Upton - resurface)

2020 - **I-94 Rest Area** (eastbound rest area just west of Capital Ave. SW - total rebuild of rest area)
6 1/2 Mile Road (from Christian Drive to G Drive N - resurface)
Raymond Road (from Verona Rd. to Golden Ave. - resurface)
Territorial Road and Evergreen Road (from Helmer Rd. to 20th St. + Avenue A to Harmonia Rd. - resurface)

2021 - **Transit Radio System, Computer System Upgrades (**updates and upgrades to transit facilities)
I-94 BL (W. Columbia Ave/Skyline Dr.) (from I-94 to Columbia Ave. - resurface and minor widening)
- **Glen Cross Road Extension NEW FACILITY** (from M-66 eastward and then northward to B Drive N - new 3-lane road)
- **Morgan Road Extension and Bridge NEW FACILITY** (from east of M-66 to Bellevue Road at N Drive N. - construct new 2-lane road segment with paved shoulders, and a bridge over the Battle Creek River and the railroad tracks)
- **Verona Road** (from McAllister to Wattles - add continuous center left-turn lane and resurface)

2017-2040 **Numerous transit projects** to replace transit vehicles and equipment as they are eligible for replacement
2017-2040 **Selected MDOT Bridges** along I-94 to relieve construction/incident capacity and re-routing issues (reconstruction/rehabilitation)

Remaining Schedule for Development of the 2040 Transportation Plan

Feb. 2016

This process for developing a minor update to the BCATS transportation plan has extended over the past year or more. Since conditions in the BCATS area have not changed dramatically, this update did not involve a total "start from scratch" process for the Plan update. Information was updated as needed, and the new federal requirements associated with Plan updates (that have still not been finalized and released at the federal level) could be anticipated, but were not able to be incorporated into the preparation of this update. The list of projects will not undergo an assessment related to air quality impacts at this time, due to Calhoun County's current air quality status with the Environmental Protection Agency. Local approval of the final 2040 Metropolitan Transportation Plan is expected later this year. The BCATS Technical and Policy Committees meet the second and fourth Wednesday's, respectively of each month in the Council Chambers at the City of Springfield City Hall, 601 Avenue A, Springfield, MI at1:30p.m. and those meetings are open to the public.

Aug. - Sept. 2016

Reminder: Public input is welcomed in the development of the updated Plan document. Please contact the BCATS office for further details (269) 963-1158 or email: bcats@bcatsmpo.org

BCATS

Battle Creek Area Transportation Study (BCATS)

The Newsletter of the Battle Creek Area Transportation

"The Signal"

BCATS 2040 Transportation Plan

BCATS

September, 2016

601 Avenue A, Springfield, MI 49037 (269) 963-1158
fax (269) 963-4951 e-mail: bcats@bcatsmpo.org
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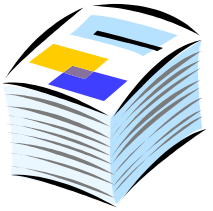
BCATS Provides Update on 2040 Long Range Transportation Plan

The Battle Creek Area Transportation Study (BCATS) is moving ahead with the updating of its 20-year long range transportation plan. The current plan, approved in 2011, has a horizon year of 2035. The updated plan will have a horizon year of 2040. The 2040 Plan is a minor update of the 2035 Plan. The Plan includes forecasted improvements to federal-aid eligible roads, transit, bicycle and pedestrian facilities, safety related projects (such as traffic signal upgrades), and other transportation related areas, all within the limits of reasonably expected revenues. BCATS has gone through a process of reaffirming goals and objectives, developing projections of future population, employment, and traffic levels, and determining what levels of funding may be available to address future transportation needs. The completion of the 2040 Plan document over the next couple of months will conclude this minor update process.



Public input is welcomed throughout the development of the 2040 Plan. CHECK OUT THE BCATS WEBSITE AT: **www. bcats-mpo.org**

The Goals guiding development of the long range plan update include:

1. **Safety** - to minimize the loss of life, injuries, and property damage resulting from travel on all modes within the BCATS area.
2. **Accessibility** - to provide all travelers in the community with reasonable access to important destinations such as: residence, employment, recreation, community facilities, and commercial centers
3. **Preservation** - to preserve the investment in the area's transportation system
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5. **Financial** - to minimize the financial costs of the transportation system to travelers and the community as a whole
6. **Comprehensive Planning** - to coordinate the planning and development of transportation facilities within the metropolitan area and in conjunction with countywide and statewide planning efforts
7. **Public Involvement** - to provide for public involvement in the planning and development of transportation facilities and services
8. **Environmental Mitigation** - to avoid disrupting social and economic life or creating a less attractive or less healthy living environment for Battle Creek residents due to unintended harmful effects of transportation on the immediate and global environment
9. **Community Impact** - to avoid and reduce conflicts between transportation facilities and land use.

Since the last Plan update was adopted in 2011, almost all of the 2011-2015 projects that were identified in the Plan have been implemented. This includes road, transit, non-motorized, bridge and safety projects in the BCATS area. During those years, a total of approximately $51.4 million in federal funding, which was matched with state and local funding, was committed to projects within the metropolitan area. One major project not completed was the Glen Cross Road Extension, as it has been determined that the right-of-way to connect the extension to B Drive North will not be available within the foreseeable future.

The purpose of this newsletter is to provide the public with information regarding the activities of the Battle Creek Area Transportation Study (BCATS). The public is encouraged to contact BCATS at the above address or telephone (269) 963-1158, fax (269) 963-4951 or e-mail: bcats@bcatsmpo.org concerning issues in *The Signal* or other transportation matters.

2040 Plan - Proposed Projects

The Major Road, Transit, Non-Motorized, and Other Projects included in the proposed listing for the 2040 Transportation Plan update at the present time are as follows:

2017 - **B Drive S and Capital Ave., SW** (from 3.5 Mile Road east to M-66 and .25 mile north and south of B Drive S, respectively - resurface)
Wattles Road @ Verona Road Intersection (add dedicated turn lanes on westbound Verona and northbound Wattles)
Goguac Street, McCamly Street, Roosevelt Avenue (a total of 1.4 miles on these three streets - resurfacing)
Propone Conversion/Retrofit of 18 Light-duty Vehicles (conversion of up to 18 light-duty vehicles to propane fuel use)
Battle Creek Areawide Roadway Preventative Maintenance Program (capital preventative maintenance on selected area roadways)
Two Heavy-Duty Transit Buses for Fixed Route Service (replacement vehicles)
M-66 (from south of D Drive South north to north of Glen Cross Road - resurface)

2018 - **East Avenue** (from Roosevelt Avenue north to Morgan Road - resurface)
McAllister Road (from Verona Road north to N Drive North - resurface)
One Clean Diesel Dump Truck (replacement vehicle)
Helmer Road (from Gethings Road north to Columbia Avenue - resurface)
Capital Avenue @ Jackson Street Intersection (upgrade signals and interconnections)
Main Street (from Mary Street south to city limits and from Division Street south to Hamblin Avenue (resurface)
M-66 (Capital Avenue NE) (from Capital Avenue/Division Street intersection north to Frey Drive - restore and rehabilitate)
One Heavy-Duty Transit Bus for Fixed Route Service (replacement vehicle)

2019 - **North Avenue (Pennfield Township)** (from Halbert Road north to Calhoun County Line - resurface)
Elm Street (from Mary Street north to Michigan Avenue - resurface)
Glen Cross Road (from Capital Avenue east to M-66 - resurface)
One Heavy-Duty Transit Bus for Fixed Route Service - (replacement vehicle)
Capital Avenue SW @ Michigan Avenue Intersection (upgrade signals and interconnections)
North Avenue (City of Battle Creek) (from Roosevelt Avenue north to Coolidge Avenue - resurface)
M-311 (11 Mile Road) (from Newton Township south border north to I-94BL/Michigan Avenue - restore and rehabilitate)
M-311 Bridge over the Kalamazoo River (bridge replacement and rehabilitation of bridge approaches)

2020 - **Cliff Street @ Raymond Road Intersection** (modernize and upgrade of traffic signals, including adding video camera detection)
N Drive N (Gorsline Road) (from Bellevue Road east to 12 Mile Road - resurface)
Waubascon Road (from Morgan Road north to Halbert Road - resurface)
Capital Avenue SW (from south City of Battle Creek limits north to Beckley Road - resurface)
Capital Avenue @ VanBuren Street Intersection (upgrade signals and interconnections)
Kendall and Union Streets (from Dickman Road north to Michigan Avenue & Michigan Avenue north to VanBuren Street - resurface)
One Clean Diesel Dump Truck (replacement vehicle)
I-94 Westbound Entrance Ramp at 11 Mile Road (reconstruct loop ramp)
One Propane-fueled Small Bus/Van for Demand Response Service (replacement vehicle)

2021 - **I-94/M-66** (bridge barrier railing replacement)
2021-2040 **Areawide Preventative Maintenance** by local road agencies and the Michigan Department of Transportation (MDOT)
2026-2040 **Numerous transit projects** to replace transit vehicles and equipment as they are eligible for replacement
2026-2040 **Selected MDOT Bridges** along I-94 to relieve construction/incident capacity and re-routing issues (reconstruction/rehabilitation)

Aug. 2016

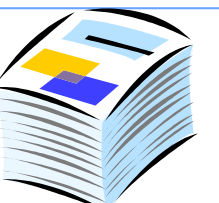
Nov. 2016

Remaining Schedule for Development of the 2040 Transportation Plan

This process for developing a minor update to the BCATS Transportation Plan has extended over the past year. Since conditions in the BCATS area have not changed dramatically, this update did not involve a total "start from scratch" process for the Plan update. Information was updated as needed. In addition, new federal requirements associated with Plan updates (as a result of the MAP-21 and FAST Act legislation) were not finalized in time for incorporation into the preparation of this current update. At present, the list of projects will not have to undergo an assessment related to air quality impacts. This may change in another year when new air quality designations are finalized by the Environmental Protection Agency. Local approval of the final 2040 Transportation Plan update is scheduled for November 30, 2016. The BCATS Technical and Policy Committees will meet at 1:30pm on November 16th and November 30th, respectively, in November. The meetings are held in the Council Chambers at the City of Springfield City Hall, 601 Avenue A, Springfield, MI.

Reminder: Public input is welcomed in the development of the updated Plan document. Please contact the BCATS office for further details (269) 963-1158 or email: bcats@bcatsmpo.org

BCATS



CHAPTER V

CONSULTATION

PROCESS

MAP-21 and the FAST Act require that BCATS consult with federal, state and local entities that are responsible for the following:

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

The goal of this process is to eliminate or minimize conflicts with other agencies' plans and programs that impact transportation, or for which transportation decisions may impact them.

Since the intent of the consultation, according to FHWA, is to exchange information, and not just ask for comments on the BCATS Plan or TIP, BCATS began the consultation process for its overall program with the distribution of a general letter to the involved parties many years ago with a letter making contact in January 2007. The letter was provided to the following agencies making them aware of the consultation requirement for transportation (a copy of the letter is included at the end of this chapter).

- Fish and Wildlife Service
- US EPA Region 5
- Michigan DEQ - Kalamazoo District
- Michigan DNR - Plainwell
- National Trust for Historic Preservation
- Office of State Archaeologist
- Calhoun Soil Conservation District
- USDA - Michigan State Office
- Michigan Department of Agriculture
- W.K. Kellogg Airport
- Michigan Department of Community Health
- Michigan Economic Development Corporation
- Disability Resource Center
- Calhoun County MSU Extension
- USGS - Lansing District
- SW Michigan Land Conservancy
- Calhoun County Farm Service Agency
- Natural Resources Conservation Service
- Consumers Energy
- Calhoun County Water Resources Commissioner
- BC/CAL/KAL Inland Port Development Corporation
- Friends of the Kal-Haven Trail
- Region III Area Agency on Aging
- Michigan 63rd District State Representative (Lorence Wenke Jan/2007)
- Michigan 62nd District State Representative (Mike Nofs Jan/2007)
- Michigan 19th District State Senator (Mark Schauer Jan/2007)
- City of Battle Creek Planning Department
- Charter Township of Bedford
- Charter Township of Pennfield
- Charter Township of Emmett
- Leroy Township
- Newton Township
- Battle Creek Unlimited

- Community Action Agency of Southcentral Michigan
- Burnham Brook Center
- Marian E. Burch Adult Day Care Center and Rehab. Center
- Behnke, Inc. (trucking)
- Kellogg Corportation
- Kraft Foods - Post Division
- Canadian National Railroad
- Battle Creek Area Chamber of Commerce
- State Historic Preservation Office

Subsequent to these initial contacts, BCATS also contacted the Nottawaseppi Huron Band of Potawatomi Indians (Tribal Chairperson and tribal planner).

BCATS has been maintaining information about the plans and programs of these other entities on an on-going basis since the initial contacts were made back in 2007. This includes: Southwest Michigan Non-Motorized Plan (2011), updates to the W.K. Kellogg Airport Plan (2010), development plans along M-66 in Pennfield Township (2010-11), and update to the Calhoun County Coordinated Public Transit Human Service Agency Plan (2015). Recently, all Michigan MPOs were advised of planning updates being conducted by the National Forest Service.

The Consultation list received the same newsletter information about the Plan update process as those on the public participation list (see Chapter IV). Once the Plan update is adopted, the agencies will be advised that, should they wish to consult BCATS' Plan, it is available on the BCATS website. **No comments on the 2040 Metropolitan Transportation Plan were received from the consultation agencies and organizations.**

RESPONSES/COMMENTS

BCATS received the following responses to its initial January 23, 2007 letter:

- Michigan Department of Agriculture (MDA) - primarily concerned with properties enrolled under Part 361 of NREPA (formerly the Farmland and Open Space Preservation Act) and indicating that any projects that will impact land outside of existing rights-of-way would want to be reviewed by MDA. The response also encourages contact with the County Water Resources Commissioner (the Commissioner is on the BCATS consultation list).
- Michigan DEQ - Kalamazoo District Office - provided a helpful list of contact persons for various different types of environmental issues handled by the DEQ. Also included was a copy of the response provided to the Kalamazoo Area Transportation Study (KATS) by the Chief of the Transportation and Flood Hazard Unit of the Land and Water Management Division of the DEQ regarding the KATS 2030 Transportation Plan. The correspondence to KATS provided additional contact persons and website resources for water/wetlands/floodplain related issues. A contact was also provided for issues related to threatened and endangered species.
- A contact person for State Senator Mark Schauer's office was identified.
- The airport manager for W.K. Kellogg airport provided information regarding some changes to roadway operations in the immediate vicinity of the airport which have since been implemented.
- U.S. EPA - Chicago office - responded with some general information about the availability of information at EPA websites, a specific contact person and a willingness to review specific projects.

Types of projects they are primarily interested in include: new alignments, new river crossings, and other capacity increasing project that require additional right-of-way. The key environmental aspects which were pointed out to BCATS include: wetlands, floodplains, impaired streams and other waterbodies, environmental justice, hazardous waste sites, endangered species, and air quality.

- U.S. Department of the Interior-Fish and Wildlife Service (East Lansing, MI office) - responded with a listing of Endangered Species information for the BCATS area (of particular interest are the Indiana bat, bald eagle, copperbelly water snake, and eastern massasauga rattlesnake). The protection of wetlands, in general, was also noted in the correspondence.

The comments/issues generated by the 2007 letter that were still relevant were considered in the update of the 2030 Plan to a 2035 horizon. They were also taken into consideration with the current update to a 2040 horizon.

TREATMENT OF RESPONSES/COMMENTS

Since the responses to the January 23, 2007 letter were not specific to any project, BCATS staff used the information that was still relevant to do a cursory review of the projects included in the draft listing of projects for the 2040 Plan, regarding the issues mentioned by the respondents. The majority of the comments were related to general environmental issues and will be addressed by the project owners within the context of their development of individual projects. Given the high percentage of 2040 Plan projects that are reconstruction, resurfacing, or maintenance related, there are very few projects which would impact the environmental issues noted. For those that may have modest impacts, all guidance material provided by the consulting agencies will be made available to the project owners for use in developing those projects. BCATS' adopted environmental "Best Practice Guidelines" (Policy Committee September 26, 2007) which have already been provided to potential project owners for their reference. The guidelines are being re-issued to the units of government as part of the 2040 Plan update process.

There were no new comments to respond to from the Consultation agencies.

Battle Creek Area Transportation Study
601 Avenue A - Springfield, MI 49015
269/963-1158 -- fax 269/963-4951
e-mail: *bcatsmpo@aol.com*

DATE: **January 23, 2007**

TO: **Agencies and organizations involved with plans and programs which may impact transportation - and for whom transportation decisions may impact their plans and programs**

FROM: **Patricia Karr, Executive Director** PAK

SUBJECT: **Introductory Letter - Request for Consultation with the Battle Creek Area Transportation Study, Battle Creek, Michigan**

Recent federal transportation legislation spelled out a concern with the impact that the plans and programs of those responsible for areas such as: environmental protection, land use management, historic preservation, provision of human service transportation, economic development, airport operations, freight movement, and other areas have upon the decisions, plans, and programs of federally designated transportation planning agencies.

The same legislation is now requiring metropolitan planning agencies, called MPOs, to have a specific "Consultation" element identified in their programs, and to use this element in the development of two existing major projects. These projects are: (1) a 20-year long range transportation plan; and (2) a 4-year implementing component of the long range plan (called a Transportation Improvement Program, or TIP).

As the MPO in the greater Battle Creek, Michigan area, the Battle Creek Area Transportation Study is working to identify appropriate agencies to include in this Consultation effort. BCATS requests a copy of any plans or programs your agency or organization may have that detail future development, location of sensitive resources, or any other inventory that may be useful in reviewing plans for future transportation projects. These items can certainly be provided electronically to BCATS at bcatsmpo@aol.com. Other contact options are included in the letterhead above. Please also provide the name of the best contact person within your agency or organization so that future contact can be completed as efficiently as possible.

BCATS is in the process of updating its long range transportation plan to the year 2030 at the present time. BCATS is also developing a new 4-year Transportation Improvement Program this winter and spring which will cover the time period of 2008-2011. As part of both of these activities, BCATS will send you correspondence notifying you of the projects included in these efforts and will solicit your comments. However, the intent of the consultation process is to ***exchange information*** and not just to have BCATS ask for comments on its plans and projects at any one point in time.

We do not wish this to be a burden to your organization - and be advised that all fourteen MPOs in Michigan have this same charge from the federal regulations - however, we do wish to develop a relationship that can be beneficial to both of our organizations. Thank you for your consideration and

Battle Creek Area Transportation Study
601 Avenue A - Springfield, MI 49015
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e-mail: *bcatsmpo@aol.com*

April 18, 2007

Ms. Laura Spurr
Tribal Chairperson
Nottawaseppi Huron Band of Potawatomi Indians
2221 - 1½ Mile Road
Fulton, MI 49052

Dear Chairperson Spurr:

I am contacting you on behalf of the Battle Creek Area Transportation Study (called BCATS) which is the metropolitan planning organization for the greater Battle Creek, Michigan area. As the metropolitan planning organization, BCATS is responsible for the planning and programming of transportation improvements involving many modes of travel. BCATS recognizes that your tribe has an interest in the transportation decisions which affect all areas of Calhoun County. The BCATS service area (which is only a portion of Calhoun County) includes the Cities of Battle Creek and Springfield and the Townships of Bedford, Pennfield, Emmett, Leroy and Newton.

Since your tribe has established land in trust within the BCATS' service area (in Emmett Township), BCATS would like to invite you, or your representative, to be involved in the activities of BCATS. BCATS has two standing Committees, the Technical Committee and the Policy Committee, which make decisions about transportation policies and programming. The Technical Committee reviews plans and programs and makes recommendations to the Policy Committee. The Policy Committee has final local approval regarding U.S. Department of Transportation funded projects. I invite you to attend a Committee meeting to see more of what BCATS is all about. I have included a joint meeting schedule for 2007 for your information.

BCATS has two major federally mandated programming requirements which are updated periodically. These are: a 20-year long range transportation plan; and a 4-year implementing component of the long range plan (called a Transportation Improvement Program, or TIP). BCATS is in the process of updating its long range transportation plan to the year 2030 at the present time. This spring, BCATS is also developing a new 4-year Transportation Improvement Program (the implementing plan) which will cover the time period of 2008-2011. As part of both of these activities, BCATS will request your comments on the planned improvements. A flyer detailing the updated Transportation Improvement Program is included with this correspondence for your review and comment.

Please feel free to contact me with any questions you may have about the BCATS organization.

Sincerely,

Patricia Karr

Patricia Karr
Executive Director

BCATS

CHAPTER VI

INTERMODAL CONSIDERATIONS

AVIATION, RAIL, TRUCKING

To the extent possible from available information, this chapter describes the services, facilities, and condition of air, rail, and trucking as components of the transportation system. These three intermodal areas have an impact on the factors to be considered in plans and project strategies, such as economic vitality, safety and security, accessibility, integration, and connectivity.

Although the ISTEA legislation was superseded by TEA-21 in 1998, SAFETEA-LU in 2005, MAP-21 in 2012 and the FAST Act in 2015, the process that ISTEA outlined still provides good guidelines for the consideration of intermodal interests:

1. *Connections:* The convenient, rapid, efficient, and safe transfers of people and goods among modes that characterize comprehensive and economic transportation services.
2. *Choices:* Opportunities afforded by modal systems that allow transportation users to select their preferred means of conveyance.
3. *Coordination and cooperation:* Collaborative efforts of planners, users, and transportation providers to resolve travel demands by investing in dependable, high-quality transportation service either by a single mode or by two or more modes in combination.

A discussion of the aviation, rail, and trucking modes in the Greater Battle Creek area will address these considerations to the extent possible.

AVIATION

There is one airport facility within the BCATS area. This is the W.K. Kellogg Airport (KBTL), located approximately three miles west of downtown Battle Creek and immediately southwest of the City of Springfield. KBTL completed an update of its original *Airport Layout Plan* in 2003. The update graphically depicts future facilities for the Airport. As part of the *Airport Layout Plan Update*, projections of aviation activity for the Airport were developed through the year 2020. The report inventories the existing airport facilities and forecasts levels of activity at the airport through the year 2020. The *Airport Layout Plan Update* developed recommendations for future facilities for the Airport needed to accommodate existing and projected aviation needs. In 2015-2016, the Airport is engaged in the development of an Airport Strategic Business Plan which is designed to set out the mission, vision, values, goals and objectives, and action plans necessary to continue being good stewards of the airport's assets.

Characteristics and Classification - KBTL is situated on 1,260 acres on the west side of the City of Battle Creek which are zoned for industrial use. The airport is owned and operated by the City of Battle Creek. The airport is a regional general aviation airport. It has an Airport Reference Code on the Airport Layout Plan of D-IV, indicating that this airport is capable of accommodating aircraft with approach speeds in excess of 141 knots (Aircraft Approach Category D) and wingspans under 171 feet (Airplane Design Group IV).

KBTL is also classified as a Tier 1 airport in the 2000 Michigan Aviation System Plan (MASP). Tier 1 airports (as defined in the MASP) "respond to essential/critical state airport system goals and objectives. These core airports should be developed to their full and appropriate level."

The primary runway (5L-23R) at KBTL is 10,004 feet long by 150 feet wide, allowing it to serve a variety of users and nearly all aircraft types. The crosswind runway is 4,835 feet long by 100 feet wide, and a third runway (4,100 feet long by 75 feet wide, that is parallel to the 10,004 foot runway) provide for additional landing options for slower, small single-engine aircraft. The airport operates 24-hours/day. An on-site Air Traffic Control Tower (ATCT), operated under FAA contract with Midwest Air Traffic Control Service, Inc., is in use from 6:00 am to 10:00 pm. After control tower hours, Kalamazoo Approach Control (10:00 -11:00 pm) and Chicago Center (11:00 pm - 6:00 am) manage the airspace of the airport. The ATCT has been in operation since July, 2005, and is located on the mid-field portion of the airport property. Other structures on the property include numerous City of Battle Creek-owned buildings and the old terminal building (now utilized by the Western Michigan University College of Aviation). There are 56 airport-owned and one corporate owned hangars on-site. There are currently two fixed base operators (FBOs) providing services to the public such as fuel sales, aircraft maintenance, airplane sales, etc. Duncan Aviation provides aircraft overhaul and refurbishment services to corporate jet aircraft, while Waco Classic Aircraft Corporation manufactures the Waco YMF-5 and assembles the Great Lakes 2T-1A-2. Waco is the only FAA certified fixed wing aircraft manufacturer in Michigan. There are additional buildings that also house the Air National Guard, Western Michigan University's College of Aviation, the Kellogg Corporate Flight Department, and the FAA Regional Flight Inspection Field Office.

Utilization - KBTL has been one of the busiest airports in the State of Michigan. In 2015, the Airport was the fourth-busiest towered airport in the state. The facility is utilized on a regular basis by both itinerant and local aviation traffic. Tenants basing aircraft at the airport include sixty-five private individuals, two large corporations, two fixed based operators (FBOs), one government agency, the Western University College of Aviation, and the Air National Guard. The WMU College of Aviation is the third largest post-secondary aviation education program in the United States and utilizes the airport for flight training activities. At the present time, the Air National Guard does not have a flight mission out of Battle Creek. However, this could change in the future. Scheduled commercial passenger service has not been provided at the airport since 1987. Passenger service is provided at the Kalamazoo/Battle Creek International Airport located 23 miles to the west in Kalamazoo, Michigan. Table VI-1 below summarizes operations (including itinerant and local traffic) at the airport from 2012-2015.

TABLE VI-1
W.K. KELLOGG AIRPORT - AIRCRAFT OPERATIONS SUMMARY 2012-2015

OPERATIONS TYPE	2012	2013	2014	2015	2012-13	2013-14	2014-15
Air Taxi/Air Carrier	691	804	1,041	1,134	16.4%	29.5%	8.9%
Military	2,179	1,380	1,625	2,679	-36.7%	17.8%	64.9%
General Aviation	78,467	80,131	75,261	75,436	2.1%	-6.1%	0.2%
TOTAL	81,337	82,315	77,927	79,249	1.2%	-5.3%	1.7%

Aviation activity declined significantly due to the economic recession of 2008-2009. General Aviation traffic has stayed fairly stagnant and the military presence at the airport has significantly declined.

Other Considerations - Legislation enacted in 2000 by the State of Michigan created the Michigan SmartZone program. This legislation allows the Michigan Economic Development Corporation to designate SmartZones throughout the state. The Michigan Economic Development Corporation (MEDC) designated KBTL and its surrounding environs as the "Battle Creek Aviation SmartZone." Partners in the local SmartZone include the City of Battle Creek, Battle Creek Unlimited (BCU), WMU College of Aviation, and Kellogg Community College Regional Manufacturing Technology Center (RMTC). The zones are intended to stimulate the growth of technology-based businesses and jobs by aiding the recognized clusters of new and emerging businesses. Aviation, aerospace and e-learning research and development are the focus of the "Battle Creek Aviation SmartZone." However, at the present time this designation has yet to yield benefits for the airport.

The use of KBTL as a cargo facility peaked in 1979 and was then associated with the provision of passenger service from the airport. Some freight movement occurs at the airport now through Duncan Aviation at the south end of the airport. Any freight ground movements are accommodated via South Airport Rd and Helmer Rd (I-94BL/M-96). From Helmer Rd, freight can be transported southwest via W. Columbia Ave/Skyline Drive (I-94BL) and on to I-94 for travel east (Detroit) or west (Kalamazoo/Chicago). Cargo can also be transported north to Lansing and Grand Rapids via I-94BL/M-96 (Helmer Rd) to M-37 (Helmer Rd north of I-94BL).

U.S. Customs clearance services are provided in conjunction with BCU, the marketing arm of the Fort Custer Industrial Park. BCU is the operator of the Foreign Trade Zone #43, located west of the airport where the customs offices are located. These services are provided on an "on-call" basis for arriving aircraft. There are no customs facilities at the airport.

There are no rental car operations on airport property.

The airport has developed a "Fly Quiet Program" to address issues of noise abatement and is working to implement the provisions of the program. The airport property is bounded by areas of industrial zoning; however, there are areas east and southeast of the airport which are zoned for single family residential use and these areas will continue to show incompatibility with an airport function into the future. Currently, there are specific height and use restrictions imposed by the City of Springfield and the City of Battle Creek for areas within the flight paths of the airport's runways.

Access into the airport is primarily from I-94BL/M-96 (Helmer Rd), a four-lane roadway along the eastern edge of the airport property, and from I-94BL (W. Columbia Ave) on the south side of the airport. These roadways were assigned the I-94 Business Loop (BL) designation in 2015 due to the closure of a portion of I-94BL (Skyline Drive) on the west side of the airport property. The closure was done in order to accommodate the needs of the U.S. military. An interior circulation road to the old terminal building extends from Helmer Rd. It is a two-lane, two-way roadway which divides at the old terminal to provide a circular one-way road. This road also provides access to some of the parking areas. There is no public parking. The available parking is dedicated to the FAA, the WMU College of Aviation, and airport personnel. The access from Columbia Ave (I-94-BL) is via South Airport Rd. This road serves the airport administration office, the airport operations and maintenance facilities, the new ATCT tower, the FAA Flight Inspection Area Office, Duncan Aviation, Centennial Aircraft Services, and Waco Classic Aircraft Corporation. The Air National Guard has an entrance to its facilities from M-96 (Dickman Rd) to the north. Access to 135 acres of airport property from the west is precluded by Grand Trunk Western Railroad tracks which run the entire length of the airport property. The closure of the section of I-94BL (Skyline Drive) north of Hill Brady Rd has also precluded any other western access to the airport property from that point north to M-96

(Dickman Rd). The KBTL is investigating the possibilities of constructing an overpass over the rail tracks. which would be south of Hill Brady Rd, in order to access the western portion of the airport property in the future.

Future Forecasts and Needs - A $6 million project to rehabilitate the main runway at the airport (10,004 feet) was completed in the fall of 2015. The improvement included milling and replacing four (4) inches of the asphalt surface. The new surface was grooved and is expected to last for the next 10-15 years. The rehabilitation project cost approximately 6.1 million. The cost was shared by the Federal Aviation Administration, the Michigan Department of Transportation, and the City of Battle Creek. Several other taxiway reconstruction projects are planned over the course of the next three years.

The airport activity noted above has the potential to impact the adjacent roadways, I-94BL/M-96 (Helmer Rd), I-94BL (Columbia Ave), and South Airport Rd. Only Helmer Rd and Columbia Ave are on the transportation modeling network. Since Helmer Rd is a four-lane facility, it can accommodate additional traffic volume without the need for significant upgrading. Columbia Ave, west of Helmer Rd, is a two-lane roadway that is being evaluated for its adequacy now that it has been designated as the I-94 Business Loop. The Michigan Department of Transportation is responsible for evaluating Columbia Ave, Helmer Rd and the intersection at Columbia Ave/Helmer Rd for any necessary updates resulting from the change in the Business Loop routing. Previous improvements that were completed to the South Airport Rd/I-94BL (Columbia Ave) intersection involved adding a traffic signal with dedicated left-turn lanes at the intersection. At this time, there are no additional roadway projects to address airport needs that need to be included in BCATS' 2040 Plan update.

RAIL

Rail facilities meet a significant portion of the freight transportation needs, and to a lesser extent some of the passenger needs, in the greater Battle Creek area. There are three major operators involved: Amtrak, Norfolk Southern, and Canadian National - North America.

Freight issues facing rail operators include piggyback services, double-stack car clearances, co-existence with high speed passenger services, and abandonments. A rail issue facing the local community revolves around the noise impacts of train service, especially in the downtown area during the evening hours. The City of Battle Creek investigated the requirements for creating a rail "Quiet Zone" in Battle Creek and moved ahead with that project in 2016. In January, 2016, the City of Battle Creek filed a "Notice of Intent" to create an approximately three-mile Quiet Zone through its downtown area. There were eleven (11) crossings originally included in the Quiet Zone area: Spencer St, two on East Michigan Ave, Elm St, Main St, South Ave, Division St, Fountain St, Capital Ave SW, McCamly St and South Kendall St. A significant cost was incurred to implement all of the necessary safety improvements to the crossings to allow for no train horns sounding in the area where hotels, other venues and residents find the noise associated with passing trains to negatively impact their businesses and homes. Therefore, three of the eleven crossings listed above were identified for total closure and have been closed (at Fountain, Division and Spencer streets). Other safety treatments are being carried out for the remaining impacted crossings. Those treatments include: installation of "four-quadrant" gates on South Ave and Capital Ave SW; and "two-quadrant" gates with supplemental safety measures or alternative safety measures at the other crossings. The City of Battle Creek anticipates completing all of the necessary steps to implement the "Quiet Zone" by the end of calendar year 2016 or early in the 2017 calendar year.

Passenger service issues previously identified in Michigan are extensions of service to areas of growing population in southeast Michigan, construction of new stations along existing lines, and upgrades at stations and crossings to accommodate higher-speed rail service.

TABLE VI-2
AMTRAK SERVICE FROM BATTLE CREEK
DAILY (as of 10/31/16)
Source: Amtrak fare & schedule website
(https://www.amtrak.com/train-schedules-timetables)

Destination	Departure Times
DEARBORN (eastbound)	11:24 pm
	4:40 pm
	9:47 pm
CHICAGO (westbound)	9:01 am
	9:52 am
	1:53 pm
	8:54 pm
EAST LANSING/ PORT HURON (northbound)	7:45 pm

Amtrak provides passenger services on the former Norfolk Southern owned tracks that enter the area from the east, coming from Detroit. The tracks pass by the downtown Battle Creek intermodal terminal and leave the area headed west to Chicago. The State of Michigan purchased the Dearborn to Kalamazoo section of track from Norfolk Southern in 2013. This is the Wolverine line of service. Service is also provided along the Blue Water line, which runs from Port Huron to Chicago, coming to Battle Creek from the East Lansing station. Once west of Kalamazoo, Amtrak is able to travel at speeds of 95 miles per hour for a stretch of 45 miles. The goal for the service east of Battle Creek to Dearborn is to also achieve higher-speed rail service up to 100 miles per hour. The annual number of boardings and alightings at the Battle Creek station was 42,984 in 2015, down from the figure in the 2035 MTP, which was 56,120 in 2008 (Source: National Association of Railroad Passengers fact sheets, 2009 and 2015). Rail passengers are also afforded an opportunity to "single ticket" an intercity bus connection to certain destinations through Indian Trails, an intercity bus operator, upon their arrival in Battle Creek. Daily train movements, as of October 20, 2016, are shown in Table VI-2.

Improvements in the form of faster service to and from the east, service extensions, and new or upgraded stations may result in increased ridership and more trains operating in and out of Battle Creek's intermodal center. The implementation of higher-speed passenger rail at some point in the future will require changes to the intermodal facility. Changes to some crossings have already taken place in the BCATS area. Significant work at the Battle Creek intermodal facility to implement some of the needed changes, and to update the facility in general, was completed in 2011 as a result of federal funds provided to upgrade the Battle Creek intermodal facility. However, as the facility ages, additional work now needs to be completed in order to keep the intermodal facility in good condition. The Michigan Department of Transportation (MDOT) has been working on long range plans for higher-speed passenger rail for some time and has identified changes to existing at-grade highway/rail crossings in the categories of separated, gated, and closed crossings. See the "At-Grade Crossing" section later in this chapter.

MDOT has identified a listing of at-grade crossings to be modified in some manner to accommodate higher-speed rail along the entire Detroit to Chicago corridor. The possible actions associated with upgrading the corridor include: upgrading warning devices from flashing lights to gates; maintaining gates; provide for a grade-separation of roadways and rail tracks; and closure of crossings at some locations. Most of the crossings in the BCATS area have been included in the listing for maintaining the gated crossing devices. However, the "Quiet Zone" project discussed above resulted in additional closings and upgrades outside of MDOT's previous listings. Originally, MDOT recommended three crossings for grade separation (see listing on the next page). However, due to the costs involved to implement a grade separation, it is not anticipated that any projects of that magnitude will take place in the foreseeable future in the BCATS area.

Rail Freight Operators - Norfolk Southern and CN North America operate freight trains through the BCATS area. Battle Creek is sited along one the busiest rail corridors in the State of Michigan which goes from Port Huron to Chicago. The two rail companies' lines run parallel for approximately 1.3 miles in downtown Battle Creek. Canadian National maintains a large switching yard and a maintenance facility on the northeast side of Battle Creek, west of Raymond Rd, north and south of Emmett St.

As of the 2025 BCATS Transportation Plan, CN North America had approximately thirty (30) through freight train movements per day in the BCATS area and about 25 to 30 yard movements at its Emmett St switching and maintenance yard per day. At that time, the freight traffic figures had increased by fifty percent and the yard movements were up by thirty-three percent after the railroad tunnel under the St. Clair River at Port Huron became fully operational in 1995. Statewide, the use of rail for transporting containers, especially truck trailers loaded on rail flatcars, has increased dramatically in the last several years. Between 2009 and 2013, the weight of rail freight moved throughout Michigan increased by almost 17%. The value of the rail freight transported increased by an even larger percent, up 49% over the same time period. MDOT forecasts a more than 50% increase in tonnage and a 70% growth in value of rail freight transported in Michigan by 2030. Coal, chemicals and metallic ores are the top commodities moving by rail in Michigan. Transportation equipment is by far the most valued commodity moving by rail, at $81 billion in 2013, up over 64% since 2009. Continued increases in freight movement are expected to have an impact on the total number of trains passing through Battle Creek and on all at-grade crossings in the BCATS area. This is independent of the rail passenger route through the BCATS area.

Norfolk Southern assumed the operations of Conrail in the Battle Creek area. Norfolk Southern has a limited number of through freight trains per day operating along the Detroit to Chicago corridor. They do not operate any switching yard operations in the BCATS area. Future levels of rail freight activity are not known at present for this stretch of track.

At-Grade Crossings - The increases expected in freight movements, combined with the potential for higher-speed passenger rail in the future, require that the status of all at-grade rail crossings in the area be monitored. As noted earlier in this section, MDOT has identified at-grade crossings which would be affected by the development of a higher-speed rail line from Detroit to Chicago. There are three grade separations recommended for the future in the BCATS area. However, no closings of at-grade crossings are included for the BCATS area on MDOT's master list. All other identified gated crossings would remain gated under MDOT's proposed long range plan. This MDOT plan only addresses tracks used with Amtrak service. Crossings closed as a result of the City of Battle Creek's "Quiet Zone" project have been removed from the list that follows. The locations of gated crossings and potential grade separations for the Amtrak line, as previously determined by MDOT, are on the following list.

Crossings Impacted by Higher- Speed Passenger Rail and Treatment Recommended by MDOT

Gated Crossing Retained

Milepost	Description (Responsible Railroad)
114.260	11 Mile Rd (NS)
116.000	Wattles Rd (NS)
119.230	I-94BL/Michigan Ave (NS)
119.440	Greenville St (NS)
119.860	Elm St (CN)
120.050	Main St (CN)
120.720	M-66/Capital Ave. SW (NS)
120.870	McCamly St (CN)
121.550	Kendall St (NS)
121.950	Angell St (NS)

Grade Separation Recommended

Milepost	Description (Responsible Railroad)
122.700	20th St (NS)
123.650	Helmer Rd/S Bedford Rd (NS)
126.100	Clark Rd/Custer Drive (NS)

NS = Norfolk Southern CN = Canadian National

TRUCKING

Background - Whether the criteria is weight or value, commodity movement in Michigan is handled overwhelmingly by truck transport; 70% and 86% respectively in 2003, according to research by MDOT. The trucking industry is a key employment sector for Michigan residents as well, with one in every eleven residents employed in some facet of the industry. The increasing use of trucks for movement of goods has an effect on many areas of transportation that are key components of consideration for transportation planning including congestion, safety, pavement life, and air quality.

Characteristics - There are approximately 820 miles of public roadways within the BCATS area. However, not all of these roads are expected to provide the same types of service, nor are any of them expected to operate totally independent of the remaining roadway system. A tiered and "classified" roadway system provides a means of determining the optimal routes for accommodating truck traffic in urban and rural areas. There are many different types of trucks operated on Michigan's roadways. The "heavy" truck category, those with six or more tires meeting the road, are generally the type targeted with "truck routing restrictions." Total private and commercial trucks registered in Michigan numbered 2,201,144 in 1994. By 2004, that number had risen to 3,612,504, a 6.4% average annual rate of change. (Note that SUVs are recorded as trucks in the Michigan statistics.) The Cities of Battle Creek and Springfield have existing truck route ordinances and street designations. A listing of the streets designated as truck routes is maintained by the City of Battle Creek and updated regularly. Recently, the Charter Township of Pennfield enacted truck restrictions on some of its non-trunkline roadways.

There are approximately sixteen trucking operations of varying size in the BCATS area. They account for several hundred truck movements in the area each day. In addition, there are several major businesses/corporations which generate truck traffic at their facilities. The most significant generators are the cereal producers, Kellogg's and General Foods/Post, and the auto company suppliers, most of which are located in the Fort Custer Industrial Park on the west side of the BCATS area. The largest of these is Denso Manufacturing. Several area businesses, such as the cereal producers, also have a major impact on the volume of rail traffic in the BCATS area.

Issues - In reviewing the website of the American Trucking Association (ATA) (www.truckline.com) there are many areas that are considered significant issues for the trucking industry. In addition to the traditional issues of congestion and access impacting trucks, the Association has broadened its areas of concern to include the following topics which can impact transportation planning (from the ATA website):

- agriculture and food
- autohaulers
- crossborder
- energy
- engineering
- environment
- government traffic
- hazardous materials
- highway infrastructure and funding
- intermodal
- labor
- regional carriers
- risk management
- safety
- security
- tax and registration

These concerns are considered to the extent feasible within the development of this *2040 Metropolitan Transportation Plan* update.

CHAPTER VII

INTERMODAL CONSIDERATIONS

PEDESTRIAN & NON-MOTORIZED

There are several related areas of interest in the provision of transportation facilities to meet the needs of pedestrian and non-motorized modes of travel. These include adequate pedestrian crossings on the roadway network, provision of safe, efficient travel for utilitarian and recreational bicyclists, preservation of future trail corridors for recreational uses, and implementation of a comprehensive non-motorized system for the entire study area.

Passage of "Complete Streets" legislation by the Michigan legislature added additional planning and development requirements to transportation projects to adequately consider all users of the roadway system, especially for projects implemented by the Michigan Department of Transportation (MDOT).

PEDESTRIAN

Pedestrian movement is generally accommodated by the presence of sidewalks (or non-motorized paths) combined with the use of pedestrian crossing signals at major intersections in the BCATS area. Some recently completed roadway projects in the urban area have included sidewalks or multi-use paths to enhance pedestrian activity. It is recommended that future projects include adequate provisions for pedestrian movement and that special categories of funding, such as Transportation Alternatives Program (TAP) grants (administered by MDOT), be sought whenever possible to broaden the funding possibilities for non-motorized facilities in conjunction with roadway projects or as uniquely identified transportation improvements. The City of Battle Creek has implemented a limited number of pedestrian "countdown signals" which provide pedestrians with the number of seconds left on the walk signal. This helps the pedestrian decide whether or not to attempt to cross the road during that signal phase. The City of Battle Creek also periodically tests other new pedestrian oriented technology, such as "flashing eyes" pedestrian signals and in-pavement or overhead pedestrian crossing warning lights for motorists. The City of Battle Creek has also installed pedestrian signals with audible indicators at three downtown intersections to aid those with vision disabilities. The locations are Michigan Ave at McCamly St, Michigan Ave at Capital Ave, and Washington Ave at Champion St.

For some time now, the Americans with Disabilities Act (ADA) requirements include the installation of not only sidewalk ramps at crosswalks, but also of a detectable warning surface within the sidewalk ramp as well. These surfaces, with a pattern of raised domes on them, can be detected by persons with vision disabilities. The raised surface is required at areas of possible hazards, which include not only crosswalks, but also at edges of train platforms. The road agencies are required to install the ramps with detectable warning surfaces on all streets which are reconstructed, resurfaced or have other specific lesser treatments.

NON-MOTORIZED (linear parks, bikeways, bicycle lanes)

Bicycling is permitted on all highways, roads, and streets in Michigan except limited access freeways. However, just because it is permitted does not necessarily mean that it is safe or advisable to do so along many of the busy thoroughfares and narrow rural roads that make up the transportation network. While the responsible road

agencies (state and local) have delineated bicycle lanes and provided non-motorized paths (as may be represented in this document), it is the responsibility of the user of the facilities to exercise the good sense of a reasonable person in conjunction with the use of any provided facility. Personal safety is the responsibility of the user.

> (Disclaimer: Since BCATS does not maintain the roads or paths referred to in this Plan, it makes no express or implied guarantee as to the condition or safety of existing or planned facilities. The condition of facilities will change over time and should be assessed for suitability depending upon one's skills and abilities. BCATS shall not be answerable or held accountable in any manner for loss, damage, or injury that may result from the use of the identified non-motorized facilities in this Plan.)

In addition to traditional shared auto/bike corridors, there has been an interest in developing non-motorized travel corridors along abandoned rail rights-of-way under the auspices of the Michigan Trails and Greenways Alliance (formerly the Rails-to-Trails Conservancy Program). Nationally, there have been over 550 rails-to-trails conversions representing over 6,800 miles in 45 states. In Michigan, currently 1,200 miles of such trails connect a variety of destinations.

Nationally, the designated North Country National Scenic Trail (NST) will be traversing Calhoun County in its route from North Dakota to New York. The NST links areas of historic, natural, cultural, and scenic importance along its route. When completed, the NST will be the longest continuous trail in the nation, covering over 4,000 miles. The NST effort is expected to be jointly signed along with some of Battle Creek's Linear Park and Calhoun County's trailway as it makes its way through the county.

The Michigan Department of Transportation (MDOT) Southwest Region Office has developed a reference map for trails which exist in each of the counties in its region. The map was prepared by the Southwest Michigan Planning Commission and is available through the MDOT Transportation Service Center offices. The map provides a more regional perspective of the non-motorized trails that currently exist.

In the BCATS area, the City of Battle Creek developed a Linear Park system many years ago with 16 miles of non-motorized trails, primarily located in the area surrounding downtown Battle Creek. In 2002, the system was expanded by an additional mile with a connection to Irving Park on Battle Creek's northwest side by utilizing a federal Transportation Enhancement grant. Pennfield Charter Township's master plan includes a recommendation for development of a trailway to extend a non-motorized facility from the City of Battle Creek's Linear Park northward along the Battle Creek River and/or Wanondoger Creek. There is also a recommendation to develop a bike route along Pennfield, McAllister and Brigden Roads in Pennfield Township, in coordination with the Calhoun County Road Department (CCRD).

The CCRD has identified a corridor across the whole county for a trailway, mostly in the eastern section of the BCATS area and extending east into the remainder of the county. Some components of this trailway have already been constructed, including a portion around the Ott Biological Preserve in 2014. Calhoun County has a "2015-2019 Calhoun County Parks and Recreation Master Plan" detailing planned development of its trails county-wide. Emmett Charter Township has proposed bike lanes along several roadways in its jurisdiction. Some of these lanes have been included as part of recent roadway projects. MDOT and the City of Springfield completed a vital connection to the City of Battle Creek's Linear Park along M-37 (Helmer Rd) on the west side of the metropolitan area in 2008. MDOT added a sidewalk along M-37 (Helmer Rd) from the end of the Springfield path, south to connect with the City of Battle Creek's sidewalk and paths along Helmer Rd south of Columbia Ave.

The City of Battle Creek has developed an extensive *Non-Motorized Transportation Network Master Plan*, which was adopted by the Battle Creek City Commission in March, 2006 and which is revised on a periodic basis. This plan is a 20-year vision for the City's non-motorized system. The City utilized the assistance of consulting firm Wade Trim to complete the plan and incorporated an extensive amount of public involvement in the development of the plan. Several short-term actions were identified in the plan that are designed to implement a connected non-motorized system for not only Battle Creek, but Calhoun County and the region. These efforts included:

- incorporating the *Non-Motorized Transportation Network Master Plan* into the City of Battle Creek's Comprehensive Master Plan
- installing bike racks on Battle Creek Transit line-haul buses
- development of a citywide bike rack program targeting not just City of Battle Creek parks, schools and the library but also major employers, the downtown, hospitals, the industrial park, the retail mall, and Binder Park zoo
- expanding opportunities for water travel on the area's rivers (an effort is currently underway to explore opportunities for white water rafting along sections of the rivers in downtown Battle Creek)
- public education/media campaign to encourage safe and proper use of the non-motorized system
- establish a maintenance program and financial support for the expanding non-motorized system
- development of a coordinated signage and way-finding program for the non-motorized system

In reviewing the status of non-motorized facilities within the BCATS area, the local agencies have had an aggressive program to expand the areawide non-motorized system. Battle Creek Transit has completed installation of bike racks on its entire fleet of large buses, as called for in the listing above. BCATS plans to support the plans of the local agencies within the programming of its own long range transportation plan. There continues to be no need to recreate the excellent process used by the City of Battle Creek for determining non-motorized needs. The city's process addressed a significant amount of the "needs" in regard to this system and did an excellent job of looking beyond the borders of the City of Battle Creek. Similarly, Calhoun County has developed its Plan utilizing a comprehensive process and public involvement.

On the following page is an inventory of websites related to non-motorized transportation plans & facilities in the Battle Creek metropolitan area, including some previously referenced in this chapter.

NON-MOTORIZED PLANS & RESOURCES

City of Battle Creek *Non-Motorized Transportation Network Master Plan*, March 2006
http://www.bcparks.org/DocumentCenter/View/385

City of Battle Creek *Parks and Recreation Master Plan 2014-2018*, March 2014
http://www.bcparks.org/DocumentCenter/View/384
http://www.bcparks.org/DocumentCenter/Home/View/730, list of "Original Projects" in Capital Improvement Plan for 2014-18 Master Plan
http://www.bcparks.org/DocumentCenter/Home/View/729, list of 2016 "Amendments" to Capital Improvement Plan for 2014-18 Master Plan

City of Battle Creek, Current Non-Motorized Network map, updated 9/16/16
http://www.bcatsmpo.org/downloads/bc_nonmotorized_network_map_20160916.pdf

City of Battle Creek, Linear Park map, "New" 2016
http://www.bcparks.org/DocumentCenter/Home/View/565

City of Battle Creek, Linear Park map, from old brochure
http://www.bcparks.org/DocumentCenter/View/246

Woodland Park and Nature Preserve, http://woodlandparkbc.com/

Battle Creek Whitewater, Inc. (local non-profit organization promoting restoration of Kalamazoo River in downtown Battle Creek, to potential "blueway" trail with connections to other non-motorized facilities). http://www.battlecreekwhitewater.org/

Calhoun County *Parks and Recreation Master Plan 2015-2019*
https://www.calhouncountymi.gov/DownloadTracking.aspx?DocumentId=1868

Map of Calhoun County parks, https://www.calhouncountymi.gov/DownloadTracking.aspx?DocumentId=1876

Calhoun County Trail Master Plan, 2015, by Professional Engineering Associates (PEA) Inc.
http://peainc.com/portfolios/calhoun-county-trail-master-plan/

Calhoun County Trailway (Calhoun County Trailway Alliance, http://www.calhouncountytrailway.org/)
– 51 miles of trail across Calhoun County connecting Homer, Albion, Marshall and Battle Creek; Portions of the trail are in beautiful Ott Preserve; Will link with the Falling Waters Trail in Jackson and the Kalamazoo River Valley Trail in Kalamazoo County, along with the North Country Trail, the Iron Belle Trail, and the Great Lake-to-Lake Trail.

North Country Scenic Trail (https://northcountrytrail.org/)
– Connects with the the Calhoun County Trailway; – When completed will be the longest continuous hiking trail in the United States; The NCNST is over 4,600 miles long.

Great Lake-to-Lake Trail (www.michigantrails.org/trails/past-work/great-lake-to-lake/)
– The Calhoun County Trailway will be the county hub for the trail; Will connect Port Huron to South Haven; Its master plan was completed in 2011; When completed it will be 240 miles, connecting numerous tourist destinations.

Iron Belle Trail (http://www.michigan.gov/dnr/0,4570,7-153-10365_16839_71459---,00.html)
– The Calhoun County Trailway will serve as a portion of this trail; Will consist of hiking and biking routes from Belle Isle in Detroit to Ironwood in the Upper Peninsula; Will be the longest designated state trail in the nation.

Pennfield Township Parks & Recreation Plan 2016-2021, January 2015. http://smpcregion3.org/wp-content/uploads/2015/09/Plan-Final-1-6-15.pdf

Connecting Communities: A Regional Vision for Non-Motorized Transportation in Southwest Michigan aka *Southwest Michigan Non-Motorized Transportation Plan* (for Allegan, Barry, Berrien, Branch, Calhoun, Cass, Kalamazoo, St, Joseph and Van Buren Counties). Developed by the Southwest Michigan Planning Commission with funding from the MDOT. September 2011.
http://www.michigan.gov/documents/mdot/SW_MI_Final_Plan_9_21_2011_369277_7.pdf

CHAPTER VIII

INTERMODAL CONSIDERATIONS

TRANSIT, TAXICAB, INTERCITY BUS, & RIDESHARING

TRANSIT

Public transportation service in the area encompassed by BCATS is currently provided by Battle Creek Transit (BCT). According to BCATS' 2010 population estimates, approximately 75% of the BCATS area population resides within ¼ mile of the fixed-route line-haul service (transportation service operated over fixed-routes on a regular schedule). BCT's demand response service operates throughout the City of Battle Creek, City of Springfield, and the charter townships of Bedford, Pennfield, and Emmett.

From 1932 to 1967, transit service was privately operated by the Battle Creek Coach Company, without any local government support. From 1967 to 1972, the Coach Company provided service under contract with the City of Battle Creek, which subsequently purchased the Coach Company. In July, 1977, public transportation service became a complete City of Battle Creek function known as Battle Creek Transit (BCT). BCT is currently housed in a downtown Battle Creek facility which houses the administrative, dispatching, maintenance, and bus storage functions in three separate buildings. These BCT facilities are located separately from the downtown transfer station for its buses.

BCT operates its line-haul service on eight (8) fixed-routes, at thirty to sixty minute intervals - depending on the route - between the hours of 5:15 am and 6:45 pm on weekdays and from 9:15 am to 5:15 pm on Saturdays. No Sunday service is provided. BCT's fleet currently consists of fourteen (14) traditional large buses for its line-haul service and 7 van-type vehicles for demand-response operations. As of September, 2016, the average age of BCT large buses was 6.8 years. Federal guidelines dictate that large buses can be replaced at 10-12 years of age, or at 350,000 miles. The BCT fleet is being replaced as funding becomes available. The plans for the next 25 years call for replacement of both large and small buses and vans based on the allowed life expectancy. BCT has established an ongoing vehicle replacement program that is primarily dependent on discretionary federal monies for implementation. Replacement buses are required to be wheelchair accessible. Bus shelters and benches are provided and maintained by BCT along its routes (see Table VIII-1). BCT plans to rotate replacement of shelters on an on-going basis, addressing those in the worst condition first. As new destinations develop, BCT evaluates the need for service and service amenities for those locations.

TABLE VIII-1
BATTLE CREEK TRANSIT BUS STOP AMENITIES

ROUTE	MILES	STOPS	BENCHES	SHELTERS
1W - West Michigan	9.5	84	5	4
2E - Emmett-East Ave	6.4	46	6	4
2W - Columbia-Territorial	12.7	48	3	2
3E - Main-Post	5.8	37	6	3
3W - Kendall-Goodale	7.0	53	7	4
4N - NE Capital	6.7	39	4	2
4S - SW Capital	14.1	67	6	3
5W - Ft Custer-VA Hosp	20.0	69	4	4
SYSTEM TOTALS	**82.2**	**443**	**41**	**26**

BCT also plans to update its farebox system as technological advances dictate changes in the way farebox revenues are collected and administered. Each year, BCT allocates a prescribed amount of its federal funding to address safety and security needs of its operation. Examples of recent safety projects for transit include improved facility security equipment and replacement security cameras on the buses, cameras at the Transit Transfer Station, and cameras on the exterior of the BCT administrative building.

BCT has outfitted its line-haul fleet of buses with bicycle racks so that passengers can load their bikes on the bus and travel to a destination where they can continue their bicycle trip. This upgrade to BCT's buses represented an increase in intermodal connectivity within the BCATS area.

A schedule of capital improvements for BCT has been provided to BCATS. The schedule is the basis for the recommended *Plan* projects for BCT.

BCT has successfully implemented its goals in meeting the requirements of the Americans with Disabilities Act, (ADA), to provide for the accessibility of persons with disabilities. Details may be obtained from BCT by calling (269) 966-3474. Some senior service agencies, social service organizations and private non-profits in the BCATS area offer smaller-scale transit services for their clients. These agencies are eligible for certain categories of funding that are "passed through" BCT and which are included, as applicable, in the BCATS Transportation Improvement Programs. This represents a very small portion of the program as these agencies typically apply for one small demand-response vehicle at a time.

BCT is currently doing a study to develop a comprehensive transit master plan that will improve the effectiveness and responsiveness of public transit to the Battle Creek service area. The study may include (exact scope of work to be developed) an in-depth evaluation of the transit operations of the City of Battle Creek, to include a financial plan, a comprehensive asset management plan (fleet, facilities, security, and equipment), marketing plan, and in-depth review of fare structure, route and ridership analysis, customer service satisfaction and trip purpose analysis, and ADA service compliance. It will also identify gaps in transit travel needs within the existing service area. In addition, the study will identify and evaluate all other existing public and human service transportation service in Battle Creek and identify potential unmet travel needs within Calhoun County and as they carry into the greater Regional Prosperity Region #8. This study will be conducted in FY 2017.

TAXICAB SERVICES

There currently is only one taxicab service licensed to operate in the BCATS area, which is A City Cab. In the 2025 Transportation Plan, there were five cab operators. There are also several limousine operators licensed in the City of Battle Creek to provide specialty service. The cab and limousine services are licensed and are regulated by the City of Battle Creek in order to operate within the City Limits. Most of these services are available on an on-call basis 24-hours per day, 7 days per week. There is also a service called "Mobility Transport LLC" that provides accessible vehicle transportation. Currently, that service is not a licensed service, but it may soon fall under the licensing requirements of the City of Battle Creek.

INTERCITY AND CHARTER BUS SERVICES

There are two intercity bus companies operating regularly-scheduled services in and out of Battle Creek. These companies are Greyhound Bus Lines and Indian Trails Motorcoach. These operators utilize the Intermodal Terminal in downtown Battle Creek as their transfer center. Service is provided once or twice a day coming into and leaving Battle Creek, generally bound for other Michigan cities. As noted in the Rail section of Chapter VI, Indian Trails is partnering with Amtrak on some connecting service for Amtrak passengers. Other bus companies provide charter service on an on-call basis to the greater Battle Creek area.

RIDESHARING

The BCATS area is included within the Kalamazoo Local Ridesharing Office (LRO), which encompasses the counties of Barry, Branch, Calhoun, Kalamazoo, and St. Joseph. The Kalamazoo LRO function is performed by Kalamazoo Metro Transit, the urban transit provider in Kalamazoo, MI. Ridesharing remains an alternative to the single person commute and benefits air quality, congestion, and safety as the number of vehicles using the system is reduced.

MDOT maintains two carpool lots within the BCATS area for use by commuters. They are located at the I-94 Exit 100 at Beadle Lake Road and at I-94 Exit 92 at Skyline Drive. These lots have been expanded as demand for carpooling spots increases. The Beadle Lake Road lot currently has 53 spaces and the Skyline Drive lot has 69 spaces. Both lots are utilized extensively. The paved lots are maintained by MDOT. Future programing will focus on the on-going preventative maintenance work needed at these carpool lots and if any additional lot locations need to be identified. A new carpool lot has just been added by MDOT at the newly redesigned Exit 88 on I-94. This is located just to the west of the BCATS area, approximately four miles west of the Calhoun County/City of Battle Creek boundary. Further information about ridesharing can be obtained from the Kalamazoo LRO, Office of the Special Projects Coordinator, at Kalamazoo Metro Transit, 530 N. Rose Street, Kalamazoo, MI, (269) 337-8394, web information at www.KMetroRide.com.

BCATS

CHAPTER IX

COORDINATION with the STATE LONG RANGE PLAN, LONG RANGE PLANNING, & OTHER STATE PLANS

The MAP-21/FAST Act legislation maintains the requirements of prior legislation for a statewide long range transportation plan (SLRP). The state plan must cover a minimum twenty-year time frame at the time of adoption and provide for the development and implementation of the multi-modal transportation system in the state. The state plan must also be developed in cooperation with the Metropolitan Planning Organizations (MPOs) for the areas of the state where there are MPOs. Upon completion of the plan, future transportation improvements need to be consistent with the plan. For that reason, the State of Michigan's Long Range Plan (SLRP) is a broad policy-oriented document which can be used to guide transportation investment decisions at all levels of government. There are "Corridors of Highest Significance" but no specific projects identified. Broad, policy strategies are given for each of these multi-modal corridors. The plan is designed to be flexible enough to accommodate the rapidly changing transportation demands of people operating in a competitive global economy.

STATE OF MICHIGAN LONG RANGE TRANSPORTATION PLAN

The Michigan Department of Transportation recently updated its long range transportation plan. The "MI Transportation Plan - Moving Michigan Forward - 2040 State Long-Range Transportation Plan" (MITP) was approved by the State Transportation Commission on July 21, 2016. The vision for transportation in Michigan is identified in that document as:

> *"Michigan's 2040 transportation system is a safe, efficient, resilient and integrated multimodal system and serves as the foundation of the state's economic vitality and quality of life and support for its residents. Transportation providers throughout the state will work together to address the system's diverse needs. The entire system will be maintained, preserved and protected as one of the state's most important physical assets."*

The vision is then defined in some measure of detail to provide guidance for planning and implementing future investments. Nine values are identified to define the 2040 MITP Vision. These are: choice, efficiency, safety, security, integration, innovation, funding, balance, performance, and stewardship.

MDOT also identifies how the MITP addresses the federal planning requirements and planning factors associated with federally required state long-range plans. An extensive listing of "white papers" support the connection between the MITP and the federal planning factors as well as providing more specific information about how MDOT addressed each topic area for the MITP update.

The 2040 MITP continues the goals from the 2035 update of the Plan, which are:

Goal 1: **System Improvement**: Modernize and enhance the transportation system to improve mobility and accessibility.

Goal 2: **Efficient & Effective Operations**: Improve the efficiency and effectiveness of the transportation system and transportation services, and expand MDOT's coordination and collaboration with partners.

Goal 3: **Safety & Security**: Continue to improve transportation safety and ensure the security of the transportation system.

Goal 4: **Stewardship**: Preserve transportation system investments, protect the environment, and utilize public resources in a responsible manner.

The Michigan Department of Transportation has stated a commitment to on-going public involvement in its planning activities and completed public involvement through various community forums and other activities in the development of its updated Plan.

The 2040 MITP includes approximately twenty-four (24) technical reports, called "white papers", which provide valuable support/information for the State's Plan. These reports constitute a library of reference material specific to transportation in Michigan. BCATS has access to these reports and has been able to utilize information from the reports. BCATS' goals for its 2040 Metropolitan Transportation Plan (MTP) are consistent with the State's goals.

The *MI Transportation Plan* reaffirms eleven (11) national/international and eight (8) statewide "Corridors of Highest Significance" when determining how to achieve the goals of the MITP. One of the technical reports, *Corridors and International Borders*, defines and identifies these corridors. Broad strategies are identified for each corridor. The portion of Interstate 94 (I-94) which traverses the BCATS area is included in two of the identified highly significant corridors (Detroit/Chicago and Port Huron/Chicago). The national/international and statewide corridors in Michigan carry a high percentage of the state's entire movements across all modes of transportation. These corridors move an increasing number of people, and an increasing amount of freight as well.

METROPOLITAN PLANNING ORGANIZATION PLANS

MAP-21/FAST ACT legislation, as well as its predecessor (SAFETEA-LU), require development of long range transportation plans in each of Michigan's urban areas with over 50,000 population by the Metropolitan Planning Organizations (MPOs). Each of the MPOs in Michigan is responsible for developing its own plan based on expected revenues over a minimum twenty-year time frame. Unlike the statewide plan, the MPO plans are required to be financially constrained and identify specific projects rather than simply corridors. MPO plans must also undergo air quality conformity testing, if applicable, before approval is granted. BCATS has reviewed the long range transportation plans of other MPOs along the 1-94 corridor in preparing its own plan update, since there are common interests dealing with that "Corridor of Highest Significance."

STATE HIGHWAY SAFETY PLAN

The federal legislation also requires states to develop a State Highway Safety Plan. In anticipation of this requirement, Michigan's "Governor's Traffic Safety Advisory Commission" (GTSAC) commissioned the preparation of a strategic highway safety plan (SHSP) back in October, 2004. The SHSP, which was published in August, 2006, provided for addressing twelve emphasis areas with the goal of reducing Michigan's fatalities to 1.0 fatalities per 100 million vehicle miles traveled by 2008, along with a corresponding reduction of 15% in serious injuries as well. The twelve (12) emphasis areas were:

- alcohol/drug impaired driving
- commercial vehicle safety
- drivers age 24 and younger
- driver behavior and awareness
- intersection safety
- lane departure
- motorcycle safety
- occupant protection
- pedestrian and bicycle safety
- senior mobility and safety
- traffic records & information systems
- work zone safety

Since that first SHSP, there have been updates to the time-frame and emphasis areas in subsequent versions of the SHSP. The latest update was completed in 2012, entitled the State of Michigan Strategic Highway Safety Plan - 2013-2016. The 2013-2016 HSIP set aggressive goals for reducing traffic fatalities and serious injuries in Michigan. In order to facilitate the desired improvement in these statistics, the Plan identified four (4) broad emphasis areas where resources should be focused. They are:

- high-risk behaviors
- at-risk road users
- engineering infrastructure
- system administration

Twelve (12) action teams were created to provide targeted guidance for meeting the overall goals. The strategies from each of these teams, plus the data used to measure success in reaching the overall targets for fatalities and serious injuries, were considered in developing projects for BCATS' *2040 Metropolitan Transportation Plan*.

OTHER STATE PLANS

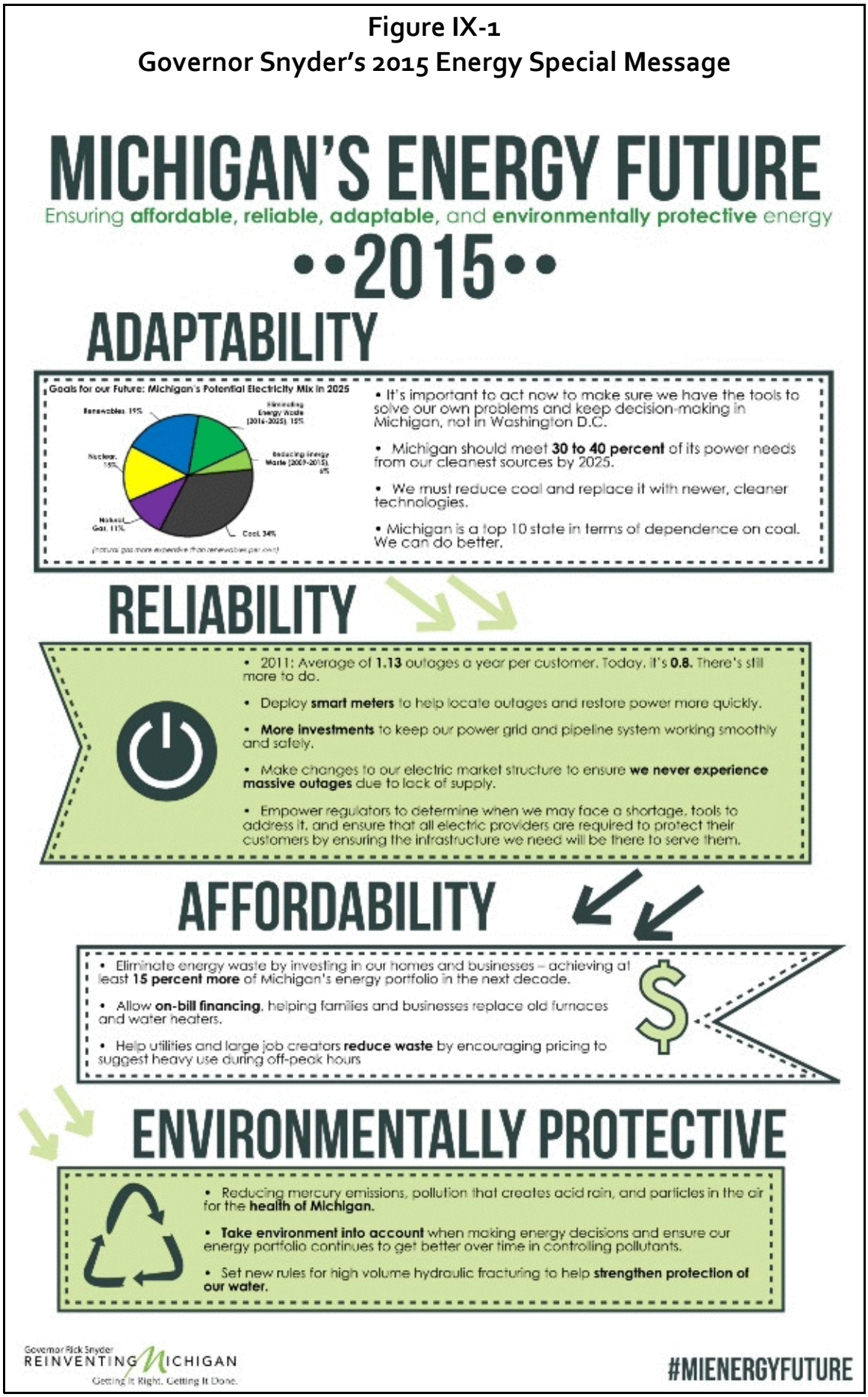
Governor's 2015 Energy Special Message

With the change in administration within the Governor's office since the last BCATS MTP was adopted, there has been a change in the focus related to climate and energy. The 2035 MTP referenced a Michigan Department of Environment Quality publication entitled "Climate Action Plan" to address Michigan's response to the issues of climate change, reduction in greenhouse gases, and changes to the future of energy usage in the state. That plan has been replaced with an energy policy from Governor Snyder, released in 2015, that identifies actions and policies in regard to Michigan's energy future. The focus areas are affordability, adaptability, reliability, and protecting the environment. Figure IX-1 on the following page details the components of each of these focus areas.

State Freight Plan

In September, 2013 the Michigan Department of Transportation published a Michigan Freight Plan as part of the development of its 2035 State Transportation Plan and in response to recommendations outlined in the MAP-21 federal legislation of 2012. Data and information in that report were recently updated as part of the MI Transportation Plan and are presented in the "Freight White Paper" in conjunction with that Plan. The freight data is reported for the state as a whole, but is useful in determining the levels of activity likely to be anticipated into the future. The "Freight White Paper" deals with all modes of freight transport - highway, rail, water, and pipeline.

Figure IX-1
Governor Snyder's 2015 Energy Special Message



CHAPTER X

SOCIO-ECONOMIC DATA

Current and future deficiencies in capacity of BCATS' road network are identified with the assistance of a computerized Travel Demand Forecast Model (TDFM), prepared and maintained jointly by the staff of MDOT's Bureau of Transportation Planning, in Lansing, and BCATS. The model distributes traffic onto the BCATS street network to simulate traffic volumes and conditions. The street network used in this simulation includes existing major streets plus improvements for which construction has been committed by a city, county road commission, or the state. The socio-economic data, consisting of population, number of households, vehicle availability, and employment, serves as the foundation for the simulation.

For the modelling process, the socio-economic data is allocated to small subdivisions of the BCATS area, referred to as Traffic Analysis Zones (TAZs). TAZs are defined by similarity of land use, municipal and Census divisions, major street frontages, natural boundaries, and other geographic characteristics. The current TAZ structure for the BCATS area is comprised of 292 TAZs, covering the entireties of the Cities of Battle Creek and Springfield and the Townships of Bedford, Pennfield, Emmett, Newton, and Leroy, in northwestern Calhoun County. (see Figures II-1 & II-2 in Chapter II - Introduction)

The computer model estimates the number and type of trips ("trip generation") based on the socio-economic characteristics for each TAZ. For instance, a primarily residential TAZ can be expected to generate a certain number of trips per each household, with various percentages of the trips traveling to/from work, shopping, or other places. The traffic is distributed onto the street system according to expected travel patterns between various areas, using current patterns and known traffic volumes as a base, along with the relative "attractiveness" of each TAZ as a destination. The model can anticipate a strong attraction between residential areas and shopping or employment centers, and direct appropriate traffic volumes accordingly. A more technical discussion of the TDFM is presented in the next chapter.

The computer simulation can be used with projected socio-economic data to identify corridors expected to have significant congestion if the existing roadway system is not improved (i.e. capacity deficiencies where traffic volumes will exceed the volumes the corridor can accommodate without serious congestion and long delays). This *2040 Metropolitan Transportation Plan* process then can prioritize capacity deficient corridors, provide improvement recommendations, and suggest an implementation program to address identified capacity deficiencies.

The methodology for developing the socio-economic data is outlined in this chapter. TAZ-level data was calculated for the initial TDFM base year of **2010**, the *Plan* horizon year of **2040**, and for one "interim" year of **2017**, to apply on the 2017 existing street network with committed improvements expected thru 2017. Further detail relative to the base year and forecast data can be provided upon request.

METHODOLOGY

The base year (2010) data process was able to utilize appropriate data from the 2010 Census released in spring 2012. Since this *2040 Metropolitan Transportation Plan (MTP)* was considered to be only an update of

BCATS' previous *Plan,* much of the forecast data was built upon calculations used in the development of TAZ-level population & households, and employment data of both the *2035 MTP* (June 2011) and the *2030 Transportation Plan* (November 2007).

Population & Households

The following steps outline the development of population & households data for use in this *2040 MTP.*

1. 2010 Census block populations in households, and households, were aggregated into each of BCATS' 292 TAZs encompassing an individual block or collection of blocks, using BCATS' computerized geographic information system (GIS) program, *TransCAD*.
2. 2010 Census population & households and forecasts for 2015-2040 (at five-year intervals) by Statewide TAZs in Calhoun County were obtained from the MDOT Statewide & Urban Travel Analysis (SUTA) section. BCATS' TAZs generally "nest" within the 27 Statewide TAZs designated in the BCATS metropolitan area. The MDOT estimates are based on a computerized economic forecasting tool known as REMI[1].
3. Each BCATS' TAZ was "tagged" with the Statewide TAZ number that it resides in.
4. Annual rates of change in each Statewide TAZ population & households were calculated for each five-year interval from 2015-2040.
5. The annual rate of change for the appropriate five-year interval of its corresponding Statewide TAZ was applied to the 2010 Census population & households of each BCATS TAZ, first to calculate values at each five-year interval (including the **2040** *Plan* horizon year), then to calculate **2017** values by interpolation between 2015 & 2020.
6. The potential for increased numbers of households in excess of that drawn from the Statewide TAZ growth rates was reviewed. For this *2040 MTP* there were no anticipated developments identified as significant enough to warrant modifying the TAZ-level changes produced from the Statewide TAZ growth rates. Possible added population & households from residential developments in TAZ 131, appurtenant to a once-imminent Wal-Mart on the east side of M-66 (Capital Ave NE) at Morgan Rd in Pennfield Township, were not accounted for as "extra" growth in this *2040 MTP,* as had been done in the previous two BCATS' *Plans.*

[1] Recent Federal transportation legislation has placed a number of new demands on both MDOT and the state's urban areas' travel demand forecast models. One requirement is the need for a Statewide Plan and Transportation Improvement Program, and the integration of the urban and statewide planning processes. This requirement led MDOT to develop a consistent set of population and employment forecasts in cooperation with regional planning agencies and Metropolitan Planning Organizations to be used in the travel demand modelling process. MDOT contracted with the University of Michigan Institute of Labor and Industrial Relations (UM-ILIR) to develop an integrated set of employment and population forecasts for each county in Michigan as well as national forecasts by region. The historical data source and model used by the UM-ILIR was developed by Regional Economic Models Inc. (REMI). MDOT specified the forecasted data set in terms of employment detail, age group, and geographic breakdown. The REMI model is a linked population economic model that is driven by U.S. economic and population forecasts and the influence of births and deaths by age group on the resident population. Employment increases at the national level stimulates growth by sector at the county level. As the labor force participation rate increases wages increase which results in an influx of population to fill the new jobs. At some point wages may become high enough to retard employment growth. The natural increase component of the population forecasts is the result of expected births and deaths by age groups.

7. Additional population & household characteristics were tabulated by TAZ from 2010 Census data by MDOT SUTA, to use in the trip generation formulas in the TDFM. Those characteristics include vehicle availability, labor force involvement, household income, school-aged (5-17 yrs) population, and K-12 school enrollment.

Employment

The place, type, and level of employment facilities are work-based socio-economic characteristics used to estimate the number of trips terminated in individual TAZs (i.e. destinations). Different types of workplaces (e.g. manufacturing, wholesale trade, retail trade, services, government, and agriculture/mining) have unique trip-generating characteristics relative to the number of workers. The employment figures compiled by various economic sectors can be used to estimate the number of trips produced by workers in each TAZ, and the number of other trips attracted to a TAZ, especially applicable where a large concentration of retail employment exists.

The following steps outline the development of employment data for use in this *2040 MTP.*

1. The geographic distribution and levels of 2010 employment by TAZ were initially estimated based on 2010 employment data developed for the *2035 MTP* (June 2011). That previous data was determined by tabulation of individual workplace employment figures, obtained from the MDOT Statewide & Urban Travel Analysis (SUTA) section. In the inventory from SUTA, each workplace is geo-located by Statewide TAZ and also listed with its six-digit North American Industry Classification System (NAICS) code. For use in the TDFM, each workplace is assigned among six major categories: Manufacturing, Other Basic (including Agriculture, Forestry, & Fishing; Mining; Construction; and Transportation, Communications, & Public Utilities), Wholesale Trade, Retail Trade, Services (including Finance, Insurance, & Real Estate; and Business Services), and Other (including Government; Health/Social Services; and Public Admin).
2. The initial estimates of 2010 employment by TAZ were reviewed where the TAZ included workplaces with 100 or more employees, to confirm the workplace was located in the proper TAZ and coded to the appropriate employment category, and to make corrections as necessary.
3. Employment forecasts for each workplace, based on expected growth rates specific to its NAICS code, for 2015-2040 (at five-year intervals) were obtained from MDOT's SUTA section. Those future workplace employment values were tabulated by Statewide TAZs in each of the six categories (Manufacturing, Other Basic, Wholesale, Retail, Services, & Other). From that tabulation, annual rates of change in each Statewide TAZ for each of the six employment categories were calculated for each five-year interval from 2015-2040. The MDOT employment estimates are based on the same computerized economic forecasting tool, REMI, discussed before under the population & households methodology.
4. Given that BCATS' TAZs generally "nest" within the 27 Statewide TAZs designated in the BCATS metropolitan area, each BCATS' TAZ was "tagged" with the Statewide TAZ number that it resides in. The annual rate of change for the appropriate five-year interval of its corresponding Statewide TAZ was applied to the 2010 employment in each of the six categories, of each BCATS TAZ, first to calculate values at each five-year interval (including the **2040** *Plan* horizon year), then to calculate **2017** values by interpolation between 2015 & 2020.

5. The potential for changed employment numbers different from those drawn from the Statewide TAZ growth rates was identified in several BCATS' TAZs. Of significance are the following:
   - The Kellogg Company's world headquarters in downtown Battle Creek (TAZ 25) has notably downsized staff in recent years, contrary to forecast 50% growth (from 2010 to 2040) of Services sector employment in the TAZ. Accordingly, the final forecast 2017 employment in the TAZ was reduced by 100, and reduced by 250 in 2040, generating a 23% drop in total TAZ employment from 2010 to 2040.
   - The forecast 30% drop (from 2010 to 2040) of Manufacturing sector employment in TAZ 46, along the south side of Michigan Ave E (from Gilbert St to Bell St), was considered somewhat excessive for the Kraft Foods - Post Holdings cereal production facility in that TAZ. Even with 90 additional manufacturing employees in 2040, overall employment in the TAZ is forecast to still drop 23% from 2010 to 2040.
   - In TAZ 214, southeast of the I-94/M-311 (Wheatfield/11 Mile Rd) interchange at I-94 exit 104, and home to Firekeepers' Casino, growth of 32% in Services sector employment in the TAZ from 2010 to 2040 was initially calculated. Given the addition of a 243-room resort style hotel in late 2012, an additional 300 employees were included for 2017, and 500 more within the TAZ by 2040, resulting in an increase of 66% in total employment in TAZ 214 from 2010 to 2040.
   - The mix of manufacturing workplaces in TAZ 266, comprised of Fort Custer Industrial Park property south of M-96 (Dickman Rd W) & north of Denso Rd, produced a forecast drop of almost 12% from 2010 to 2040 in manufacturing employment within the TAZ. With approximately 4000 workers in the TAZ and anticipation for a less severe loss, 100 manufacturing employees were added for 2017, and 250 more by 2040, bringing the total employment drop in the TAZ down to 5% from 2010 to 2040.
   - With total 2010 employment of approximately 650, and a different mix of manufacturing in TAZ 269, comprised of Fort Custer Industrial Park property north of M-96 (Dickman Rd W) & south of River Rd W, forecast growth of just over 30% from 2010 to 2040 in manufacturing employment within the TAZ was initially calculated. In expectation of new manufacturing facilities locating in the extensive available land within the large TAZ, an extra 100 manufacturing employees were included for 2017, and 400 more by 2040, increasing the change in total employment in the TAZ to 92% from 2010 to 2040.

   Uncertainty about a site at the Fort Custer Training Center being considered by the US Dept of Defense Missile Defense Agency for a ground-based Continental Interceptor Site (CIS) prompted the CIS impacts to <u>not</u> be evaluated as part of the TDFM for this *Plan.* Details of the proposed CIS, estimated to have upwards of 850 workers onsite full-time when operational, are further discussed in Chapter XII - Transportation Deficiencies & Alternatives.

   Possible added employment in TAZ 131, both at and appurtenant to a once-imminent Wal-Mart on the east side of M-66 (Capital Ave NE) at Morgan Rd in Pennfield Township, was also <u>not</u> accounted for as "extra" growth in this *2040 MTP,* as had been done in the previous two BCATS' *Plans.*

The following Table X-1 provides a summary of 2017 and 2040 population and employment figures calculated for each local unit of government in the BCATS' metropolitan area.

Table X-1 – 2017 & 2040 Estimated Population & Employment by Local Government Unit

POPULATION

Local Govt Unit	2017 Population in Households	2040 Population in Households	Pop % Chg 2017--2040	Pop # Chg 2017--2040	% of BCATS Area Change
CITY OF BATTLE CREEK	52,331	52,339	0.02%	8	0.8%
BEDFORD TOWNSHIP	9,335	9,351	0.17%	16	1.7%
EMMETT TOWNSHIP	11,653	11,674	0.18%	21	2.2%
LEROY TOWNSHIP	3,855	4,333	12.40%	478	50.4%
NEWTON TOWNSHIP	2,580	2,664	3.26%	84	8.9%
PENNFIELD TOWNSHIP	9,187	9,393	2.24%	206	21.7%
CITY OF SPRINGFIELD	5,348	5,484	2.54%	136	14.3%
BCATS Metropolitan Area	*94,289*	*95,238*	*1.01%*	*949*	*100.0%*

EMPLOYMENT

Local Govt Unit	2017 Total Employment	2040 Total Employment	Empl % Chg 2017--2040	Empl # Chg 2017--2040	% of BCATS Area Change
CITY OF BATTLE CREEK	40,946	44,678	9.11%	3,732	64.2%
BEDFORD TOWNSHIP	2,646	3,110	17.54%	464	8.0%
EMMETT TOWNSHIP	7,247	8,046	11.03%	799	13.7%
LEROY TOWNSHIP	662	755	14.05%	93	1.6%
NEWTON TOWNSHIP	203	227	11.82%	24	0.4%
PENNFIELD TOWNSHIP	2,661	3,074	15.52%	413	7.1%
CITY OF SPRINGFIELD	4,040	4,328	7.13%	288	5.0%
BCATS Metropolitan Area	*58,405*	*64,218*	*9.95%*	*5,813*	*100.0%*

BCATS

CHAPTER XI

TRAVEL DEMAND FORECAST MODEL (TDFM)

Future roadway capacity deficiency identification and analysis has traditionally been a key ingredient in an area's long-range transportation plan. Both the identification of deficiencies and the plan itself are dynamic; initiated under ISTEA and continuing under TEA-21, SAFETEA-LU, MAP-21, & FAST, they are to be updated every four to five years to reflect changing transportation and land use conditions. In essence, the roadway capacity deficiency analysis, and the plan (prepared by the MPO with input from the MDOT) are "snapshots in time," reflecting the conditions and trends at the time of development.

The purpose of roadway capacity deficiency identification and analysis is to determine where future congestion is projected to occur and where safety deficiencies related to a roadway's capacity might develop. Deficiency identification and analysis is done with a computerized network model of the street and highway system. The identification and analysis of capacity deficient corridors and links is intended to serve as the basis for system improvement/expansion funding decisions. Technical terms utilized in this discussion are defined in the glossary at the front of this document.

MODEL PROCESS DESCRIPTION

Travel demand forecasting within the Battle Creek urban area has been completed through application of a travel demand forecast model (TDFM) developed and maintained by staff of MDOT's Statewide & Urban Travel Analysis (SUTA) section in Lansing, in cooperation with the BCATS staff. The model is a computer simulation of current and future traffic conditions, and is based in *TransCAD,* a transportation modeling software and geographic information system (GIS). This is the same GIS program used in-house by BCATS. Since the model is a "systems-level" transportation planning model, the deficiencies identified are generalized, 24-hour (daily) deficiencies, based on generalized 24-hour capacities and traffic assignment volumes.

The urban travel demand forecasting model development process generally consists of six phases:

1. Data Collection, in which socio-economic and facility inventory data are collected.
2. Trip Generation, which calculates the number of trips produced in or attracted to a traffic analysis zone (TAZ).
3. Trip Distribution, which determines how much travel will occur between TAZs, based on the "attractiveness" of the other zones.
4. Traffic Assignment, which determines what routes trips will take between zones.
5. Model Calibration/Validation, which involves adjusting the model and verifying that the volumes (trips) simulated in traffic assignment replicate (as closely as possible) actual, observed traffic counts.
6. System Analysis, to test alternatives and to analyze changes in order to improve the transportation system.

There are two basic systems of data in the travel demand forecasting process. The first system is the street and highway network (links). The network generally includes only links of the "collector" functional classification and higher. The second data organization mechanism involves the traffic analysis zones (TAZ's). These geographic

areas are determined based on similarity of land use and human activity, compatibility with jurisdictional boundaries, presence of physical boundaries, and the links that make up the road network.

DATA COLLECTION

The BCATS staff produced population (in households), households (occupied housing units), and employment summaries by TAZ for input into the model. As described in Chapter X, each data item by TAZ was estimated first for 2010, then forecast at five-year intervals to the horizon year 2040, and then 2017 values were interpolated between 2015 & 2020. Additional discussion of the socio-economic data is presented in Chapter X. A summary of the data for the BCATS metropolitan area, as used within the TDFM, is shown in Table XI-1.

TABLE XI-1
SOCIO-ECONOMIC DATA SUMMARY

Data Type	2017	2040	Change
POPULATION	*94,289*	*95,238*	1.0%
HOUSEHOLDS	38,340	39,956	4.2%
RETAIL EMPLOYMENT	5,303	4,853	-8.5%
SERVICES EMPLOYMENT	25,699	32,101	24.9%
OTHER EMPLOYMENT	27,403	27,264	-0.5%
TOTAL EMPLOYMENT	58,405	64,218	10.0%

TRIP GENERATION

Trip generation is the process by which the TDFM translates the socio-economic data into numbers of person trips. Generally the households produce trips and the employment places attract trips. For each TAZ the number of trips produced and attracted to a zone are determined based on the socio-economic data for each zone. The three trip purposes used in the model are home-based work (HBW), home-based other (HBO), and non-home-based (NHB). Trips that originate or end outside the model area are called external trips. External trips that originate inside the model area and travel outside the model area are identified as "internal to external" (I-E) trips, and vice-versa, trips from outside the model area (external) into the model area are referred to as "external to internal" (E-I) trips. Trips that pass through the model area without stopping are "external to external" (E-E) trips. Details of travel characteristics generated from the model can be provided upon request.

TRIP DISTRIBUTION

Trip distribution involves the use of a mathematical formula (a "gravity model") which determines how many trips produced in a zone will be attracted to each of the other zones. The gravity model assumes that a destination zone attracts trips based on the activity in that zone (number of employees and/or households) and the proximity to the zone of origin. Using this gravity model, trips produced in one zone are "distributed" to all other zones. At the end of distribution, formulas are applied by each purpose to convert person trips to vehicle trips.

TRAFFIC ASSIGNMENT

Traffic assignment is the process of route selection between zones. Traffic assignment takes the trips distributed in the previous phase and assigns them a path on the roadway network using the "capacity restraint" process. The capacity restraint method assigns the trips based on the shortest time path, but when the assigned volume of trips on a link nears the road capacity, trips begin to be diverted to the next quickest route. This continues until the system reaches equilibrium. (The capacity for each link is the maximum number of vehicles that can travel

on that segment of road in an "average" 24 hour day. A capacity calculator program developed for MDOT computes the daily capacity for each link). When the assignment process is completed, each link (road) will have a volume that represents the number of vehicles that travel on that link (road) over a typical twenty-four hour day.

MODEL CALIBRATION/VALIDATION

The purpose of model calibration is to adjust the model to achieve statistically valid model outputs which are reflected in model validation. Model validation verifies that the base year assigned volumes simulate actual base year traffic counts. When validation is complete, the base model is considered statistically acceptable. This means that the process can proceed to future socio-economic data being substituted for existing (base) data. Then the trip generation, trip distribution and traffic assignment can be repeated and future trips can be simulated for system analysis, as part of the plan process. For this *2040 Metropolitan Transportation Plan*, the calibrated "base year" is 2010.

SYSTEM ANALYSIS

Once the base and future trips are simulated, a number of system analysis procedures can be conducted:

- Potential improvements to relieve congestion can be tested for the plan. Future traffic can be assigned to the existing network to show what would happen in the future if no improvements were made to the present transportation system. From this, improvements can be planned that would alleviate demonstrated capacity problems. This analysis was performed for the BCATS Plan, and is discussed in further detail in the next chapter of this document.
- The impact of planned roadway improvements or network improvements can be assessed.
- Links can be analyzed to determine what zones are contributing to the travel on that link (i.e., the link's service area). This can be shown as a percentage breakdown of total link volume (e.g., 50% of the trips in a given TAZ utilize the selected link).
- The network can be tested to simulate conditions with or without a proposed bridge. The assigned future volumes on adjacent links would then be compared to determine traffic flow impacts. This, in turn, would assist in assessing whether a bridge should be replaced and/or where it should be relocated.
- The impacts of land use changes on the network can be evaluated (e.g., what are the impacts of a new major retail store being built).
- 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.
- Model runs are also done as part of air quality conformity analysis, if required.

Generally three different alternative scenarios are developed for a long-range transportation plan:

- Existing trips on the existing network; this scenario created 2010 volumes, generated by 2010 socio-economic (SE) data, onto the highway network as it was in 2010. This is referred to as the "calibrated", existing network scenario, or **"base-year"** alternative, and is a prerequisite for the other two scenarios.
- Future trips on the "existing plus committed" (E+C) network; this scenario creates 2040 volumes, generated by 2040 SE data and the highway network as it exists in 2017, with any improvements listed in BCATS' current *Transportation Improvement Program (TIP)* for which funds have been "committed" to complete the project. This alternative displays future capacity and congestion problems if no further improvements beyond those committed thru 2020 are made. This "deficiency analysis" on the 2017 E+C network is also called the "do

nothing", or **"no-build"** alternative, and includes the 2017 E+C network, with current capacities and those "committed" capacity improvements.

– Future trips on the future network; this scenario creates 2040 volumes, generated by 2040 SE data and the highway network as it is proposed to be in 2040. This scenario is the long-range transportation plan **"build"** alternative. It includes the 2040 E+C highway network, plus alternative capacity improvement projects selected to alleviate congested areas or corridors. Projects that successfully resolve or mitigate forecasted congestion in the TDFM continue on in the plan process to be evaluated against expected financial resources and then to possibly be recommended for programming in the *TIP* and implementation at some time over the course of the plan.

Much of the preceding narrative in this chapter was provided by MDOT SUTA staff, initially for BCATS' *2030 Transportation Plan* (November 2007), as technical explanation of the TDFM process. For the application of the TDFM within development of this *Plan*, note the following:

– Passenger car equivalents (PCEs) were used to take account of the differential traffic impacts of larger vehicles, by treating them as having the same volume impact as some number of added cars. For example, larger, heavier vehicles occupy more physical roadway space than passenger cars and have poorer acceleration and deceleration. A PCE factor can be applied to different types of vehicles estimated in the traffic stream; in the Battle Creek model a PCE value of 1.5 was applied to "commercial vehicles" (3+ axles) during traffic assignment. The use of PCEs supports more accurate identification of likely congested segments & corridors, particularly where there is high percentage of "commercial vehicles", like the 40-50% commercial on I-94 across the BCATS metropolitan area.

– Given improvements within the TDFM process, including better verification & validity of roadway attributes (especially calculated capacities) and socio-economic data, fewer forecast capacity deficiencies have been identifed with each update of BCATS' long-range plan. The TDFM for this *2040 MTP* shows no segments where 2040 traffic exceeds the 2017 capacity [volume to capacity (V/C) >100%]. Accordingly, and with emphasis on operations & maintenance improvements to existing roadways, no capacity increasing projects were necessary to be tested as part of the "build" alternative. A limited number of segments with a forecast V/C of 70-83% are discussed in the next chapter.

– It is hoped that over the next two years the BCATS TDFM can be updated to a peak-hour model, and to offer several other enhanced analytical processes. The new TDFM is expected to provide a more accurate measure of perceived congestion during peak-hours, and, coupled with the use of PCEs, an improved calculation of the impact that high volumes of commercial traffic i.e. "semi-tractor trailers" has on highway capacity, and subsequently on the forecast V/C ratios, especially on I-94.

– As noted in the previous chapter, uncertainty about a site at the Fort Custer Training Center being considered by the US Dept of Defense Missile Defense Agency for a ground-based Continental Interceptor Site (CIS) prompted the CIS impacts to not be evaluated as part of the TDFM for this *Plan*. However, if and when the CIS becomes imminent and/or more details released, its construction & operation could be incorporated into the TDFM to identify impacts on the transportation system and develop projects to address potential deficiencies. A "scenario planning" process, including appropriate adjustments to both the socio-economic data and the roadway system & attributes, would be followed before re-running the TDFM under the new conditions. Different scenarios can be prepared & tested anytime for any significant developments of housing or employment, or for changes to the transportation network.

CHAPTER XII

TRANSPORTATION DEFICIENCIES & ALTERNATIVES

Detailed analysis of observed and forecast roadway capacity deficiencies in the transportation network traditionally serves as the basis for the development of solutions to deficiencies within a long-range plan. An areawide travel demand forecast model (TDFM) is the primary analytical tool of the process to identify roadway capacity deficiencies. However, Federal transportation legislation has continued a growing emphasis not only on resolution of roadway capacity deficiencies, identified through a TDFM, but also of several other categories of transportation deficiencies as listed below.

Roadway Capacity Deficiencies	*Public Transit & Intermodal Transportation
Safety-Related Deficiencies	Non-Motorized Transportation
Pavement Condition	Security, Reliability, & Resiliency
Bridges Capacity & Condition	Needs Related to Economic Development

This chapter describes the evaluation of deficiencies in each of those categories, and from these evaluations, specific projects and alternatives are proposed and either recommended in this *Plan*, or listed as "Illustrative" projects.[1] The list of recommended improvements is presented in Chapter XVI, while a compilation of "illustrative" projects referenced in the following discussions is provided at the end of this chapter.

*A comprehensive list of areawide public transit needs over the next twenty years was provided directly by Battle Creek Transit, and projects to meet those needs were incorporated into this *Plan's* list of recommended improvements presented in Chapter XVI. Transit deficiencies and other long-range intermodal needs are discussed in Chapters VI–VIII.

ROADWAY CAPACITY DEFICIENCIES

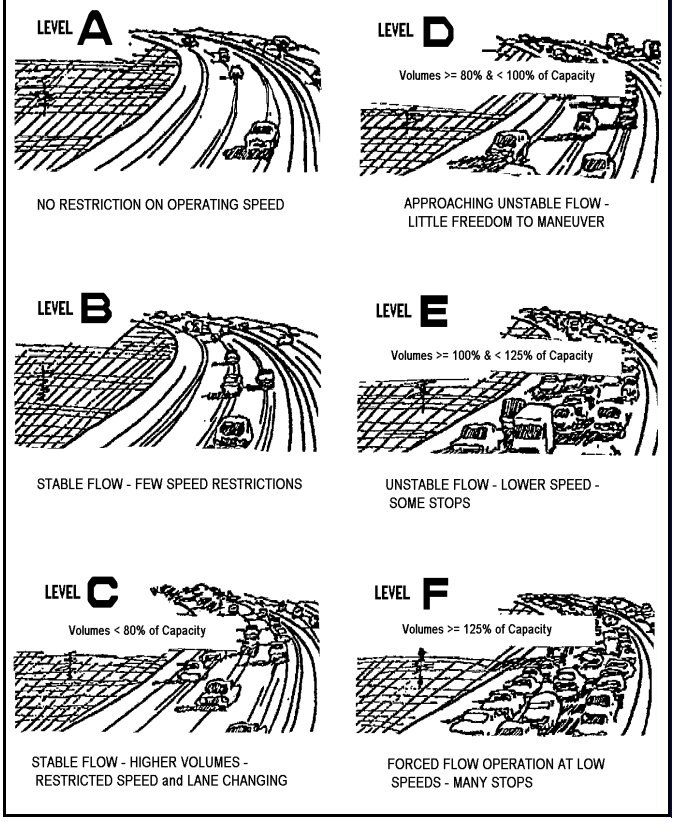
The BCATS areawide Travel Demand Forecast Model (TDFM), discussed in Chapter XI, was utilized to locate road segments where traffic congestion is probable by 2040. The intent of this effort is to identify potential solutions (needed improvements) to the recognized future roadway capacity deficiencies. These solutions assist state and local government decision-makers in the development and prioritization of transportation improvement projects, programs, and studies for inclusion in BCATS' *2040 Metropolitan Transportation Plan*.

[1] **Recommended** projects have updated cost estimates and sources of expected funding [though only "committed" for projects in BCATS' current *FY2017-20 Transportation Improvement Program (TIP)*], allowing them to be included in the "Demonstration of Financial Constraint" presented in Chapter XIV - Financial Plan. In this *2040 MTP*, recommended projects include those identified for implementation in BCATS' current *TIP*, one 2021 MDOT project from the State's *2017-2021 Five-Year Transportation Program* (approved by the State Transportation Commission on 9/22/16), several I-94 bridge projects (all beyond 2020) included in the previous *2035 MTP* and carried over into this *2040 MTP*, and specific capital projects for Battle Creek Transit over 2021-2040. **"Illustrative"** projects are generally less developed, without cost estimates or likely funding, but are identified in the *Plan* as options to be further developed over the next five years for possible recommendation in the next *Plan,* to provide alternatives for situations considered "deficient" now or into the future, and to highlight conditions to be more closely monitored. The "illustrative" projects listed in this *2040 MTP* were not included in the "Demonstration of Financial Constraint" presented in Chapter XIV - Financial Plan, but are included in the environmental justice analysis (Chapter XVIII).

Traditionally, the "alternatives" of this chapter's title refers to different alignments, additional lanes, or other treatments to mitigate a capacity deficiency identified in the TDFM. In the future year "build" alternative the inclusion of road widening or capacity increasing projects will prompt different preferred travel paths and traffic volumes on all the network roads, as compared to the "no-build" alternative. Logically, where a proposed project directly increases capacity, the deficiency on that segment should be resolved or at least mitigated; other deficiencies might be resolved by fewer "trips" choosing to take the deficient route where faster, more efficient travel paths were created by the proposed improvements. Revised configurations and roadway attributes, particularly capacity, can also produce greater, even new, capacity deficiencies within the future "build" network.

Capacity deficiencies are often described by "Level-of-Service", abbreviated "LOS", and demonstrated in Figure XII-1. Past BCATS plans have defined two Level-of-Service categories, LOS E (V/C >= 1.00 & < 1.25) and LOS F (V/C >= 1.25) as capacity deficient. In part due to improvements within the TDFM process, especially calculated capacities, fewer forecast capacity deficiencies have been identified with each update of BCATS' long-range plan. The TDFM for this 2040 MTP shows no segments where forecast 2040 traffic exceeds the 2017 capacity [volume to capacity (V/C) >100%]. Accordingly, and with emphasis on operations & maintenance improvements to existing roadways, no capacity increasing projects were necessary to be tested as part of the "build" alternative. Only one segment, the eastbound I-94 exit ramp to M-311 (Wheatfield/11 Mile Rd), would be at LOS D in 2040, forecast to be at almost 83% of its current capacity. That segment and a few others with a forecast V/C of 70-80% are highlighted in red in Figure XII-2 on the next page, and further discussed in this section.

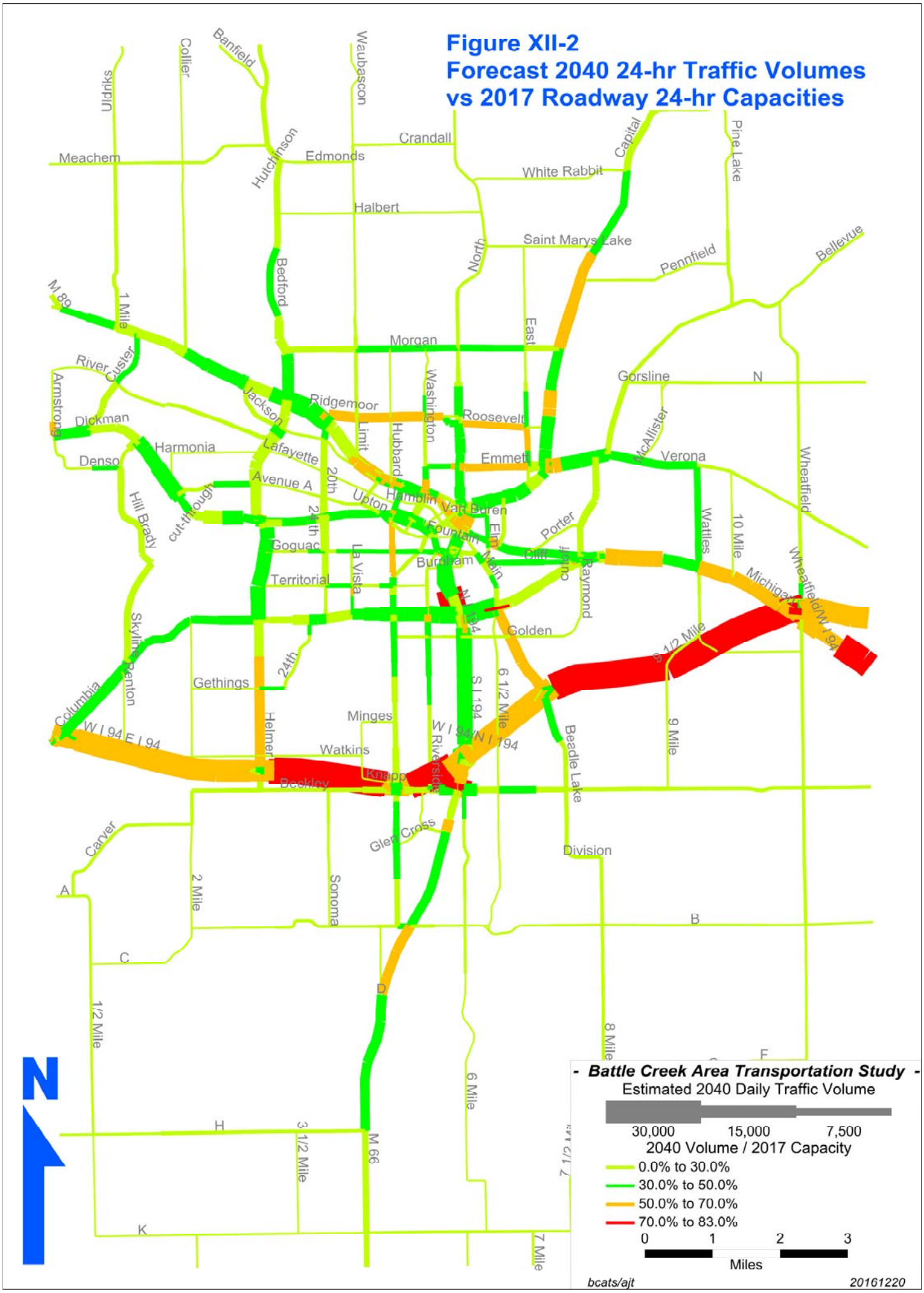
FIGURE XII-1
ROADWAY "LEVEL-OF-SERVICE" (LOS) BY VOLUME/CAPACITY RATIO



The one corridor routinely considered capacity deficient, both at present and certainly in the future, is interstate highway I-94 across the entirety of the BCATS area. According to the TDFM however, it operates generally at LOS C, with 2017 and forecast 2040 V/C of 65-75%. As noted at the end of Chapter XI, the BCATS TDFM is being updated to be converted to a peak-hour model, and to offer several other enhanced analytical processes. The new TDFM is expected to provide a more accurate measure of the perceived I-94 congestion clearly noticeable during peak hours, and, with use of passenger-car-equivalents (PCEs), an improved calculation of the impact that high volumes of commercial traffic i.e. "semi-tractor trailers" has on highway capacity, and subsequently on the forecast V/C ratios.

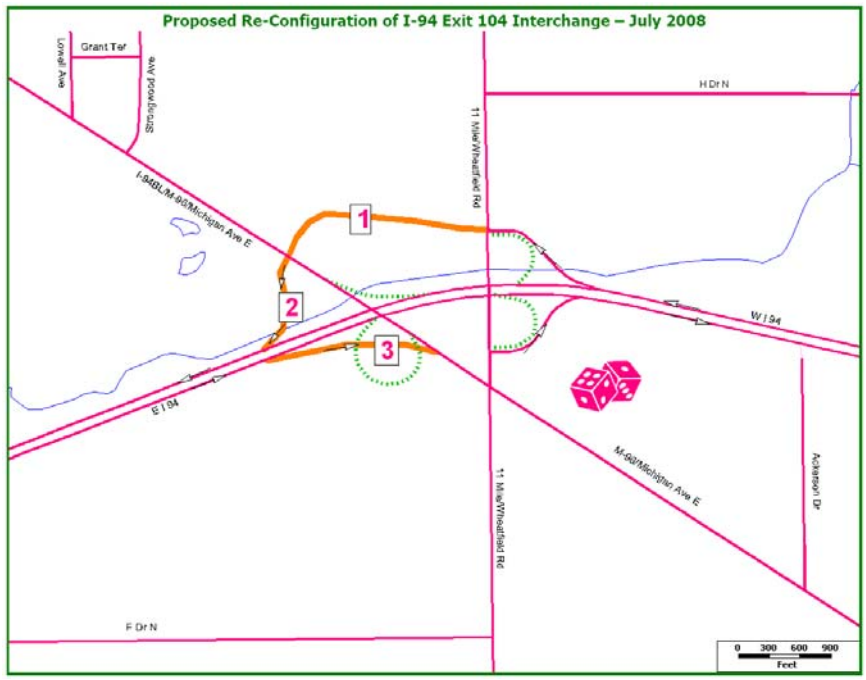
While no additional thru-lanes for I-94 can be recommended (with expected funding) at this time, under requirements for financial constraint, a long-term vision to mitigate congestion and improve safety by widening I-94 to three mainline thru-lanes in each direction is the foremost "illustrative" project to be included in this *2040 MTP.*

Figure XII-2
Forecast 2040 24-hr Traffic Volumes vs 2017 Roadway 24-hr Capacities



Other I-94 capacity-related projects that are recommended in this Plan include widening of five "bottleneck" bridge pairs on I-94 in the BCATS area, as recommended in the *2035 MTP* and discussed later in this chapter under "Bridge Deficiencies", and reconstruction of the westbound I-94 loop entrance ramp at the Exit 104 interchange with M-311 (Wheatfield/11 Mile Rd). Future improvement of Exit 104's eastbound I-94 loop exit ramp will be listed as an "illustrative" project to address the 2040 forecast LOS D on that ramp segment. An option to remove both those loop ramps and replace them with ramps to/from I-94BL/M-96 (Michigan Ave E) was part of a reconfiguration of the interchange proposed in the mid-2000's. The following excerpt from BCATS' *2035 MTP* outlines that proposal:

Shortly after plans for the Firekeepers Casino were announced in 1999, possible capacity and safety-related issues at I-94 exits 103 & 104 at I-94BL/M-96 (Michigan Ave E) and 11 Mile Rd were recognized. At that time the existing configuration of the exit and entrance ramps on I-94 prompted challenging merge-weave conditions for vehicles simultaneously exiting and entering I-94 through the section. The frequent traffic conflicts were expected to become more problematic with increased traffic from the new casino in the southeast quadrant of the interchange. In response, the Managing Director of the Calhoun County Road Commission (CCRC), in consultation with BCATS and MDOT Marshall Transportation Service Center (TSC) staff, drafted a preliminary modified configuration, depicted in the diagram to the right, that would eliminate the undesirable merge–weave traffic movements.



The first phase of that modification, a "service drive" from the westbound I-94 exit 104 ramp at 11 Mile Rd westward to I-94BL/M-96 (Michigan Ave E), was completed by the CCRC in 2009 with the opening of the "Wheatfield Parkway" (the orange line labeled #1). About the same time, I-94 Exit 103 was closed, with removal of both the westbound I-94 exit ramp to Michigan Ave E, and the eastbound I-94 entrance ramp from Michigan Ave E (the green dotted lines at the I-94/Michigan Ave E "intersection"). Closure of the now-redundant exit effectively eliminated the merge-weave situation for I-94 traffic.

Additional phases of the proposed re-configuration (the orange lines labeled #2 & #3) were suggested to replace the loop ramps to westbound I-94 and from eastbound I-94 (green dotted lines) at the I-94/11 Mile Rd (Wheatfield Rd) interchange at I-94 Exit 104. It was thought that doing so would improve traffic flow, reduce congestion on 11 Mile Rd, and potentially delay the need to widen the 11Mile Rd bridge over I-94. Previously in Chapter XII's discussion of possible I-94 capacity deficiency, it was noted that the eastbound I-94 exit ramp to 11 Mile Rd (Wheatfield Rd) is forecast to operate at 90% of its single lane capacity in 2035, if unimproved from its current configuration. Accordingly, the option to serve that traffic with the new exit ramp labeled #3 above may warrant further consideration before developing a project to improve the existing ramp.

The projects proposed in this re-configuration are presented here only as possible alternatives among several options likely to be developed for the I-94 Exit 104 interchange area, and have not been endorsed in any way by the MDOT, CCRC, or BCATS. . . . any further re-configuration of the interchange itself should be considered an "illustrative" example of a project that might be a good candidate to be recommended in the next long-range plan update.

From BCATS' *2035 Metropolitan Transportation Plan* (June 2011), p. XIII-3

Additional "illustrative" work at the I-94 Exit 104 interchange to be suggested in this *2040 Plan* does not include any ramp reconfigurations, but does include improved lane delineation, with widening and added turn lanes as necessary, on M-311 (Wheatfield/11 Mile Rd), from M-96 (Michigan Ave) northward to the intersection with Wheatfield Parkway and the westbound I-94 exit & entrance ramps. This segment includes the 2-thru lane bridge over I-94. Furthermore, M-96 (Michigan Ave E) running southeastward from the interchange area, past the Firekeepers' Casino, is also considered appropriate for an "illustrative" project, in part relative to the 2040 forecast V/C of 72% southeast of the casino main entrance, but mostly in the event significant traffic-generating commercial development materializes in the vicinity. Under expectations for such development incorporated into the *2035 MTP*, the M-96 segments southeast of M-311 (Wheatfield/11 Mile Rd) were forecast in that previous plan to operate at LOS F (V/C ~133%). In this 2040 MTP those expectations were largely dropped and the forecast volumes were correspondingly less.

Three other short State highway segments were identified as possible capacity concerns in 2040, with V/C greater than 70%, according to the TDFM: **M-66** (southbound), from I 94 southward to Beckley Rd, and **M-294** (Main St/6.5 Mile Rd Beadle Lake Rd), from M-96 (Columbia Ave) southward to the Main St split, and the one lane section of the southbound **I 194/M-66 Exit 2 off ramp** to M-96 (Columbia Ave). Each segment is represented as part of "illustrative" projects in this 2040 MTP, to promote heightened monitoring and consideration of capacity enhancements within development of any projects on, adjacent to, or near the segments. Traffic signal improvements should also be considered if appropriate to these segments, in particular at the M-294/M-96 intersection.

Besides the limited number of congestion issues currently revealed through the TDFM process, several corridors and intersections are clearly recognized, through local knowledge/experience and "professional judgement", as capacity deficient. Typically, these corridors endure peak hour congestion through signalized intersections spaced less than ¼ mile apart; such congestion is not reflected in the 24 hour daily traffic evaluation of the TDFM. Using Congestion Mitigation Air Quality (CMAQ) funding, these corridors have been and continue to be improved with modernized traffic signals and interconnections to facilitate better signal timing progression, and to improve safety. On an areawide basis, a "Traffic Management Center" (TMC) has been developed at the City of Battle Creek's Dept of Public Works. The TMC operates to monitor and coordinate traffic signals on major corridors throughout the metropolitan area.

SAFETY-RELATED DEFICIENCIES

The number of people killed in motor vehicle crashes in the U.S. had been falling since 2005, when it began a sharp decline. Unfortunately, last year (2015), the U.S. Dept of Transportation (USDOT) recorded a second consecutive annual increase in the number of U.S. traffic deaths, with the change from 2014 to 2015 being the highest one-year percentage increase in half a century. The number of deaths rose 7 percent from 2014, compared with a less than 0.5 percent increase between 2013 and 2014 and a 3 percent drop the previous year. Nationwide a total of 35,092 people died in motor vehicle crashes in 2015, and roughly 4.4 million sustained injuries that resulted in medical consultations. The USDOT's most recent estimate of the annual economic cost of crashes was $242 billion dollars.

The BCATS area typically mirrors national trends in numbers of traffic crashes. The majority of crashes are property damage crashes at just over 80% of the total in 2015. The following table depicts data for crashes in the BCATS area for 2015.

Table XII-1 – BCATS Area Crash Data for 2015

City or Township	Total Crashes	Fatal Crashes	Personal Injury Crashes	Property Damage Crashes	Persons Killed	Persons Injured
Battle Creek	1,991	4	392	1,595	6	506
Springfield	150	0	26	124	0	41
Bedford	143	0	32	111	0	47
Emmett	490	4	88	398	4	128
Leroy	116	1	15	100	1	17
Newton	86	1	8	77	1	9
Pennfield	164	3	23	138	4	29
BCATS Area Total	**3,140**	**13**	**584**	**2,543**	**16**	**777**
Calhoun County Total	4,676	20	752	3,904	25	1,012
Michigan Total	297,023	893	54,008	242,122	963	74,157

Deer involved crashes remain a significant crash type in the BCATS area that is difficult, if not impossible, to remedy. The following Table XII-2 displays 2011-2015 deer crash statistics for the BCATS area cities & townships, along with Calhoun County & statewide tabulations.

Table XII-2 – BCATS Area Deer Involved Crashes - 2011-15

City or Township	% Deer Involved of All 2011-15 Crashes	2011	2012	2013	2014	2015
Battle Creek	5.80%	121	105	107	93	116
Springfield	4.45%	7	5	3	7	10
Bedford	24.06%	41	42	19	23	35
Emmett	15.95%	115	71	70	56	74
Leroy	55.26%	80	57	67	53	58
Newton	52.64%	74	50	52	46	37
Pennfield	35.34%	90	60	45	35	58
BCATS Area Total	**13.19%**	**528**	**390**	**363**	**313**	**388**
Calhoun County Total	23.32%	1,429	997	1,059	900	1,009
Michigan Total	16.94%	53,592	48,918	49,205	45,690	47,002

While the annual number of deer involved crashes in metropolitan Battle Creek continued to stay under 400, since 528 in 2011, the 2015 figure of 388 is a 24% increase from 2014. Over the five-year period deer involved crashes were over 13% of the total crashes in the BCATS area, although the range from 4-6% in the cities to over 52% in the rural townships is notable.

When the data are mapped, several corridors within the BCATS area have consistently high numbers of vehicle/deer crashes, including:

– I-94 corridor throughout the BCATS area
– M-37/Helmer/Bedford Rd from B Dr N north to north county line
– W Columbia Ave from Helmer Rd west to Skyline Dr
– M-66 from Frey Dr north to north county line
– M-66 from Beckley Rd south to L Dr S (very heavy concentration)
– I-194 from Beckley Rd north to Dickman Rd
– M-96/Michigan Ave from Columbia Ave east to 12 Mile Rd
– Verona Rd from Bellevue Rd east to 12 Mile Rd
– M-311/11 Mile Rd from B Dr S south to J Dr S
– Morgan Rd from North Ave east to M-66
– M-78 from M-66 east to north county line

Another crash type that has shown a continuing upward trend in the BCATS area is involvement with senior age drivers (with "senior" defined as persons over 59 years old). In 2004, 17.7% of crashes in the BCATS area involved senior, or "elderly", drivers. The percentage of these types of crashes steadily increased since 2004 to 22.2% in 2009, and 23.7% overall from 2011-2015, as shown in the following table:

Table XII-3 – BCATS Area Senior Driver Involved Crashes - 2011-15

City or Township	% Senior Driver Involved of All 2011-15 Crashes	2011	2012	2013	2014	2015
Battle Creek	25.26%	388	450	489	498	536
Springfield	25.31%	27	32	49	38	36
Bedford	23.31%	35	26	28	29	37
Emmett	21.90%	128	88	101	100	113
Leroy	19.30%	16	20	23	20	31
Newton	14.63%	13	13	19	15	12
Pennfield	18.53%	26	28	37	29	31
BCATS Area Total	**23.70%**	**633**	**657**	**746**	**729**	**796**
Calhoun County Total	22.02%	936	939	1,048	1,042	1,129
Michigan Total	22.30%	60,062	59,832	63,690	68,421	69,737

As the average age of the population in Michigan continues to rise, this percentage is expected to increase further. Senior mobility and safety has emerged as an emphasis area in statewide & metropolitan transportation planning. BCATS attempted to address safety issues related to senior drivers by scheduling a project to replace street signs with larger font sizes for better readability, but the project was never implemented. BCATS continues to promote consideration of safety improvements targeting senior mobility whenever possible.

Other prominent crash types and safety issues that warrant increased attention in planning transportation improvements include crashes involving drunk/drugged (impaired) & distracted drivers, child passenger restraint, and safety belt use. BCATS actively promotes awareness of these issues, often in conjunction with state & national campaigns, and encourages its participating agencies to incorporate whatever might be applicable relative to these issues into development of their transportation improvement projects.

It is likely that every transportation improvement project provides safety benefits somehow within its scope of work, although the project may be categorized as "pavement preservation", "bridge reconstruction", or

something other than "safety-related". Of the projects recommended in this *2040 MTP*, ten fall primarily into the "Traffic Safety/Operations" project type used for "safety-related" work in the "Recommended Improvements" list in Chapter XVI. Six of the ten are intersection improvements (two geometrics improvements, four signal modernizations) designated for Federal Congestion Mitigation Air Quality (CMAQ) funding, that are also marked as "Air Quality" project type. Two projects consist of fixed object (i.e. tree) removal & culvert replacements along M-311 (11 Mile/Wheatfield Rd), one project adds intersection control - flashing beacons at the Clark Rd/River Rd intersection, and the tenth recommended "Traffic Safety/Operations" project will improve several I-94 & I-194 interchange ramps to reduce potential for wrong-way entry. A major ($1.1M+) MDOT project recommended in 2020, categorized first as "Preservation" and second as "Traffic Safety/Operations", will reconstruct the I-94 westbound loop entrance ramp at I-94 Exit 104. Future improvement of Exit 104's I-94 eastbound loop exit ramp will be listed as an "illustrative" project to not only address the 2040 forecast LOS D on that ramp segment, as discussed previously in this chapter under "Roadway Capacity Deficiencies", but also to improve safety.

The identification of high-crash rate intersections is often the essential first step in the development of safety-related projects to remediate perceived deficiencies at the intersection itself or on the adjacent roadway corridors. Upon review of several online media rankings of high crash intersections in Calhoun County, and cursory analysis of recent crash data, coupled with local knowledge/experience and "professional judgement", a number of intersections regularly have high numbers of crashes each year. The following list of BCATS-area high crash intersections, in no particular order, is an initial compilation of intersections for increased monitoring & possible project development, as well as to suggest corridors connecting these intersections be considered for more detailed study.

- Beckley Rd @ M-66
- Beckley Rd @ Capital Ave
- Columbia Ave (M-96) @ Capital Ave
- Main St/6½ Mile Rd/Beadle Lake Rd (M-294) @ Columbia Ave (M-96)
- Bedford Rd (M-37) @ Michigan Ave (M-89)
- Columbia Ave (I-94BL/M-96/M-37) @ Helmer Rd (I-94BL/M-96/M-37)
- Helmer Rd (M-37/I-94BL/M-96) @ Dickman Rd (M-96)
- Capital Ave @ Dickman Rd (I-94BL)
- Columbia Ave (M-96) @ 20th St
- Columbia Ave (M-96) @ I-194 exit 2 ramps
- Columbia Ave (M-96) @ Riverside Dr
- Hill Brady Rd @ Dickman Rd (M-96)
- Bedford Rd (M-37) @ Jackson St
- Beckley Rd @ Minges Creek Pl
- Beckley Rd @ 6 Mile Rd

Of note on the above list is that over half of the intersections include state highway M-96, as either Columbia Ave or Dickman Rd. Coincidentally, in late 2016 MDOT proposed an addition to BCATS' *FY 2017-2020 Transportation Improvement Program (TIP)* of FY17 preliminary engineering and right-of-way work with a FY19 construction phase to optimize/modernize/upgrade numerous traffic signals along 12.4 miles of M-96 in Calhoun County, a project to be listed as "illustrative" in this *2040 MTP*. Project details are still forthcoming in advance of the 2019 construction, but certainly the proposed $2.9M total investment in M-96 signalization will have significant impact on traffic safety throughout the Dickman Rd and Columbia Ave corridors.

Within the BCATS metropolitan area, other safety-related "illustrative" projects for this *2040 MTP* have been identified , based in part on capacity & traffic flow results from the Travel Demand Forecast Model (TDFM), aforementioned local knowledge/experience and "professional judgement", and having been suggested as "illustrative" projects in past BCATS' long-range metropolitan transportation plans. These additional safety-related "illustrative" intersection projects include:

- M-89 (Michigan Ave) @ Augusta Dr, and M-89 (Michigan Ave) @ VanBuren St. At both these intersections on the State trunkline system, the M-89 trunkline traffic must yield to thru traffic on the intersecting non-trunkline road. Also at each intersection, the M-89 trunkline meets the non-trunkline thru road at an acute angle, potentially adversely impacting

sight distance and turning movements. The awkward geometrics at these locations prompts their consideration here as safety-related deficiencies, although undue delay on the State trunkline system could suggest these intersections also be considered congested or capacity deficient.

- M-96 (Dickman Rd W) @ Armstrong Rd. Observed A.M. peak hour traffic movements and P.M. peak hour congestion suggest possible improvements to this intersection that provides access northward to the Veterans' Affairs Medical Center (VAMC), with approximately 1,500 employees, and to possible future employment centers in Fort Custer Industrial Park property north & east of the VAMC along River Rd and Clark Rd. Extending the right-turn approach lanes on westbound M-96 and on southbound Armstrong Rd, and adding a center left-turn lane on the eastbound M-96 approach should be evaluated as means to address the potential safety-related & capacity deficiencies of this intersection. Depending on location & access to the potential US Dept of Defense missile base at Fort Custer Training Center (details discussed later in this chapter under "Needs Related to Economic Development"), the Dickman/Armstrong intersection may warrant consideration for full signalization and related geometric improvements.
- Avenue A @ 20th St. An estimated $200,000 traffic signal modernization at this location was programmed for FY14 in BCATS' *FY14-17 Transportation Improvement Program (TIP)*, but was dropped in May 2014 when the desired mast arm support system was determined unsuitable for the surrounding vertical terrain. The "illustrative" project now suggested would modernize & upgrade the traffic signal(s) at the intersection, with replacement of the existing span wire supports, left-turn phasing, and interconnection to the control/warning signals at the railroad crossing of 20th St south of Avenue A.
- 20th St @ I-94BL (Dickman Rd). Currently travel from westbound Dickman Rd to southbound 20th St utilizes a diagonal crossover in the southeast quadrant of this intersection instead of making the typical left-turn movement at the intersection itself. The crossover also serves travel from northbound 20th St to eastbound Dickman Rd. The removal of the crossover has been proposed not only to open up the southeast corner parcel to commercial development, but also to provide for more efficient & safe left-turn movements onto southbound 20th St as traffic volumes at the intersection increase.

The final safety-related "illustrative" project for this plan is reconstruction of the Battle Creek Rest Area #703 on eastbound I-94, about at mile marker 96 between Helmer Rd & Capital Ave. The reconstruction would include replacement of the existing building, parking lot improvements, sidewalks, ADA ramps, and associated site work. Recommended in the *2035 MTP* as "preservation", the project is being primarily classified as a "Traffic Safety/Operations" improvement in this plan. The I-94 rest area reconstruction was programmed in BCATS' *FY11-14 Transportation Improvement Program (TIP)* for FY13 construction, but deleted from the *TIP* in November/2012 when construction was rescheduled for FY18. Since then that FY18 construction has not been programmed in either the *FY14-17 TIP* or the current *FY17-20 TIP*, where the project is kept on the TIP's list of "illustrative" projects with an estimated 2018 construction cost of $4.5M.

Other future safety-related improvements along I-94 might evolve from recommendations in "Evaluation of the I-94 Corridor from the Indiana State Line to US-127 South - FINAL REPORT" (10/26/15), available online at:
http://www.michigan.gov/documents/mdot/I-94CorridorEvaluationFINALREPORT_11-25-15_507041_7.pdf
The study was prepared jointly by the MDOT, Michigan State Police, and the Federal Highway Administration, at the request of a State Senator and the Governor, in response to a January, 2015, series of multi-vehicle crashes on I-94 in Kalamazoo County just west of the Calhoun/Kalamazoo County border. It was determined ultimately that the incident involved 193 vehicles, and resulted in, amazingly, only one fatality and twenty-two injured motorists. More details of the incident and the study are presented later in this chapter under "Security, Reliability, & Resiliency".

Another study that may provide recommendations for safety-related improvements across the BCATS' area is the "Southcentral Michigan Regional Highway Safety Study", ongoing since spring 2016 and expected complete

by fall 2017. MDOT has contracted a consultant to complete the Study covering the five south-central Michigan counties of Barry, Calhoun, Branch, St Joseph, and Kalamazoo. The goal is to make the resulting report a document that can be used as a basis for addressing traffic safety improvements in the region, and support the *Michigan Strategic Highway Safety Plan*, available online at:

http://www.michigan.gov/documents/msp/SHSP_2013_08_web_412992_7.pdf

PAVEMENT CONDITION

Each of the road agencies in the BCATS area has, to varying degrees, pavement management systems in place to facilitate evaluation and prioritization of improvements to pavement deficient roadways under their respective jurisdictions. Along with Pavement Surface Evaluation& Rating (PASER) data collected by BCATS and road agency staff for the Michigan Transportation Asset Management Council (TAMC), the pavement management systems support the identification and development of needed pavement preservation projects. Specific major projects planned through 2020 have been included in this *Plan* and will proceed to implementation in BCATS' *FY 2017-2020 Transportation Improvement Program (TIP)*. Beyond 2020 in this *Plan*, funding for both a local and an MDOT "Pavement Preservation Strategy" is recommended as a project each year through 2040.

BRIDGES CAPACITY & CONDITION

The condition of all bridges is closely monitored and routinely reviewed by both MDOT and the local road agencies. Periodically, MDOT publishes a "Highway Bridge Report" for structures located on the state maintained system (interstate routes and state trunklines). The latest MDOT bridge report was released March 31, 2010. There are forty-seven (47) structures under MDOT jurisdiction within the BCATS area that are included in the latest report. Two of the structures are listed as culverts and neither of them have structural or functional issues. The remaining forty-five (45) bridges were all last inspected between July, 2009 and December, 2009.

Based on those inspections, five (5) MDOT bridges were assessed to be structurally deficient (SD). "A highway bridge is classified as structurally deficient if the deck, superstructure, or substructure is rated in "poor" condition (0-4 in the NBI rating scale). A bridge can also be classified as structurally deficient if its load carrying capacity is significantly below current design standards, or if a waterway below frequently overtops the bridge during floods." (Source: MDOT Highway Bridge Report, March 31, 2010, MDOT) In addition, a total of twelve (12) bridges were classified as functionally obsolete (FO) in the latest report. "Highway bridges classified as functionally obsolete are NOT structurally deficient, but their design is outdated. They may have lower load carrying capacity , narrower shoulders, or less clearance underneath than bridges built to the current standard." (Source: MDOT Highway Bridge Report, March 31, 2010, MDOT)

The deficient and obsolete MDOT bridges, as of June 2011, were listed in BCATS' previous plan as follows:

Structurally Deficient on MDOT System (as of June 2011)

Route	Over	Year Built
I-94BL (Skyline Dr)	I-94	1958
M-66	Wanondoger Creek	1940
I-194	I-94BL (Dickman)	1966
I-194	Fountain St	1966
M-96 (Columbia Ave)	Raymond Rd	1940

Each of the structurally deficient bridges listed above has been improved since 2011.

Functionally Obsolete on MDOT System (as of June 2011)

Route	Over	Year Built
M-37 (Bedford Rd)	Waubascon Creek	1990
M-66	Battle Creek River	1966
M-96 (Columbia Ave)	I-194	1965
M-89	Waubascon Creek	1947
Helmer Rd	I-94	1959
Capital Ave	I-94	1992
I-194/M-66 (NB)	**I-94**	1994
I-194/M-66 (SB)	**I-94**	1994
I-94BL (Michigan)	I-94	1960
M-311 (11 Mile Rd)	I-94	1960
M-311 (11 Mile Rd)	**Kalamazoo River**	1959
M-37 (Bedford)	Kalamazoo River	2006

The five MDOT bridges listed as structurally deficient in the previous plan have all been either replaced or rehabilitated in the last five years, and so are no longer considered structurally deficient. The only projects recommended in this plan to address any of the functionally obsolete bridges on the MDOT system are a $3.4M replacement of the M-311 bridge over the Kalamazoo River in 2019, and a $1.8M rehabilitation of the I-194/M-66 bridges over I-94 in 2021.

The functionally obsolete M-311 bridge over I-94 is suggested to be a priority "illustrative" bridge project in this *2040 Plan.* This 2-thru lane bridge at I-94 exit 104 was referenced earlier in this chapter under "Roadway Capacity Deficiencies" and discussion of an "illustrative" capacity project to improve lane delineation, with widening and added turn lanes as necessary, on M-311 (Wheatfield/11 Mile Rd), from M-96 (Michigan Ave) northward to the intersection with Wheatfield Parkway and the westbound I-94 exit & entrance ramps, a segment including the bridge over I-94.

Another functionally obsolete MDOT bridge to be designated as an "illustrative" project is Helmer Rd over I-94, at I-94 exit 95. In BCATS' *2035 MTP* this bridge was part of a marginally capacity deficient corridor, forecast to operate at an acceptable 78.4% of capacity in the *2035 Plan's* "build alternative". While the Helmer Rd corridor forecast 2040 V/C in this plan still does not indicate a need to add lanes to the bridge over I-94, development of the proposed "illustrative" project should include detailed evaluation of the existing bridge condition for possible replacement with additional capacity. Geometric changes to improve sight lines at the bridge approaches' intersections with both I-94 exit ramps should also be considered, along with accommodations for non-motorized travel over the bridge.

The City of Battle Creek has twenty (20) non-trunkline bridges under its jurisdiction. None of those bridges are currently in the structurally deficient category. BCATS' 2035 MTP listed the 20th St bridge over the Kalamazoo River as deficient. That bridge was rehabilitated in 2011-12 and no longer falls in the deficient category. In 2016, the City of Battle Creek applied to MDOT for future year preventative maintenance funding for three (3) bridges: Emmett St over the CN Railway; Michigan Ave over the Battle Creek River; and Hamblin Ave over the Kalamazoo River. No time schedule has been set for this potential work.

The City of Springfield has no structures within its boundaries for which it is the responsible road agency.

There are twenty-two (22) structures under the jurisdiction of the Calhoun County Road Department (CCRD) that are located within the BCATS area in the townships of Bedford, Pennfield, Emmett, Leroy, and Newton. Of these structures, three (3) are currently listed as structurally deficient and eight (8) are listed as functionally obsolete. Two of the bridges appear on both lists.

Structurally Deficient on CCRD System

Road	Over	Year Built
Raymond Rd	Conrail	1968
Raymond Rd	**Kalamazoo River**	1960
12 Mile Rd	Nottawassepee Creek	1919

Functionally Obsolete on CCRD System

Road	Over	Year Built
10 Mile Rd	Battle Creek River	1962
Pennfield Rd	Wanondoger Creek	1962
Raymond Rd	Conrail	1968
Raymond Rd	**Kalamazoo River**	1960
Main St	Kalamazoo River	1957
12 Mile Rd	Kalamazoo River	1925
6 ½ Mile Rd	Barnum Creek	1905
M Dr S	Nottawassepee Creek	1920

The CCRD is currently replacing the Raymond Rd bridge over the Kalamazoo River; the project is expected to be completed in spring 2017. No projects have been identified yet by the CCRD for any of the other bridges listed above.

The bridge improvements recommended in this *Plan* overall consist of five rehabilitation and two replacement projects by MDOT, and no major local bridge work. Five of the seven MDOT bridge projects are on I-94, and reflect the recognition that any replacement or major rehabilitation of bridges along I-94 should consider how to best facilitate construction to widen I-94 across the BCATS area. The five pairs of eastbound & westbound I-94 bridges have been described by MDOT as "bottleneck" bridges that are not currently wide enough to maintain two lanes of I-94 traffic in each direction during construction, assuming all traffic is crossed over to one bound while the other bound is under construction. The "bottleneck" bridges, whether to be replaced or rehabilitated, would be widened to accommodate four traffic lanes, with projects recommended to be implemented from 2021–2030. It is emphasized that any replacement or major rehabilitation of bridges along I-94 should consider the long-term need to provide for widening of I-94 across the BCATS area.

Other known bridge deficiencies in the BCATS area may be addressed as preservation projects with general preventive maintenance funding. There are no other imminent significant bridge needs that are perceived to justify recommendation in this *Plan* of a specific future bridge project, with funding, in part due to uncertainty regarding the availability and acquisition of dedicated bridge funding.

NON-MOTORIZED TRANSPORTATION

Over sixteen years ago, as part of BCATS' *2025 Transportation Plan,* a future non-motorized transportation network was defined to help guide improvement and expansion of non-motorized facilities in the metropolitan area. Since then, numerous plans and/or projects have been completed by local government agencies and non-profit organizations to advance opportunities for non-motorized transportation. Chapter VII, "Intermodal Considerations - Pedestrian & Non-Motorized", presents details of the planning & implementation of

non-motorized transportation improvements in the BCATS area. An extensive, but certainly not all-inclusive, inventory of websites related to non-motorized transportation plans & facilities in the area is included at the end of Chapter VII. It is hoped that in the short term BCATS can assemble the area's many projects and plans for non-motorized transportation into a unified vision, and also map an updated comprehensive non-motorized transportation network for the BCATS metropolitan area. Future non-motorized projects will be reviewed to ensure compatibility among the plans of all interested local, regional, and state government entities, as well as non-government & non-profit organizations.

Frequently improvements for non-motorized transportation can be incorporated into projects addressing capacity and/or pavement deficiencies. Road widening with paved shoulders, and pavement resurfacing with modified lane striping are two such examples that can provide for the addition of designated bike lanes. Intersection signal & geometric projects now include sidewalk improvements (i.e. ADA ramps), and consideration of pedestrian signals, as standard practice. The potential for non-motorized improvements to be implemented concurrent with adjacent road work should be recognized early in any project's development, especially if additional right-of-way will be needed and/or available .

Throughout preparation of this *2040 MTP*, no non-motorized transportation projects emerged to be recommended in this plan; despite many suggestions and ideas for projects in other existing plans, none have been developed with any funding commitment. Based on discussions at BCATS' Technical & Policy Committee meetings, review of other agencies' plans, observation of existing conditions, and recent local news, the following are suggested as "illustrative" projects in this *2040 MTP:*

- Rehabilitation of existing shared-use asphalt path off-road along north side of M-96 (Dickman Rd), from Evergreen Rd/American Legion Dr intersection (just north of M-96 near former location of Avenue A intersection with M-96) westward into Kalamazoo County, to Fort Custer National Cemetary, and from there extension of new path along M-96 (on- or off-road to be determined) thru Augusta & Galesburg to meet the existing Kalamazoo River Valley Trail (www.krvtrail.com) near 35th St just north of the Kalamazoo River.
- Enhancement of the Battle Creek Linear Park (www.bcparks.org/134/Linear-Park) west trailhead on the north side of M-96 (Dickman Rd) at Brady Rd, and improvement of signing along Linear Park.
- Modify four-lane (with no sidewalks) Stringham Rd from Jackson St north to M-89 (Michigan Ave) to accommodate shared-use off-road path, connecting Linear Park (on north bank of Kalamazoo River) to M-89.
- Develop non-motorized facility along east-west Watkins Rd corridor to connect existing north-south non-motorized facilities along Helmer Rd & Capital Ave SW.
- Develop non-motorized facilities in Pennfield Township to connect southward to existing City of Battle Creek non-motorized facilities.
- Provide for non-motorized access over I-94 on Helmer Rd (also part of "illustrative" project suggested under "Bridges Capacity & Condition" to replace the "functionally obsolete" Helmer Rd bridge over I-94).
- Extension of existing Calhoun County Trailway from its southern terminus at Historic Bridge Park, near I-94 at the Kalamazoo River, eastward ~3 miles to cross BCATS metropolitan planning area (MPA) boundary (Emmett Twp/Marshall Twp line), then ~27 miles further across Calhoun County into Jackson County to meet the Falling Waters Trail near Concord. The 10.5-mile Falling Waters Trail connects the village of Concord with the City of Jackson.
- Promote a local bicycle sharing program, "Battle Creek BCycle" (https://battlecreek.bcycle.com/). The program was highlighted recently in *Scene Magazine*, a local advertising publication (Scene Magazine; Vol 41, Num 08; W.W. Thayne Advertising, Inc.; Battle Creek, MI; September 2016).

SECURITY, RELIABILITY, & RESILIENCY

One of the MAP-21/FAST Act planning factors requires that the planning process provide for consideration and implementation of projects, strategies, and services that will "increase security of the transportation system for motorized and non-motorized users" as a specific stand alone consideration. The Federal Highway Administration (FHWA) generally defines "security planning" as "that related to an event that is beyond the ability of local authorities to handle and respond to, and that outside resources will be necessary to assist." (Source: Summary Report: MPO Peer Workshop on Addressing Security Planning and Natural and Manmade Disasters, February 2008) However, no "checklist" exists that defines "security" in the context of MPO planning. FHWA encourages each MPO to create its own definition that fits local needs in addressing this planning factor.

Different levels of incidents require different levels of response and involve different requirements of the transportation system. As the level of significance of an incident rises from something "local" to "regional", then to "state", and ultimately "national", the scale of public preparedness for such an event declines at the same time that the coordination complexity level rises. Obviously, the security response system needs to expand with the magnitude of the event. Based on FHWA's definition of "security planning" noted above, incidents that are regional in nature, up to and including those that are national in impact, are those incidents needing to be addressed within security planning.

Valuable assets of particular interest in the BCATS area include:

- Hart-Doyle-Inouye Federal Center which houses the Defense Logistics Information Service, Defense Reutilization Notation, and General Services Administration of the Department of Defense (approx. 1,200 employees)
- W.K. Kellogg Airport, which has on its grounds the 110th Air National Guard/110 Operations Group (approx. 200 employees), and with its 10,000 foot runway can accommodate many types of aircraft
- Veterans' Affairs Medical Center (approx. 1,150 employees)
- Fort Custer Industrial Park (approx. 7,500 employees)
- Firekeepers Casino (approx. 1,600 employees)
- Battle Creek Health System (approx. 1,500 employees)
- Kellogg Community College (approx. 500 employees)
- Western Michigan University Kendall Center
- Western Michigan University College of Aviation
- Duncan Aviation (approx. 650 employees)
- City of Battle Creek wastewater treatment plant
- Verona well fields
- Battle Creek Transit (local transit operator)
- Enbridge oil pipeline
- Interstate I-94 and its associated bridges
- Norfolk Southern and Canadian National rail lines through the BCATS area
- Canadian National Rail Yard (approx. 500 employees)
- ITS message system on I-94 (and just outside the BCATS area on I-69)
- Traffic Management Center at the City of Battle Creek Department of Public Works

The Michigan SARA Title III Program established the formation of a Local Emergency Planning Committee (LEPC) in each county in Michigan. The head of Calhoun County's Emergency Management is the contact person for the LEPC. The LEPC has been active in Calhoun County for many years. Calhoun County has an Emergency Action Guide that serves as its blueprint for dealing with emergency events. It is not made available for public review. The City of Battle Creek has its own Emergency Services Department which maintains the City's Comprehensive Emergency Management Plan. The City's Emergency Services Department is responsible for the regional response SWAT team. Since the transit operator, Battle Creek Transit (BCT) is a city department, the City's Comprehensive Plan includes emergency planning for BCT as well. The W.K. Kellogg Airport, also run by the City of Battle Creek, has its own emergency plan which is developed separately. However, its plan is signed off on by the head of the City's Emergency Services. The Hart-Doyle-Inouye Federal Center also has its own

emergency/security plans. Firekeepers Casino maintains its own security forces and contracts with local law enforcement for additional services.

MI Transportation Plan, also known as the State Long-Range Plan, is a 25-year plan, prepared by MDOT, for transforming Michigan's transportation system. MDOT reaffirmed the previous plan by evaluating its inputs, forecasts and strategies against current trends, and by extending the horizon year to 2040. The recent update (adopted by the State Transportation Commission 7/21/16) includes a discussion of security within one of the twenty-three "White Papers" supporting *MI Transportation Plan*. MDOT actively participates in the protection of critical infrastructure by participating in the development and implementation of the Michigan Emergency Management Plan and the Michigan Homeland Security Strategy with state and federal partners. While some details are provided relative to the programs, strategies, and activities MDOT has identified, for security reasons, some details of the strategies and plans will not be released to the public.

Since BCATS' *2035 Metropolitan Transportation Plan* was adopted in June 2011, there has been one incident impacting the BCATS area that has had regional or greater impact on the transportation system. In January, 2015, white-out conditions on I-94, in Kalamazoo County just west of the Calhoun/Kalamazoo County border (mile marker 90) resulted in a series of vehicle crashes both eastbound and westbound on the interstate that ultimately involved 193 vehicles, and resulted in, amazingly, only one fatality and twenty-two injured motorists. The event was weather related, but shown to be exacerbated by driver error (58 drivers were cited for driving too fast for conditions, including 30 commercial drivers). A major fire erupted in the eastbound lanes involving a tractor trailer hauling 40,000 pounds of fireworks and another commercial vehicle transporting formic acid. The situation was compounded by the fact the temperatures that day hovered around 6 degrees Fahrenheit, with significant wind chill as well. The fire and hazardous materials resulted in an evacuation order for an area within three miles of the crash for a short period of time. Altogether, it took two days to bring the scene under control. I-94, in both directions, was shut down for those two days and detours had to be put into place. Motorists were notified of the closure as far away as Indiana and Detroit and discouraged from using the facility.

The incident strained the local emergency services resources. Three police agencies, a dozen fire departments, nine ambulance companies, seven wrecker services, and transit vehicles from Battle Creek Transit and Kalamazoo Transit were all involved in the initial response and clean-up that followed. The transit vehicles were called in to take persons from vehicles involved in the crash to safe locations at area schools, due to the severe weather conditions and wind chill factors. A portion of the roadway on the eastbound portion of I-94 was so severely damaged due to the fire that it ultimately required a new overlay to be done.

BCATS' role in security planning has been providing data to other agencies, as requested, and including road and transit related security projects in the long-range *Metropolitan Transportation Plan* and *Transportation Improvement Program*. Battle Creek Transit is required to spend at least 1% of its federal assistance on projects which address security. Recent MDOT projects implemented related to intelligent transportation systems (ITS) deployment along the I-94 corridor also offer security enhancement in the BCATS area. Changeable message signs, weather monitoring stations and cameras have all been installed by MDOT along I-94 in the BCATS area. Following the major I-94 traffic crash cited above, local law enforcement and road agencies held debriefing sessions to evaluate the response to the incident. Additionally, an "Evaluation of the I-94 Corridor from the Indiana State Line to US-127 South" report was prepared by MDOT, the Michigan State Police and the Federal

Highway Administration in response to a request from State Senator Margaret O'Brien of the Kalamazoo area. Potential improvements for several locations along I-94 within the BCATS area are included in that report and have been considered during this update of the BCATS long-range *Metropolitan Transportation Plan*.

Reliability & Resiliency

Procedures for incorporating "transportation performance management" (TPM) into the planning process, as outlined in the MAP-21/FAST Act, added "reliability" and "resiliency" as planning factors required to be addressed. Like the prescription to add security, the instructions to add reliability and resiliency to the list of essential concerns came with no explicit guidance for metropolitan planning organizations (MPOs) like BCATS.

In the context of BCATS' processes, "reliability" is being interpreted to specifically mean "travel time reliability", defined as "the consistency or dependability in travel times, as measured from day-to-day and/or across different times of the day". (Source: *Travel Time Reliability: Making It There On Time, All The Time*; prepared for FHWA by Texas Transportation Institute with Cambridge Systems, Inc.; January 1, 2006. A brochure version of the report is included in the Appendix to this *2040 MTP*.) Travel time reliability measures the extent of unexpected delay for any transportation system users, whether they are vehicle drivers, transit riders, freight shippers, or even air travelers. The delay can be caused by a major crash, like the January 2015 incident on I-94 described previously in this section as a "security" issue, or by other non-recurring events such as disabled vehicles on shoulders, traffic signal malfunctions, bus passenger incidents, and extreme weather conditions.

Within transportation planning, "resilience" has come to focus on extreme weather and climate change. The FHWA defines "resilience" as "the ability to prepare for changing conditions and withstand, respond to, and recover rapidly from disruptions". (Source: *Transportation System Resilience to Extreme Weather and Climate Change*; US Department of Transportation, FHWA; November 2015. The four-page report is included in the Appendix to this *2040 MTP*.) Among the many possible impacts of extreme weather and climate change on the transportation system are pavement stress under high temperatures, increased pavement damage from more severe freeze/thaw cycles, flooded roadways due to inadequate stormwater management, and roadside environmental damage from runoff of more frequently used de-icing materials.

At present the requirements, and possible penalties for non-compliance, for suitably addressing reliability & resiliency in the transportation planning process apply only at the State level. The evolution of MDOT's transportation performance management (TPM) techniques with consideration of all the planning factors is an ongoing activity expected to continue indefinitely. It is anticipated that in the near future, BCATS and other Michigan metropolitan planning organizations (MPOs) will be able to adapt MDOT's TPM practice(s) to fit within their own processes, supporting the state vision and effort.

NEEDS RELATED TO ECONOMIC DEVELOPMENT

There are some concerns for the future transportation system, such as those related to plans in place for future development of industrial and commercial areas, that do not specifically fall neatly into the capacity, safety, pavement, bridge, or non-motorized categories. Only one such future development has been identified for this *2040 MTP* as possibly imminent, that might necessitate appropriate transportation improvements, during both

its construction and its operation. Several "illustrative" projects are cited below to better serve a site at the Fort Custer Training Center (FCTC) being considered by the US Dept of Defense Missile Defense Agency (MDA) for a ground-based Continental Interceptor Site (CIS).

In May 2016 the MDA released the draft Environmental Impact Statement (EIS) for the CIS to be located at one of three existing military installations: FCTC – Michigan Army National Guard, Augusta, Michigan; Camp Ravenna Joint Military Training Center – Ohio Army National Guard, Portage and Trumbull Counties, Ohio (~50 miles southeast of Cleveland); and Fort Drum, in upstate New York. Public hearings were held in each community over the summer, and comments accepted into August. The final EIS was expected to be complete by the end of 2016.

The FCTC option presents two possible sites of ~1000 acres, as displayed on a map "poster" from material displayed at the public meeting in Battle Creek (included in the Appendix to this *2040 MTP*, with a "Fort Custer Socioeconomics" "poster" from the public meeting, and site road network maps from the 382-page FCTC section of the draft EIS). Site 1 straddles the Calhoun/Kalamazoo county line just north of the interchange at I-94 exit 92, and lies entirely west of I-94BL/M-37 (Columbia Ave W). The gated entrance to Site 1 is proposed to run westward into the facility from I-94BL/M-37, possibly opposite the existing signalized T-intersection at Skyline Dr, where Skyline Dr heads due north from the northward to eastward Columbia Ave route of the I-94BL. Site 2 is wholly in Kalamazoo County, northwest of I-94 exit 88 at 40th St and south of Fort Custer Dr.

Of the two possible sites in FCTC, only Site 1 would have direct impacts on the transportation network within the BCATS metropolitan area. The following locations are suggested as candidates for "illustrative" projects in this *2040 MTP*, to mitigate future transportation issues should the US Dept of Defense - MDA select FCTC Site 1 for implementation of the new Continental United States Interceptor Site (CIS):

- I-94 exit 92 interchange, @ I-94BL/M-37 (Columbia Ave W). Resurfacing of the roadway approaches & exit/entrance ramps, and replacement of the bridge over I-94 was completed in 2015. Additional traffic from the CIS may warrant traffic signalization at the exit ramp intersections and geometric improvements such as minor widening for turn lanes.
- I-94BL/M-37 (Columbia Ave) @ Skyline Dr. Resurfacing & realignment at this intersection was also completed in 2015. Additional traffic from the CIS would likely prompt signal timing modifications, and should the main CIS entrance be located westward from the intersection, significant geometric revisions as well.
- M-96 (Dickman Rd) @ Hill Brady Rd, M-96 (Dickman Rd) @ Armstrong Rd), Hill Brady Rd-Logistics Dr @ Skyline Dr. While removed from the proposed CIS site itself, these three intersections may accommodate increased traffic from CIS-related employees, during both construction and operation, commuting to/from residential areas to the north and west of Battle Creek. Also, the current main FCTC entrance is southward off Denso Rd, about midway between Armstrong Rd & Hill Brady Rd, and could be used more for interior access to the CIS and other FCTC operations expected to continue. Signal timing modifications at M-96 (Dickman Rd)/Hill Brady Rd, added new signalization & turn lanes at M-96 (Dickman Rd)/Armstrong Rd (identified previously as a "safety-related" illustrative project), and revisions to both the signalization and geometry at Hill Brady Rd-Logistics Dr/Skyline Dr (to favor the typical traffic movement following Hill Brady Rd and Skyline Dr, with very limited traffic approaching the intersection westbound from Logistics Dr), would be the suggested "illustrative" improvements.

Even upon the completion of the final EIS, there are no expectations of a timeline for the Missile Defense Agency (MDA) to select where to build the new CIS, among the sites in Michigan, Ohio, and New York, nor is there any indications of the start date for the three to five year construction phase. The MDA website, at https://www.mda.mil/about/enviro_cis.html, can be accessed for updates, handouts, news releases, and official reports.

In BCATS' last two long-range plans expected development, that inspired a pair of projects as "Needs Related to Economic Development" to be recommended, never came to fruition. The following two projects are no longer considered viable, even as "illustrative" projects, given no foreseeable changes to the situations that precluded their implementation.

Morgan Rd Extension - this project would have extended Morgan Rd eastward from M-66 (Capital Ave NE) across the Battle Creek River and the GTW railroad to the intersection of Gorsline Rd (N Dr N) and Cooper/Bellevue Rd. Relative to economic development, this new roadway would have enhanced access to a retail, office, and residential complex, based on a new Wal-Mart "superstore", at one time expected to open late 2012 but dropped during the national economic downturn. The proposed Wal-Mart was to be on the east side of M-66 (Capital Ave NE), on the north side of the planned extension of Morgan Rd. The completion of a continuous east-west route across the north edge of the "built-up" urban area, including another crossing of the Battle Creek River, was also foreseen to be a significant benefit to the overall transportation system.

Glenn Cross Rd Extension - this project would have extended Glenn Cross Rd from M-66, eastward across 6 Mile Rd, then northward to meet B Dr N between Harper Village Dr and 6½ Mile Rd. Property south of B Dr N along this new road would have been made accessible and available for development, while the new road itself was expected to alleviate congestion at the M-66/B Dr N (Beckley Rd) intersection, as a "bypass" route. The project could not be implemented due to inability to acquire suitable right-of-way to access B Dr N between existing businesses.

2040 MTP "ILLUSTRATIVE" PROJECTS

The following list includes "illustrative" projects identified in this chapter, grouped by project type category and in the order that they were first identified. Note these "illustrative" projects have no estimated costs or years of implementation, and were not included in the financial plan and determination of fiscal constraint presented in Chapter XIV. However, "illustrative" projects with defined physical locations were mapped and considered within the environmental justice analysis presented in Chapter XVIII.

Roadway Capacity Deficiencies

A. **I-94 widening** (one additional thru lane in each direction), from Sprinkle Rd (I-94 exit 80 in Kalamazoo County) eastward across the BCATS metropolitan area to I-69 at I-94 exit 108 near Marshall.

B. **I-94 eastbound loop exit ramp to M-311** (Wheatfield/11 Mile Rd) at I-94 exit 104; reconstruct & add capacity as warranted, with appropriate safety improvements..

C. **M-311 (Wheatfield/11 Mile Rd),** from M- 96 (Michigan Ave) northward to the intersection with Wheatfield Parkway & the westbound I-94 exit & entrance ramps; improve lane delineation, with widening & added turn lanes as necessary, including the 2 thru lane bridge over I-94 (listed as a separate "illustrative" bridge project).

D. **M-96 (Michigan Ave E),** from M-311 (Wheatfield/11 Mile Rd) eastward past Firekeepers' Casino to metropolitan planning area (MPA) boundary (12 Mile Rd), and further towards Marshall as warranted. Add thru lanes & turn lanes pending nearby future commercial development & increased traffic.

E. **M-66 (southbound),** from I-94 southward to Beckley Rd; add capacity as warranted.

F. **M-294 (Main St/6.5 Mile Rd Beadle Lake Rd),** from M-96 (Columbia Ave) southward to the Main St split; widen as warranted, improve M-294/M-96 intersection with turn lanes on each approach as appropriate and traffic signal modernization.

G. **I-194/M-66 southbound Exit 2 off ramp** to M-96 (Columbia Ave); extend two-lane section at M-96 intersection northward down ramp to add capacity as warranted.

Safety-Related Deficiencies

H. **M–96 (Dickman Rd & Columbia Ave) Traffic Signals,** optimize/modernize/upgrade numerous traffic signals along 12.4 miles of M-96 in Calhoun County.

I. **M-89 (Michigan Ave) @ Augusta Dr,** reconfigure geometry & traffic control signing to favor southeast-bound thru traffic on state trunkline M-89.

J. **M-89 (Michigan Ave) @ VanBuren St,** reconfigure geometry & traffic control signing to favor northwest-bound thru traffic on state trunkline M-89.

K. **M-96 (Dickman Rd W) @ Armstrong Rd.** Extend the right-turn approach lanes on westbound M-96 and on southbound Armstrong Rd, add center left-turn lane on the eastbound M-96 approach. Consider full signalization & related geometric improvements pending possible development of US Dept of Defense missile base at Fort Custer Training Center, discussed in this chapter under "Needs Related to Economic Development".

L. **Avenue A @ 20th St.** Modernize & upgrade traffic signal(s) ,including interconnection to the control/warning signals at the railroad crossing of 20th St south of Avenue A.

M. **20th St @ I-94BL (Dickman Rd).** Remove southwest-bound diagonal crossover in the southeast quadrant of this intersection to shift travel from westbound Dickman Rd to southbound 20th St to the intersection itself.

N. **I-94 Rest Area**. Reconstruction of Battle Creek Rest Area #703 on eastbound I-94,between Helmer Rd & Capital Ave, including replacement of existing building, parking lot improvements, sidewalks, ADA ramps, & associated site work.

Bridges Capacity & Condition

O. **M-311 (Wheatfield/11 Mile Rd) bridge over I-94,** at I-94 exit 104. Replace functionally obsolete 2-thru lane bridge with wider bridge aligned with widened approaches suggested as part of an "illustrative" capacity project.

P. **Helmer Rd bridge over I-94,** at I-94 exit 95. Replace functionally obsolete 2-thru lane bridge with wider bridge to add non-motorized access and capacity as warranted, and consider geometric changes to improve sight lines at the bridge approaches' intersections with both I-94 exit ramps.

Non-Motorized Transportation

Q. **Comprehensive Non-Motorized Transportation Plan for BCATS Metropolitan Area**. Prepare planning document with mapped current and proposed future non-motorized transportation network.

R. **M-96 (Dickman Rd) Trail**. Rehabilitate existing shared-use asphalt path along north side of M-96 (Dickman Rd), from Evergreen Rd/American Legion Dr intersection (just north of M-96 near former location of Avenue A intersection with M-96) westward into Kalamazoo County, to Fort Custer National Cemetery, and from there extend new path along M-96 to meet the existing Kalamazoo River Valley Trail (www.krvtrail.com) near Galesburg.

S. **Battle Creek Linear Park**. Enhance Linear Park (www.bcparks.org/134/Linear-Park) west trailhead on the north side of M-96 (Dickman Rd) at Brady Rd, and improve signing along Linear Park.

T. **Stringham Rd Non-Motorized Connector**. Modify Stringham Rd from Jackson St north to M-89 (Michigan Ave) to accommodate shared-use off-road path, connecting Linear Park to M-89 (Michigan Ave W).

U. **Watkins Rd Corridor Non-Motorized Connector**. Develop new non-motorized facilities aligned along Watkins Rd corridor to connect existing non-motorized facilities on Helmer Rd & Capital Ave SW.

V. **Pennfield Township Non-Motorized Connections**. Identify & develop non-motorized facilities in Pennfield Township to connect southward to existing City of Battle Creek non-motorized facilities.

W. **Helmer Rd Non-Motorized Crossing over I-94**. Provide non-motorized access over I-94 on Helmer Rd (also part of "illustrative" bridge project to replace the "functionally obsolete" Helmer Rd bridge over I-94).

X. **Calhoun County Trailway**. Extend existing Calhoun County Trailway from terminus at Historic Bridge Park eastward ~30 miles to to meet the Falling Waters Trail near Concord in Jackson County.

Y. **Battle Creek BCycle**. Promote local bicycle sharing program (https://battlecreek.bcycle.com/).

Needs Related to Economic Development

Z. **I-94 exit 92 interchange,** @ I-94BL/M-37 (Columbia Ave W). Traffic signalization at the exit ramp intersections and geometric improvements such as minor widening for turn lanes, for possible increased traffic with potential location of a new US Dept of Defense Missile Defense Agency (MDA) Continental Interceptor Site (CIS) at the nearby Fort Custer Training Center.

AA. **I-94BL/M-37 (Columbia Ave) @ Skyline Dr**. Increased traffic from the potential MDA CIS will necessitate signal timing modifications, and, should the main CIS entrance be located westward from the intersection, significant geometric revisions.

BB. **M-96 (Dickman Rd) @ Hill Brady Rd**. Signal timing modifications for increased traffic from the potential MDA CIS.

CC. **M-96 (Dickman Rd) @ Armstrong Rd**. Add new signalization & turn lanes at M-96 (Dickman Rd)/Armstrong Rd (identified previously as a "safety-related" illustrative project) for increased traffic from the potential MDA CIS.

DD. **Hill Brady Rd-Logistics Dr @ Skyline Dr**. Revise signalization and geometry at Hill Brady Rd-Logistics Dr/Skyline Dr (to favor the typical traffic movement following Hill Brady Rd and Skyline Dr, with very limited traffic approaching the intersection westbound from Logistics Dr), for increased traffic from the potential MDA CIS.

CHAPTER XIII

OPERATIONAL & MANAGEMENT STRATEGIES

INTRODUCTION

SAFETEA-LU required that BCATS include "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" (USDOT, Metropolitan Transportation Planning: Final Rule FHWA, Sec. 450.322.(f)(3), effective 3/14/07) in the development of its long range transportation plan. The requirement did not change under the recently released MAP-21/FAST Act rules and regulations published May 27, 2016.

The intent of identifying and utilizing operational and management strategies is not only to improve performance of the system but to reduce the number of costly widening projects and the frequency of total roadway reconstruction projects on the area's roadways. To this end, BCATS participates in, and promotes, a wide variety of transportation strategies that seek to reduce congestion, prolong the life of the facilities, and maximize the safety and mobility of people and goods. These strategies also support the BCATS' 2040 Plan goals of safety, accessibility, preservation, efficiency, financial restraint, comprehensive planning, and environmental impacts. These strategies are discussed below.

ASSET MANAGEMENT

BCATS is actively involved in the process of asset management for federal-aid roadways in the greater Battle Creek area. One of the goals of the statewide roadway asset management program, overseen by MDOT, is to maximize pavement life by applying the correct "fix" at the right time. All federal-aid eligible roads are assessed at least every other year by a trained team of field surveyors (including BCATS' staff) to determine deterioration levels. Each of the local agencies has access to the PASER rating system and the RoadSoft software to utilize the results of the field data. The City of Battle Creek chooses to survey its local roads on a periodic basis as well, to ascertain the health of its local road system and to provide a means for scheduling of maintenance projects. Each road agency is responsible for its own pavement management program.

BCATS supports this activity with its involvement in training, field surveying, equipment maintenance, assistance to the local agencies, and reporting to MDOT.

CAPITAL PREVENTATIVE MAINTENANCE (CPM)

This strategy is one of the implementation steps that can result from the efforts of the asset management activity. BCATS promotes the timely resurfacing, re-paving, repainting, re-decking, signal upgrading, and other preventative maintenance activities which will extend the life of the existing transportation system infrastructure. Many of these projects can be smaller in scope. Many are not significant enough to be identifiable projects within the context of BCATS' long range plan. MDOT identifies a general program account, called a "GPA", in each year of the Transportation Improvement Program (TIP) for its CPM activities. The local road agencies conduct some of these activities jointly under an Areawide Preventative Maintenance project programmed in the TIP on a

somewhat regular basis. BCATS has promoted the activities of all of its implementing agencies through its support of the asset management program, its safety studies, and the inclusion of CPM for MDOT in the TIP.

GENERAL MAINTENANCE

By maintaining existing facilities in the best possible condition, the transportation system is sustained, its useful life extended, and it functions better and more safely for users. Activities considered general maintenance can include: minor resurfacing, some crack sealing and chip and seal type applications, winter maintenance (ice and snow removal), traffic signal maintenance, pot-hole filling, sign and pavement marking upkeep and replacement, street cleaning and debris removal, and landscaping activities (mowing, tree trimming, etc.)

Some of these activities are supported by BCATS through funding of sign upgrade projects, safety projects, certain enhancement projects, and through its participation in the asset management program.

SAFETY

While many of the activities in the CPM and maintenance categories result in improved safety, safety is an ancillary benefit and not the identified goal of the activity. However, there are some activities that are specifically directed toward improved safety which also improve the operation of the transportation system. These activities include developing projects to address high crash locations, adding specific safety features to existing roadways and bridges, improving geometrics or design, and promoting public education programs.

BCATS will continue to support safety activities through its local safety studies, selection and funding of periodic projects under the "local safety" program, and promoting national safety awareness promotions (such as National Drunk and Drugged Driving Prevention Month).

INTELLIGENT TRANSPORTATION SYSTEMS (ITS)

Intelligent Transportation Systems (ITS) activities involve the addition of facilities, services, and/or technological enhancements designed to improve mobility and safety. Such activities in the BCATS area include: computerized signal control, automated transit fare collection system, transit vehicle locator system, and a traffic management center with fiber connected optimized road corridors. In addition, a regional system of changeable message signs and traffic monitoring sensors has been installed by MDOT along I-94 and at the I-94/I-69 interchange in Calhoun County.

Several years ago, BCATS participated in the development of the regional ITS architecture by the MDOT Southwest Region office that has led to the current I-94 ITS implementation. BCATS has also funded several traffic signal interconnect projects with a variety of funding sources, funded transit fare equipment upgrades and vehicle locator systems, and funded development of a local traffic management center with CMAQ funding. BCATS will continue to direct funding to appropriate projects which support the ITS foundation that is in place in the BCATS area.

TRAFFIC MANAGEMENT CENTER

As noted above, a Traffic Management Center (TMC) has been established at the City of Battle Creek's Public Work Department facility that can monitor traffic signals on several City corridors and one joint corridor with City, County and MDOT jurisdictions all being involved. Future projects may include additional phases of TMC development, including the addition of more upgraded signal locations that tie into the TMC system.

ACCESS MANAGEMENT

Access Management involves establishing policies and implementing projects which will reduce or eliminate driveways, roadway access points, or at-grade intersections with the intention of improving safety, reducing congestion, and enhancing traffic mobility by reducing conflict points. Success with access management requires that many players be involved in the process including (but not limited to): MDOT, local road agencies, property owners, developers, and local planning commissions. MDOT is actively engaged in access management studies to preserve access along its state highway corridors. This involves a process of bringing together all of the stakeholders to develop an access control plan and associated land use and zoning changes. Other access management activities include: driveway consolidation and shared use, use of medians and/or turning restrictions, construction of frontage roads and development of educational materials for the public, planning commissions and developers.

BCATS supports access management through its development of access management studies for area corridors, when appropriate, and by its participation on steering teams for MDOT access management studies within the Battle Creek metropolitan area. Access management is a strategy that BCATS promotes relative to all roadway projects in the BCATS area.

COMPLETE STREETS (formerly Pedestrian and Non-Motorized)

The "Complete Streets" legislation in the State of Michigan has many provisions for effective accommodation of pedestrians and users of the wide variety of non-motorized transport devices available today. The goal of the legislation is the inclusion of all possible users of the transportation network. In the BCATS area in the past, this has involved activities such as the "Safe Routes to School" program (now part of the Transportation Alternatives Program), shared use paths, and bicycle lanes on roadways. BCATS expects these projects to continue, along with new ways of addressing the "Complete Streets" goals. The local agencies and MDOT are actively involved in planning, designing, and implementing these types of projects.

BCATS supports these activities through coordination with the City of Battle Creek's non-motorized plan and Calhoun County's trails plan.

OTHER

BCATS promotes optimization of operation and management functions for public transit in the areas of shelters and amenities, and route optimization. BCATS also promotes the development and expansion of rideshare parking lots.

BCATS

CHAPTER XIV

FINANCIAL PLAN

INTRODUCTION

The function of the MTP Financial Plan is to represent available federal-aid highway and transit resources as related to planned future transportation improvements. Specifically, the Financial Plan details:

1. Available highway and transit funding (federal, state and local)
2. Fiscal constraint (cost of projects cannot exceed the reasonably expected funding to be available)
3. Expected rate of change in available funding (unrelated to inflation)
4. Year of Expenditure (YOE) factor (to adjust costs for predicted inflation)
5. Estimate of Operations and Maintenance (O&M) costs for the federal-aid highway system (FAHS)

The May 27, 2016 FHWA final planning rules, which implement the MAP-21/FAST Act legislation, provide guidelines for the continuing requirement that all long range transportation plans be financially constrained documents. The MAP-21/FAST Act legislation continue the requirements of the prior legislation, SAFETEA-LU, relative to the requirements for a planning process that is realistic in terms of the financial resources available to carry out the plan. The regulations regarding establishing a financial plan are as follows:

- (i) For purposes of transportation systems 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).
- (ii) 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). 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.
- (iii) 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. The financial plan may include an assessment of the appropriateness of innovative finance techniques (for example, tolling, pricing, bonding, public private partnerships, or other strategies) as revenue resources for projects in the plan.
- (iv) 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. 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).
- (v) 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.
- (vi) For non-attainment and maintenance areas, the financial plan shall address the specific financial strategies required to ensure the implementation of TCMs in the applicable SIP.

- (vii) For illustrative purposes, the financial plan may 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.
- (viii) 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.

BCATS' development of this financial plan chapter is based on the outlined requirements from the regulations. The revenue and expenditure projections are presented in cost adjusted/inflated dollars, termed "year-of-expenditure" dollars. The previous 2035 MTP was also developed using this process. Past practice, historic data, and already committed funds are the major factors considered in establishing future funding estimates.

Since the majority of the funding for transportation improvements comes from federal and state dollars, actions at both these levels will impact the actual future funding available for projects at the local level. The future of both of these funding sources for the life of the 2040 Plan can not be predicted with much level of certainty at this time. Therefore, lacking any definitive information to the contrary, future estimates are based on a continuation of the historic experience with these sources and statewide standards for developing future funding estimates.

HISTORY OF TRANSPORTATION FINANCING

The development and maintenance of the transportation system has been, and still is, primarily financed by user fees. However, local funding, both public and private has become an increasing contributor to transportation improvements in recent years. At the state level, user fees include a per gallon tax on gasoline and diesel fuel and a per vehicle registration fee based on vehicle value. The state gas tax has been $0.19 per gallon since it was raised from $0.14 per gallon in 1997. A gas tax increase was passed in Michigan in 2015 that phases in not only an increase of $0.073 per gallon of gasoline as of January 1, 2017 ($0.11 per gallon of diesel fuel), but as of 2022, both gasoline and diesel fuel tax rates will be indexed for inflation. However, as vehicles become more fuel efficient, and alternative fuel use increases, the revenue generated from these taxes diminishes significantly. Gasoline and diesel fuels are also taxed $0.184 per gallon at the federal level. Some revenue for transportation at the state level is also generated from the sales tax on vehicle related consumer purchases, but much of this tax revenue is directed to other areas of the state budget, notably the School Aid fund and revenue sharing to local units of government.

SOURCES OF TRANSPORTATION FUNDING

Collection and distribution of gasoline and diesel fuel taxes in Michigan is regulated under State Act 51 of 1951 (commonly referred to a "Act 51"). Michigan's fuel tax is collected at the refinery and deposited into the Michigan Transportation Fund (MTF). Federal taxes are placed into the Federal Highway Trust Fund, with the exception of one cent of the tax, which is dedicated to the clean-up of underground fuel storage tanks. Most of the tax

revenues, at the federal and state levels, are earmarked to fund highway, mass transit, safety, and non-motorized improvements. The state's MTF dollars are distributed to MDOT, the county road commissions, the cities and villages, and the Comprehensive Transportation Fund (CTF). The CTF was established to fund public transit improvements. In addition to the funding from the MTF, the CTF has received funding from the state's general fund in the past.

Most states have vehicle registration fees that are earmarked for transportation improvements as well. In Michigan, the registration fees for automobiles and trucks are also deposited in the MTF. There is no federal passenger vehicle registration fee.

County and city allocations from the MTF generally represent over half of locally available transportation revenues. Local units of government may provide additional funding for transportation. Typical sources for such funds include a community's general fund, property tax millage, general obligation bonds, income tax revenues, contributions from other units of government, tax increment financing, and special assessments. Bonding for transportation improvements can also occur, with the pay back of the bonds becoming an on-going obligation. Revenue can also result from accumulated interest on unspent MTF funding that has been distributed to the local road agencies.

County road commissions/departments receive funding from their member townships for improvements to non-primary roads as county road commissions/departments are not allowed to pay for more than 50% of such improvements. Some counties, as well as cities, generate revenue by entering into maintenance agreements with MDOT to complete work on state trunkline facilities. Revenue is also sometimes generated from developers who will pay for the construction of access drives, roads, or other necessary improvements serving new developments.

At the federal level, MAP-21/FAST Act contains a myriad of programs available to fund transportation improvements. The state utilizes the Interstate and National Highway System (NHS) program for high level facilities like interstate highways. The Surface Transportation Program (STP) provides funds to the state and to local urban, small city, and rural areas for transportation improvements. A separate safety component was established under SAFETEA-LU to address projects in this category. The Transportation Alternatives Program (TAP) (formerly the Enhancement Program) includes beautification, historic preservation, and non-motorized types of projects. There are also bridge and Congestion Mitigation Air Quality (CMAQ) categories of funding that have continued under current federal legislation. All of these, as well as smaller federal highway related programs are listed in Figure XIV -1, below.

Summary of Potential Sources of Revenue for Plan Development

Federal Funding

see Figure XV-1 below

State Funding

- Motor Vehicle Tax (Act 51) Distribution
- Comprehensive Transportation Fund Distribution
- Transportation Economic Development Funds (TEDF)
- Other state

Local Funding

- General Fund Contributions (cities)
- Township Contributions
- Street Improvement Assessments
- Road Improvement Bonds
- Tax Increment Financing
- Special Assessment Districts
- Dedicated Millage
- Service Contracts
- Fare Box Revenues
- Private Industry Contributions
- Foundation Contributions
- In-kind Contributions
- Other local

FIGURE XIV-1
List of Available Federal-Aid Highway Revenues
(This is not intended to be an exhaustive list of all potential resources or eligible activities, but rather the most likely used revenues and types of activities)

Federal Highway Resources

Source	Purpose	Examples of Eligible Activities
Surface Transportation Block Grant Program	Maintain and improve the federal-aid highway system	Construction, rehabilitation, or reconstruction of highways, bridges, and tunnels; transit capital projects; ITS projects, highway and transit safety projects, non-motorized projects
Highway Safety Improvement Program (HSIP)	Decrease highway deaths and injuries	Intersection safety improvements; pavement and shoulder widening; rumble strips or other warning devices; improvements for pedestrian or bicyclist safety; improvements for safety of person with disabilities; traffic calming features; elimination of roadside hazards; highway signage and pavement marking projects; roadside safety audits
Congestion Mitigation and Air Quality Improvement Program (CMAQ)	Reduce emissions from transportation sources	Installation of dedicated turn lanes; signal re-timing, interconnection, or actuation; construction of roundabouts; diesel retrofits; projects to reduce single-occupant vehicle travel; transit vehicle replacement; transit new or reduced-headways routes
National Highway Performance Program (NHPP)	Maintain & improve the National Highway System (NHS) (ie; the subset of the federal-aid highway system that includes roads classified as principal arterials and above)	Construction, rehabilitation, or reconstruction of highways, bridges, and tunnels; transit capital projects; ITS projects, highway and transit safety projects, non-motorized projects - all on the NHS system
National Highway Freight Program (NHFP)	Infrastructure improvements that increase economic competitiveness and productivity; reduce congestion on the NHFP; improve safety, efficiency, and reliability of that network	Construction, reconstruction, rehabilitation, real property and equipment acquisition, and operational improvements directly related to system performance; ITS improvements; rail/highway grade separation; geometric improvements to interchanges and ramps; truck-only lanes; climbing and runaway truck lanes; adding/widening shoulders; truck parking facilities

DEVELOPING REVENUE FORECASTS

State and Local Revenues (for the local system (not including transit))

Local revenue projections were made utilizing the experience of the three local road agencies for the period of 2013 to 2015 as the base. The Act 51 reports submitted to the state by the agencies provided revenue and expenditure data for making future projections. The Act 51 reports break down revenues and expenditures between the major/primary road system and the minor/local road system. BCATS deals with funding for projects on the federal-aid eligible system, which mirrors almost completely the major/primary road system. Therefore,

although reviewed, the information for the local street/secondary road system is not used into addressing either costs or revenues for this financial assessment.

Table XIV-1
Average Per Year Major Street/Primary Road Revenues
for the Time Period 2013-2015

REVENUES	City of Battle Creek	Cal. Co. Rd. Comm. (60% of County totals)	City of Springfield	Total
MI Transport. Fund	$3,864,677	$3,608,531	$302,463	$7,775,671
MI Econ. Dev. Fund	$0	$92,304	$0	$92,304
Federal funding*	$0	$678,236	$0	$678,236
Local funding	$1,265,865	$0	$16,936	$1,282,801
Operating Transfers	($1,518,176)	($730,832)	($66,666)	($2,315,674)
Metro Act & Misc.	$472,435	$487,269	$19,507	$979,211
TOTAL	$4,084,801	$4,135,508	$272,240	$8,492,549

*most Federal funding is administered by MDOT and not reflected on Act 51 reports

Table XIV-2
Average Per Year Local Street/Secondary Road Revenues
for the Time Period 2013-2015

REVENUES	City of Battle Creek	Cal. Co. Rd. Comm. (60% of County totals)	City of Springfield	Total
MI Transport. Fund	$1,022,107	$1,371,652	$106,101	$2,499,860
MI Econ. Dev. Fund	$0	$0	$0	$0
Federal funding*	$0	$283,906	$0	$283,906
Local funding	$2,221,863	$419,007	$12,031	$2,652,901
Operating Transfers	$1,518,177	$730,832	$66,666	$2,315,675
Metro Act & Misc.	$56,590	$892,079	$21,950	$970,619
TOTAL	4,818,737	$3,697,476	$206,748	$8,722,961

*most federal funding is administered by MDOT and not reflected on Act 51 reports

The estimates of future funding for local transportation needs on the major street/primary road system are based on the presumption, lacking any better evidence, that the current funding sources will continue to be available to fund future improvements with small increases due to the new state revenue package discussed earlier in this chapter. However, revenues are still not likely to be able to keep pace with inflation. An increase of 2.0% per year (first ten years) and 2.4% per year (remaining Plan years) is figured as the potential increase in federal STPU per an agreed upon statewide growth rates. State funding is expected to increase 3.7% (first ten years) and 2.3 %

(remaining Plan years), again per agreed upon statewide growth rates. No increase is applied to local funds available, as local agencies will likely not be increasing their contributions - due to decreasing state revenue sharing, shrinking local tax bases, and overall resistance to tax increases of any kind. However, there is a movement in the BCATS area to adopt local millages, or parcel fees, to fund transportation improvements in specific townships. Two townships have implemented local taxation, with two additional townships having a proposal on the November, 2016 ballot for similar measures. However, the taxes collected under these options are almost exclusively directed for improvement of local/secondary roadways that are not federal-aid eligible and not considered within the BCATS MTP or TIP.

Based on the Act 51 reports, it is estimated that the local agencies, as a group, will have revenues available for transportation investments for federal-aid eligible (major streets/primary roads) averaging the following from each of these categories (based on Table XIV-1):

MI Transportation Fund (MTF) - starting with a combined average of $7,775,671, increasing 3.7% per year through 2026 and then increasing 2.3% each year thereafter until 2040 to reach a total of approximately $271,868,000 for the overall time period of 2017-2040.

State Economic Development Categories - starting with a combined average of $92,304, carrying forward at the same level for 2017 to 2040 (if the category survives the on-going state budget realignment) will yield a total of approximately $2,215,000 in the category.

Local Funding & Misc. - starting with a combined average of $1,282,801 for local funding, with $979,211 for the miscellaneous category, and carrying forward at the same level for 2017 to 2040 (due to restricted local budgets) this category will provide a total of approximately $54,528,000 combined.

Operational Transfers - starting with a combined average of -$2,315,674 being transferred out of the funding available for this category of roads, and carrying forward this same level of transfer over the life of the Plan, this category will reduce the funding available by approximately $54,288,000 over the life of the Plan.

Net Total - The net funding available from state and local sources totals.

Once again, it should be noted that revenues and expenditures for local streets/secondary roads are not included in the calculations above, nor shown in the remainder of this chapter.

The calculation of the total revenues by the above categories is shown in the following Table XIV-3:

TABLE XIV-3
Cumulative Revenue Estimates for the Period of 2017-2040
for State and Local Sources used by LOCAL AGENCIES
(Source: Act 51) ($ in 000's)

Year	MTF	Econ Dev.	Local + Misc.	Transfers
2017	7,776	92.3	1,283 + 979	-2,316
2018	8,064	92.3	1,283 + 979	-2,316
2019	8,362	92.3	1,283 + 979	-2,316
2020	8,671	92.3	1,283 +979	-2,316
2021	8,992	92.3	1,283 + 979	-2,316
2022	9,325	92.3	1,283 + 979	-2,316
2023	9,670	92.3	1,283 + 979	-2,316

Year	MTF	Econ Dev.	Local + Misc.	Transfers
2024	10,028	92.3	1,283 + 979	-2,316
2025	10,399	92.3	1,283 + 979	-2,316
2026	10,784	92.3	1,283 + 979	-2,316
2027	11,032	92.3	1,283 + 979	-2,316
2028	11,285	92.3	1,283 + 979	-2,316
2029	11,545	92.3	1,283 + 979	-2,316
2030	11,810	92.3	1,283 + 979	-2,316
2031	12,082	92.3	1,283 + 979	-2,316
2032	12,360	92.3	1,283 + 979	-2,316
2033	12,644	92.3	1,283 + 979	-2,316
2034	12,935	92.3	1,283 + 979	-2,316
2035	13,233	92.3	1,283 + 979	-2,316
2036	13,537	92.3	1,283 + 979	-2,316
2037	13,848	92.3	1,283 + 979	-2,316
2038	14,167	92.3	1,283 + 979	-2,316
2039	14,493	92.3	1,283 + 979	-2,316
2040	14,826	92.3	1,283 + 979	-2,316
2017 - 2040 Total	**271,868**	**2,215**	**30,792 + 23,496**	**-55,584**
NET TOTAL =	**$272,787 ($000's)**			

Federal Revenues [for the local system (not including transit)]

In addition to the categories reflected on the Act 51 report, BCATS programs the expenditure of funds in the following categories that are represented by projects in the Transportation Plan and the TIP (these projects are generally administered by MDOT, so the federal portion of the funding does not usually show up on the local agencies' Act 51 reports) :

Federal Funding

STP Urban funding levels are taken from the BCATS 2017-2020 TIP for those four years, followed by increasing the amount 2.0% per year up through 2026 and 2.4% thereafter to 2040, per the statewide adopted growth rates.

CMAQ funding through 2020 has been estimated by MDOT which is $517,877 for each of the 2017, 2018, 2019 and 2020 years. After 2020, the same total has been held constant out to 2040. This is due to issues of new lower EPA standards for ozone and more local areas being designated as non-attainment. This will increase the pool of recipients and lessen the amount that the existing areas may receive, unless the total amount of funds for the CMAQ program is increased by Congress. Therefore, no increase (inflationary or otherwise) is built into this funding category. A similar level of federal funding for the state under this category will be referenced in the discussion of future state generated funding for state projects.

Local Bridge funding is now distributed by a regional bridge committee that assesses need within a multi-county area. MDOT is no longer providing estimates for a local bridge general program account. Therefore this category is not being estimated separately for future revenue projections and is being included with the several smaller funding categories noted below.

Revenue estimates for several smaller federal funding categories are being estimated together for the purposes of the 2040 Plan. The 2017 general program account figures for local rail crossing, local bridge, local safety, and the transportation alternatives program have been used to calculate this total. As with the larger federal STP category, this estimate is increased by the same agreed to state percentages as noted above. There may be additional funding available in other miscellaneous categories that BCATS will not count toward available revenue totals at this time.

The calculation of these categories of funds over the life of the 2040 Transportation Plan is shown in Table XIV-4 below:

TABLE XIV-4
Cumulative Revenue Estimates for the Period of 2017-2040
for FEDERAL Revenue Sources Used by Local Agencies ($ in 000's)

Year	Federal STP	CMAQ Local	Other Misc. Federal
2017	1,170	518	100
2018	1,138	518	102
2019	1,161	518	104
2020	1,184	518	106
2021	1,208	518	108
2022	1,232	518	110
2023	1,256	518	113
2024	1,281	518	115
2025	1,307	518	117
2026	1,333	518	120
2027	1,365	518	122
2028	1,398	518	125
2029	1,432	518	128
2030	1,466	518	131
2031	1,501	518	135
2032	1,537	518	138
2033	1,573	518	141
2034	1,612	518	144
2035	1,650	518	147
2036	1,690	518	151
2037	1,730	518	155
2038	1,772	518	158
2039	1,815	518	162
2040	1,858	518	166
TOTAL	**34,669**	**12,432**	**3,098**

Federal and State Revenues (for state system)

MDOT has provided revenue estimates for its program for the time frame of the 2040 Plan. The estimates are divided by the major programming categories used by MDOT: preserve vs. increase capacity/new roads. A breakdown by multi-year groupings has been provided by MDOT for the entire Plan period. MDOT has also provided estimates for the "Transit Revenue" section, below.

Revenues that go toward operations and maintenance are not included in the figures provided by MDOT. However, the costs for this type of work for MDOT are included in the discussion regarding operations and maintenance, which is dealt with following the discussion of transit revenues.

MDOT Planning provided the revenue forecasts in "future dollars" as required by the current federal regulations. New revenue forecasts for use in developing long range plans are pending from MDOT, but were not available for use in BCATS' 2040 MTP.

BCATS has also included the state portion of CMAQ funding in Table XIV-5. The same methodology was used for the state's CMAQ revenue as for the local CMAQ revenue (Table XIV-4), which was to include no increase from the static 2017-2020 figure in the TIP.

Table XIV-5
Revenues Available for State Facilities (in thousands $000's)

MDOT	Preserve	Capacity Improve and New Roads	State CMAQ
2017-2020	16,638	0	2,072
2021-2025	25,882	0	2,590
2026-2030	29,112	0	2,590
2031-2035	31,787	0	2,590
2036-2040	37,920	0	2,590
TOTAL BY CATEGORY	141,339	0	12,432
TOTAL STATE FACILITIES =	$153,771 ($000's)		

Transit Revenues

A variety of revenue sources are available to support public transit services into the future. The federal government, through the Federal Transit Administration (FTA), makes funds available for both operating and capital transit expenditures with an annual allocation by formula to the local transit operator (see Figure XIV-2 below). The state also makes available funds to support the operating and capital portions of the transit budget. The federal government provides discretionary funding on a sporadic basis for the purchase of major capital items, such as large fixed-route buses.

Federal funding from sources under the Federal Highway Administration (FHWA) can be "flexed" for transit use, for example STP-Urban funding. CMAQ funds can also be used for transit projects. The local government (the City of Battle Creek) provides dollars from its general fund to support some of the operating costs of the transit

system (since the operator, Battle Creek Transit, is a city department). Revenues are garnered from fares paid by users of the transit service and a modest amount of revenue is recorded as income from sources like advertising.

Table XIV-6 lists the estimated revenues for transit over the life of the 2040 Transportation Plan. The federal and state revenues have been provided by MDOT, which provided revenue figures by multi-year groupings, the same as for the road categories. Total funding available for transit (not including some discretionary categories) is anticipated to be approximately $120.9 million over the life of the Plan.

The "local, farebox, & other" category is modestly increased at 2% per year over the life of the Plan. Farebox receipts have not been increasing significantly in recent years.

Table XIV-6
Revenues Available for Transit Services, Vehicles and Facilities ($ in 000's)

Year	Federal Operating (Sec 5307)	State Operating (includes Specialized Services)	Federal & State Capital - Specialized Services (Sec 5310)	Other Federal & State Capital (Sec 5339)	Local, Farebox & Other* - Operating
2017-2020	4,373	5,694	348	514	5,355
2021-2025	6,342	7,217	505	745	7,319
2026-2030	7,599	7,351	605	893	8,080
2031-2035	9,103	7,488	725	1,070	8,920
2036-2040	10,906	7,628	868	1,282	9,929
TOTAL	38,323	35,378	3,051	4,504	39,603
Annual Average	$ 1,597	$ 1,474	$ 127	$ 188	$ 1,650
GRAND TOTAL	$120,859 (000's)				

*Other includes City of Battle Creek General Fund contribution

FIGURE XIV-2
List of Available Federal Transit Revenues
(This is not intended to be an exhaustive list of all potential resources or eligible activities, but rather the most likely used revenues and types of activities)

Source	Purpose	Examples of Eligible Activities
Sec. 5307 Urbanized Area Formula Grants	Funding for basic transit capital needs of transit agencies in urban areas, also operating funding for some transit agencies	Capital projects; transit planning; projects eligible under the former Job Access Reverse Commute (JARC) program; some of the funds can also be used for operating expenses, depending upon the size of the transit agency; one percent of funds received are to be used by the agency to improve security at agency facilities
Sec. 5310 Elderly and Person with Disabilities	Improving mobility options for seniors and those persons with disabilities	Projects to benefit seniors and those with disabilities when service is unavailable or insufficient; transit access projects for those with disabilities that exceed the Americans with Disabilities Act (ADA) requirements - incorporates the former New Freedom program

Sec. 5311 Non-Urbanized Area Formula Grants	Improving mobility options for residents of rural areas	Capital, operating, and rural transit planning activities in areas under 50,000 population
Sec. 5337 State of Good Repair Grants	Maintaining fixed-guideway transit systems in a state of good repair	Capital, maintenance, and operational support projects
Sec. 5339 Bus and Bus Facilities	Funding for basic transit capital needs of transit agencies, including construction of bus-related facilities	Replace, rehabilitate, and purchase of buses and related equipment; construction of bus-related facilities

OPERATIONS AND MAINTENANCE

The continued effective operation and maintenance of the existing transportation system is a priority and goal of the BCATS process. Therefore, estimated costs for these aspects of the transportation system over the life of the 2040 Plan are taken into consideration and are applied against the total anticipated revenues before any improvements to the system are considered.

The Act 51 reporting data from the local agencies included detail on expenditures as well as revenues. Based on an average of the last three years of expenditures for the three local road agencies, the total cost to operate and maintain the existing major street/primary road system (non-heavy maintenance, routine maintenance, traffic services, winter maintenance, and administrative services) in the BCATS area, was approximately $5.7 million per year. This includes the assumption that 60% of the Calhoun County Road Department's total expenditures for operations and maintenance are in the BCATS area (this is the same % assumed for inclusion of revenues). BCATS covers an area which includes five of the twenty townships in Calhoun County. However, the more intense development in the BCATS area requires a significant portion of the road department's budget. For the life of the Plan, this figure has been expanded by 2% per year (the average CPI was used since many of the components of this category of expense are more tied to personnel costs than to construction materials, and therefore the category is not inflated at the higher construction cost index used to develop the project list).

Based on this methodology, the total cost for operations and maintenance of the major street/primary road system in the BCATS area by the local agencies over the 2017 to 2040 time period of the 2040 Transportation Plan is expected to be approximately $173,557,000.

MDOT has provided figures regarding its anticipated costs for operations and maintenance (O+M) of the state system within the BCATS area over the time period of the Plan. The costs include routine maintenance performed by the Transportation Service Center (TSC) staff, low level CPM repair work, maintenance contract costs with local road agencies and administration. As with the local estimate, this category was expanded by 2% per year, for the same reasons as noted in the paragraph above.

Based on the figures provided by MDOT, the statewide operations and maintenance cost in 2017 attributed to the portion of the state system in the BCATS area is $5.3 million. Increasing that cost by 2% per year out to 2040 results in a total operations and maintenance cost estimated at $160.8 million.

NOTE: MDOT has not provided any revenue estimates for MTF dollars or other categories of funding that would support operations and maintenance expenditures for its facilities. Therefore, BCATS has presumed that MDOT has identified enough revenue to cover these expenses and the revenue has been made equal to expenditures for this category on the constraint table.

SUMMARY

Summaries of estimated available revenues and estimated expenditures over the life of the 2040 Plan are shown in Tables XIV-7 and XIV-8:

Table XIV-7
Summary of Available Revenues for the BCATS 2040 Transportation Plan

Projected Capital Revenues	Total $
Federal Transportation Funds for Construction of Local Roads	50,199,000
Federal and State Funding for State Controlled Roadways in BCATS area	153,771,000
Federal/State/Local Transit Funding (operating and capital)	120,292,000
State funding for Operations/Maintenance of State Controlled facilities	160,800,000
State and Local Funding for Construction and Operations/Maintenance of Local Major/Primary Roads	273,197,000
TOTAL	758,259,000

Table XIV-8
Summary of 2040 Transportation Plan Operations/Maintenance and Capital Expenditures 2017-2040
(Individual Projects are described in a detailed listing in Chapter XVI)

Operations/Maintenance Expenditures for Local & State Roads	Total $
Estimated Expenditures for Operations/Maintenance of Local Roads	**173,557,000**
Estimated Expenditures for Operations/Maintenance of State Roads	**160,800,000**
Planned Capital Expenditures	**Total $**
Local Road Projects	
Improve/Expand (0 projects)	0
Preservation (17 projects - some covering multiple years)	33,389,026
Traffic Safety/Operations & Air Quality Improvements (9 projects)	1,891,284
Non-motorized Specific (0 projects)	0
Total	**35,280,310**

Transit Projects	
Preservation (operating expense projects) (projects each year)	115,526,976
All Transit Capital (vehicle replacement/addition or facility) (50 projects)	25,335,135
Security (annual) (project each year)	383,280
Total	**141,245,391**
State Projects	
Preservation (5 projects - covering multiple years)	132,258,920
Traffic Safety/Operations & Air Quality Improvements (4 projects)	783,264
Bridges (7 projects)	37,281,000
Total	**170,323,184**
TOTAL PLANNED CAPITAL EXPENDITURES*	**346,848,885**
Total Expenditures	**681,205,885**

*includes transit operations expenses as transit "preservation" capital

DEMONSTRATION OF FINANCIAL CONSTRAINT

The total expenditures identified in the BCATS 2040 Transportation Plan are within the total federal, state, and local revenues estimated for the 2040 Transportation Plan. As shown in Table XIV-9 below, there is projected to be adequate revenue available for capital expenditures as well as for operations and maintenance expenditures for the transportation system. **Therefore, the BCATS 2040 Transportation Plan is financially constrained.**

Table XIV-9
Demonstration of Financial Constraint for the
2040 Metropolitan Transportation Plan
of the Battle Creek Area Transportation Study

Total federal, state, and local revenues estimated to be available for road related construction, transit capital/operating and road related operations and maintenance of the major street/primary road system and state roadway system within the BCATS area	$758,259,000
Expenditures for Operations/Maintenance of Local & State Roads	($334,357,000)
Expenditures for Local Road Improvement Projects	($35,280,310)
Expenditures for Transit Improvement Projects	($141,245,391)
Expenditures for State Improvement Projects	($171,323,184)
REMAINING BALANCE	**$77,053,115**

BCATS

CHAPTER XV

ENVIRONMENTAL MITIGATION

PROCESS

The MAP-21/FAST Act requires that BCATS include in its long range plan "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." (USDOT, Metropolitan Transportation Planning: Final Rule FHWA, 23 CFR 450 Subpart C 450.324(f)(10), effective 5/27/16).

The goal of this process is to eliminate or minimize environmental impacts from the planned projects in the MPO's transportation plan. This applies primarily to the "improve and expand" type projects of the Plan. However, this discussion is not intended to be project specific and does not alleviate any responsibilities of the project owner relative to evaluation and meeting the National Environmental Policy Act (NEPA) processes.

To meet the requirements for developing long range transportation plans, BCATS adopted a set of guidelines for "Considering Environmental Issues in the Transportation Planning Process" in September 2007. The guidelines were distributed to the state and local road agencies and the public transit operator in the BCATS area. The adopted document is included at the end of this chapter for reference. The guidelines were originally provided to each of the road and transit agencies with projects in the Plan. The guidelines are being re-issued to the units of government as part of the 2040 Plan update process. The guidelines include areas of concern specifically identified by some of the agencies contacted under the "Consultation" efforts associated with prior Plan updates. These include issues with farmlands, wetlands, drainage, flood plains, threatened and endangered species, impaired streams and other water bodies, air quality, and noise.

The Consultation efforts from the 2035 Transportation Plan development, as well as the current Plan update (see Chapter V), led BCATS to information about the location of some environmental and/or cultural factors to be reviewed relative to future transportation projects. The *2040 Plan* recommended and "illustrative" projects are depicted in relation to the identified issues on Figures XV-1 to XV-6. A potential impact area within 1/4 of a mile of the proposed transportation projects is shown on each of the maps. The endangered species factor is not mapped due to the resources being identified for the entirety of Calhoun County. This information is displayed in Table XV-1, following the maps.

The first four factors all deal with water related resources. The BCATS area has several lakes, two major rivers and a significant system of wetlands to consider. Farmland preservation is active in Calhoun County overall. Newton Township, in the BCATS area, is particularly active in promoting the retention of its rural character through farmland preservation. All projects are noted as potentially impacting endangered species since the habitat for many of the identified plants or animals covers the entirety of Calhoun County. Since this factor was incompatible with mapping, information from the Michigan Natural Features Inventory listing plants and animals in Calhoun County is included as noted above. Michigan's State Historic Preservation Office (SHPO) provides online an inventory by county of locations involving historic districts and properties. This listing has not been updated by SHPO since the BCATS *2035 Plan* was adopted.

XV-2

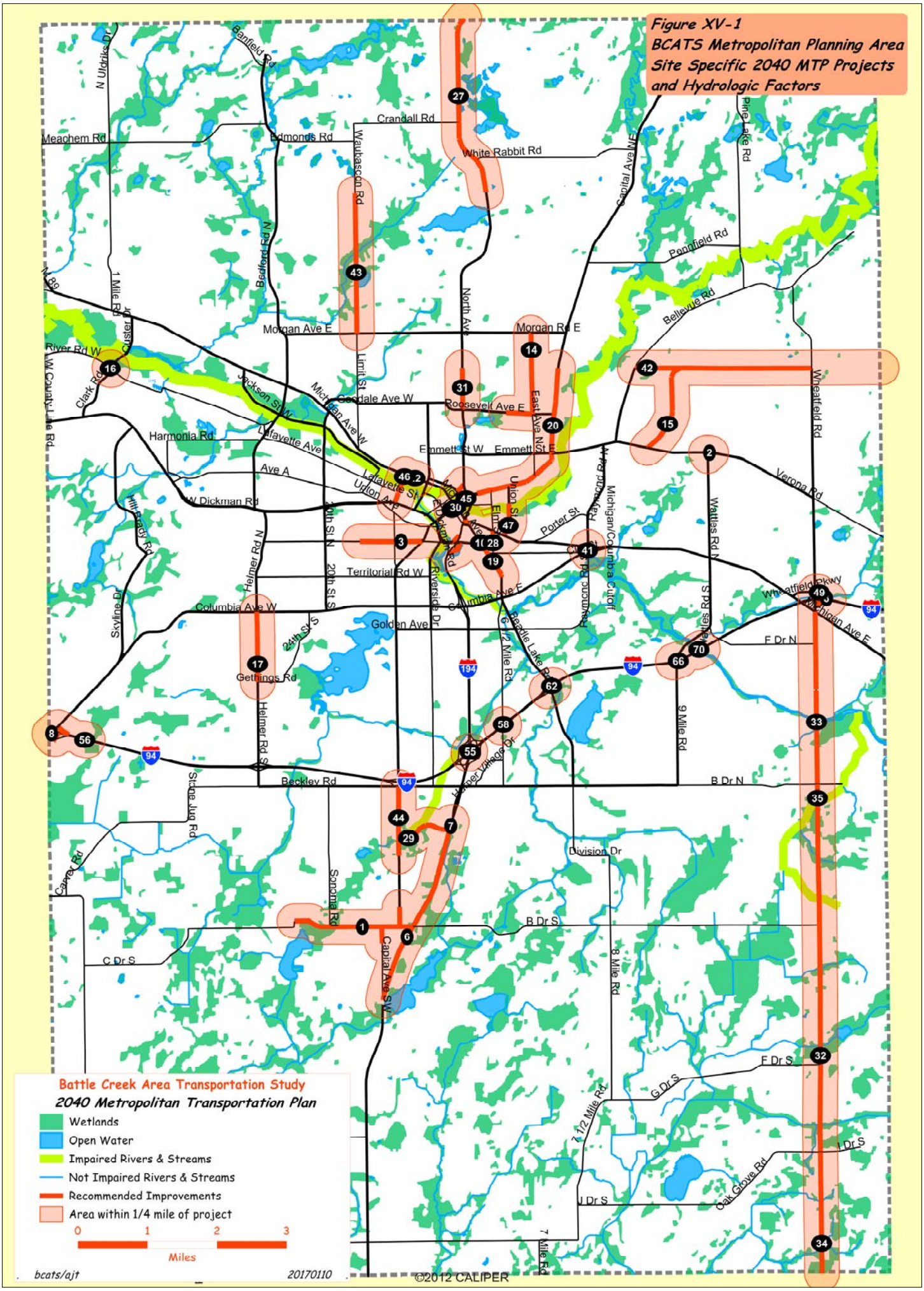


Figure XV-1
BCATS Metropolitan Planning Area
Site Specific 2040 MTP Projects
and Hydrologic Factors
Battle Creek Area Transportation Study
2040 Metropolitan Transportation Plan
Wetlands
Open Water
Impaired Rivers & Streams
Not Impaired Rivers & Streams
Recommended Improvements
Area within 1/4 mile of project
0 1 2 3
Miles
bcats/ajt
20170110
©2012 CALIPER

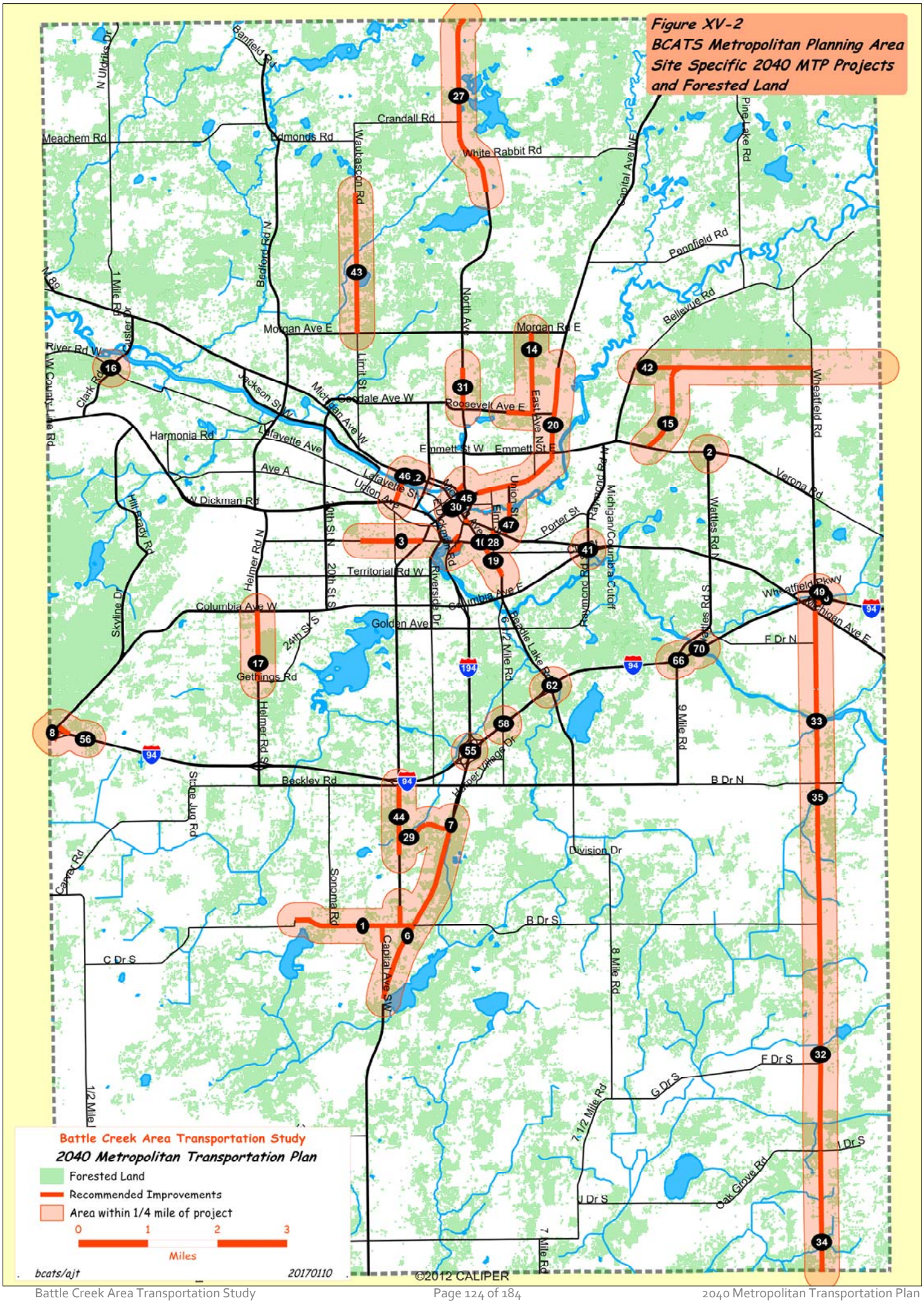


Figure XV-2
BCATS Metropolitan Planning Area
Site Specific 2040 MTP Projects
and Forested Land
Battle Creek Area Transportation Study
2040 Metropolitan Transportation Plan
Forested Land
Recommended Improvements
Area within 1/4 mile of project
0 1 2 3
Miles
bcats/ajt
20170110
©2012 CALIPER
Banfield Rd
N Uldriks Dr
Meachem Rd
Edmonds Rd
Crandall Rd
White Rabbit Rd
Waubascon Rd
Pine Lake Rd
Capital Ave NE
Pennfield Rd
Bellevue Rd
Bedford Rd N Dr
1 Mile Rd
Morgan Ave E
North Ave
Limit St
River Rd W
W County Line Rd
Clark Rd
Jackson St W
Michigan Ave W
Goodale Ave W
Roosevelt Ave E
East Ave N E
Wheatfield Rd
Harmonia Rd
Lafayette Ave
Emmett St W
Emmett St E
Ave A
Lafayette St
Union Ave
Union St
Verona Rd
W Dickman Rd
Hill Brady Rd
10th St N
Helmer Rd N
Porter St
Wattles Rd N
Michigan/Columbia Cutoff
Territorial Rd W
20th St S
Riverside Dr
Columbia Ave W
Columbia Ave E
Skyline Dr
Golden Ave
24th St S
Beadle Lake Rd
6 1/2 Mile Rd
Wheatfield Pkwy
Michigan Ave E
F Dr N
Gethings Rd
Helmer Rd S
Stone Jug Rd
Beckley Rd
Juniper Village Dr
9 Mile Rd
B Dr N
Division Dr
Sonoma Rd
Capital Ave SW
B Dr S
C Dr S
8 Mile Rd
F Dr S
G Dr S
7 1/2 Mile Rd
J Dr S
Oak Grove Rd
7 Mile Rd
94
194

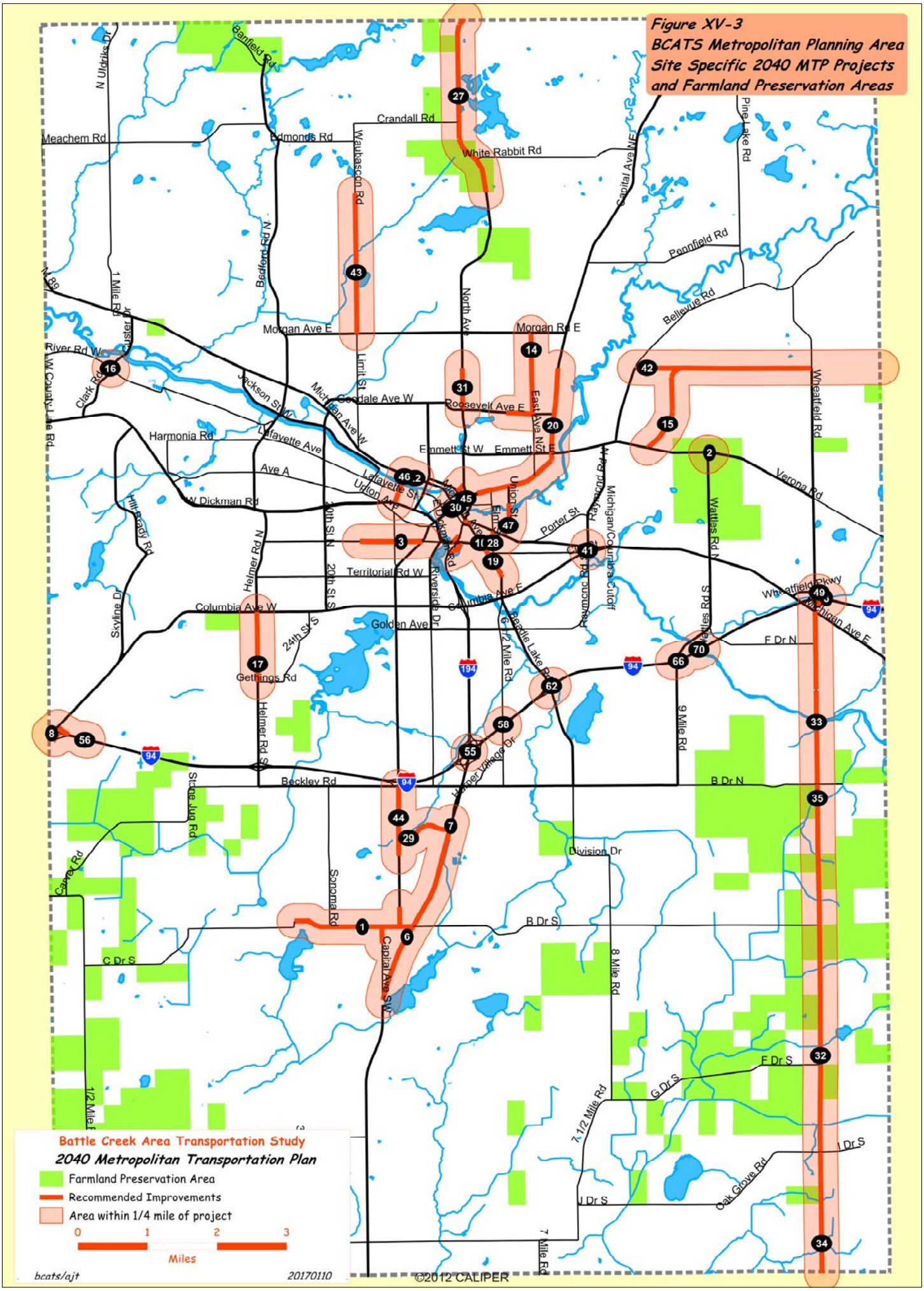


Figure XV-3
BCATS Metropolitan Planning Area
Site Specific 2040 MTP Projects
and Farmland Preservation Areas
Battle Creek Area Transportation Study
2040 Metropolitan Transportation Plan
Farmland Preservation Area
Recommended Improvements
Area within 1/4 mile of project
0 1 2 3
Miles
bcats/ajt
20170110
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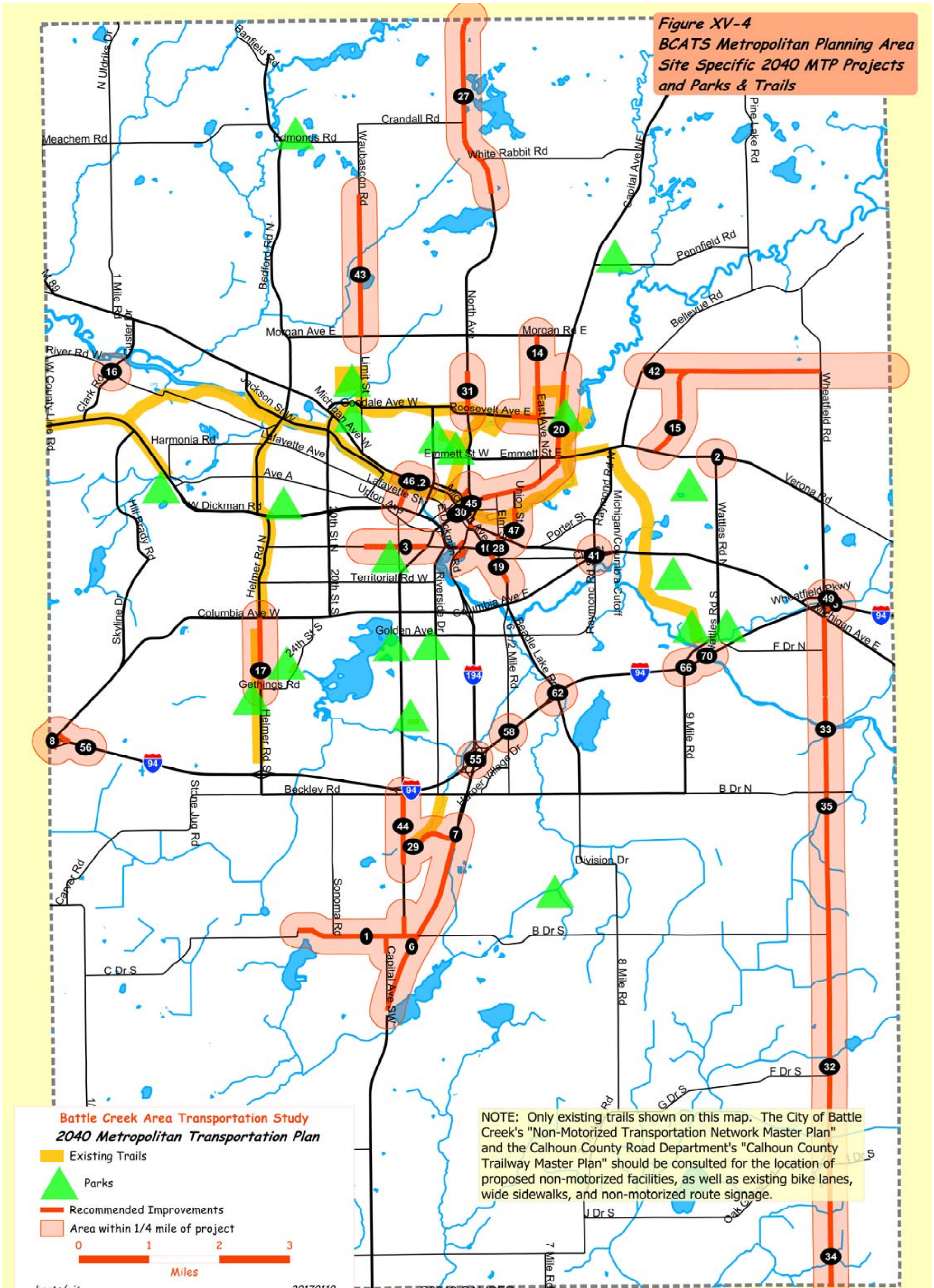
Figure XV-4
BCATS Metropolitan Planning Area
Site Specific 2040 MTP Projects
and Parks & Trails
Battle Creek Area Transportation Study
2040 Metropolitan Transportation Plan
Existing Trails
Parks
Recommended Improvements
Area within 1/4 mile of project
0 1 2 3
Miles
bcats/ajt
20170110
NOTE: Only existing trails shown on this map. The City of Battle Creek's "Non-Motorized Transportation Network Master Plan" and the Calhoun County Road Department's "Calhoun County Trailway Master Plan" should be consulted for the location of proposed non-motorized facilities, as well as existing bike lanes, wide sidewalks, and non-motorized route signage.
©2012 CALIPER
N Uldriks Dr
Banfield Rd
Meachem Rd
Edmonds Rd
Crandall Rd
Waubascon Rd
White Rabbit Rd
Capital Ave NE
Pine Lake Rd
Pennfield Rd
Bedford Rd N
1 Mile Rd
M-89
Bellevue Rd
Morgan Ave E
North Ave
Morgan Rd E
River Rd W
Clark Rd
W County Line Rd
Jackson St W
Michigan Ave W
Limit St
Goodale Ave W
Roosevelt Ave E
East Ave N
Wheatfield Rd
Harmonia Rd
Lafayette Ave
Emmett St W
Emmett St E
Verona Rd
Ave A
W Dickman Rd
Hill-Brady Rd
Helmer Rd N
20th St N
Union St
Raymond Rd N
Michigan/Columbia Cutoff
Wattles Rd N
Porter St
Territorial Rd W
Riverside Dr
Columbia Ave E
Columbia Ave W
Skyline Dr
Golden Ave
24th St S
Beadle Lake Rd
6 1/2 Mile Rd
Wheatfield Pkwy
Michigan Ave E
F Dr N
Gethings Rd
Helmer Rd S
9 Mile Rd
Harper Village Dr
Beckley Rd
B Dr N
Stone Jug Rd
Division Dr
Carver Rd
Sonoma Rd
B Dr S
C Dr S
Capital Ave SW
8 Mile Rd
F Dr S
G Dr S
J Dr S
Oak Creek
7 Mile Rd
94
194
27
43
16
31
14
42
20
15
2
46
30
45
47
3
28
19
41
49
17
70
66
62
8
56
58
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33
35
44
29
7
1
6
32
34

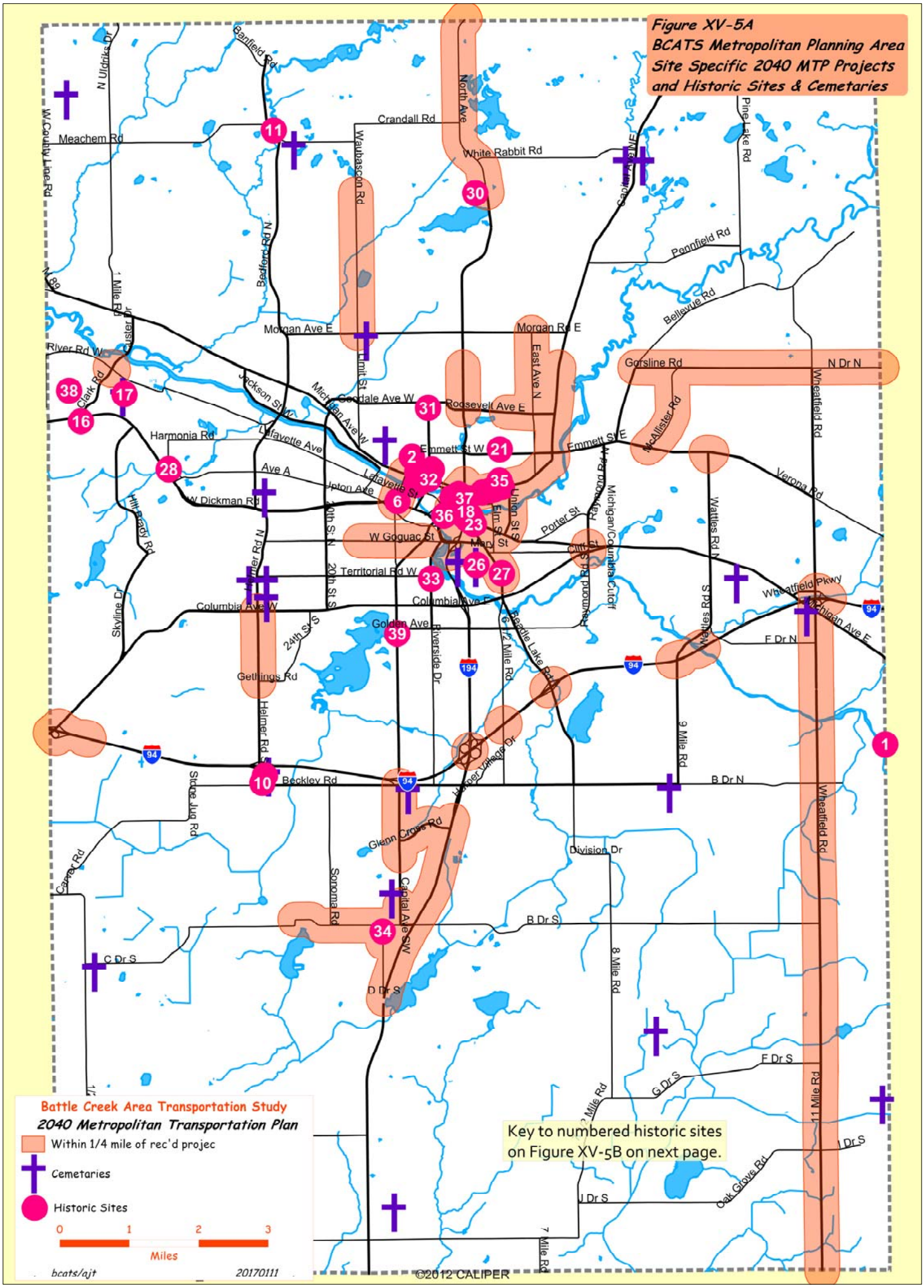
Figure XV-5A
BCATS Metropolitan Planning Area
Site Specific 2040 MTP Projects
and Historic Sites & Cemetaries
Battle Creek Area Transportation Study
2040 Metropolitan Transportation Plan
Within 1/4 mile of rec'd projec
Cemetaries
Historic Sites
0 1 2 3
Miles
bcats/ajt 20170111
Key to numbered historic sites
on Figure XV-5B on next page.
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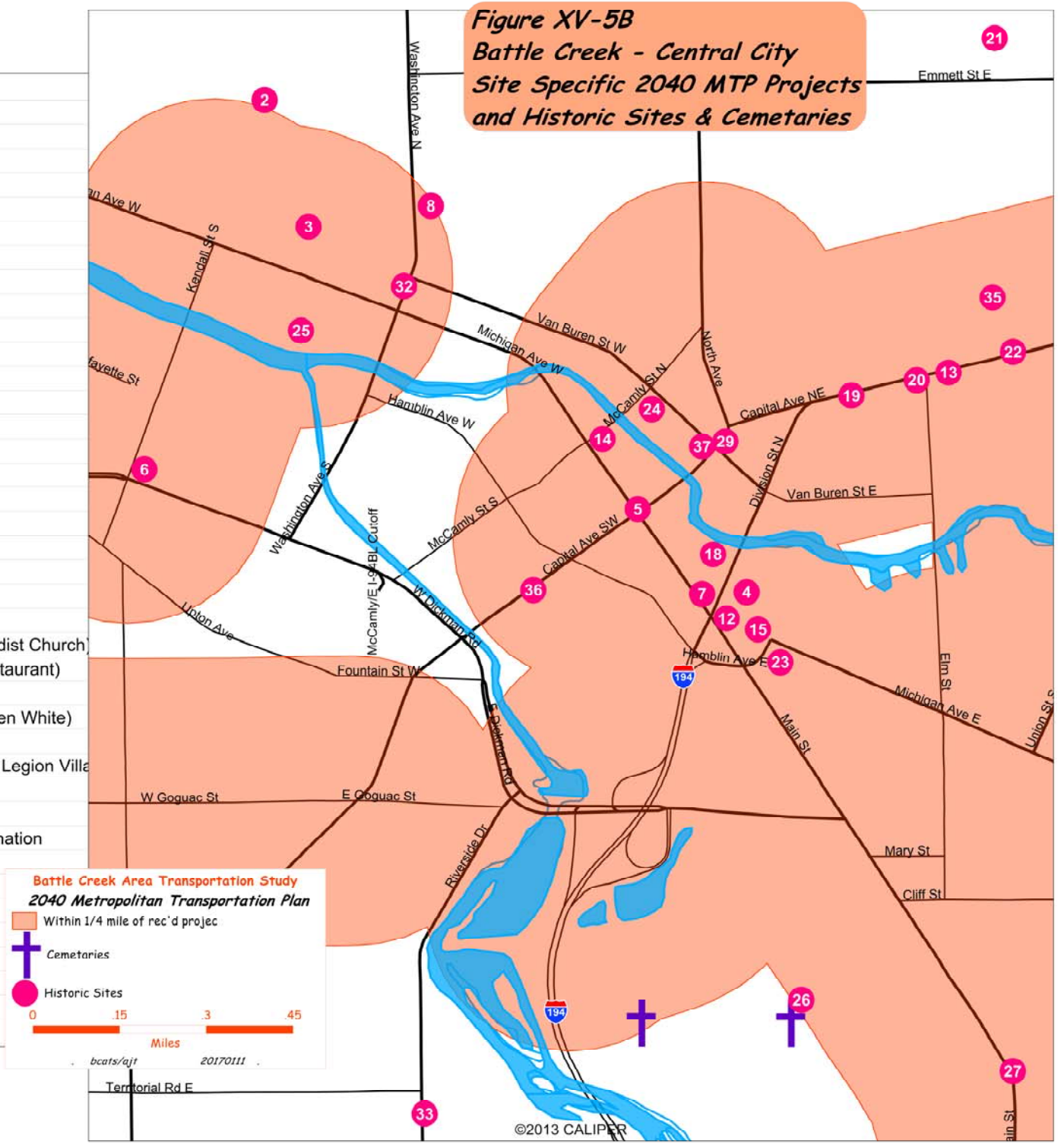
MapNum	Name
1	12 Mile Rd / Kalamazoo River Bridge
2	Adventist Village
3	African Methodist Episcopal Church
4	Battle Creek City Hall
5	Battle Creek House
6	Battle Creek No. 4 Fire station
7	Battle Creek Post Office (old)
8	Battle Creek Sanitarium (Federal Center)
9	Beckley Cemetery
10	Beckley School
11	Bedford Mill
12	City Hall Historic District
13	Cole, Seirn B. House
14	Elks Temple
15	First Baptist Church
16	Fort Custer
17	Harmonia Cemetery
18	Kellogg, W. K. House
19	Kimball House
20	Maple Street Historic District
21	Merritt Woods Historic District
22	Merritt, Charles, House
23	Methodism in Battle Creek (First United Methodist Church)
24	Michigan Central Railroad Station (Clara's Restaurant)
25	Milk Producers Company Barn
26	Oak Hill Cemetery Grave Sites (James and Ellen White)
27	Penniman Castle
28	Roosevelt Community House ("the Rotunda" at Legion Villa
29	Saint Thomas Episcopal Church
30	Scheuch, Nelle Zinn Burt Estate
31	Second Baptist Church Commemorative Designation
32	Seventh Day Adventist Church
33	Shepard, Warren B. House
34	Sonoma United Methodist Church
35	Stevenson House
36	Union Manufacturing Company
37	Van Buren Street Historic District
38	Veterans' Hospital No. 100, Camp Custer
39	Willard, Allen and Charles House



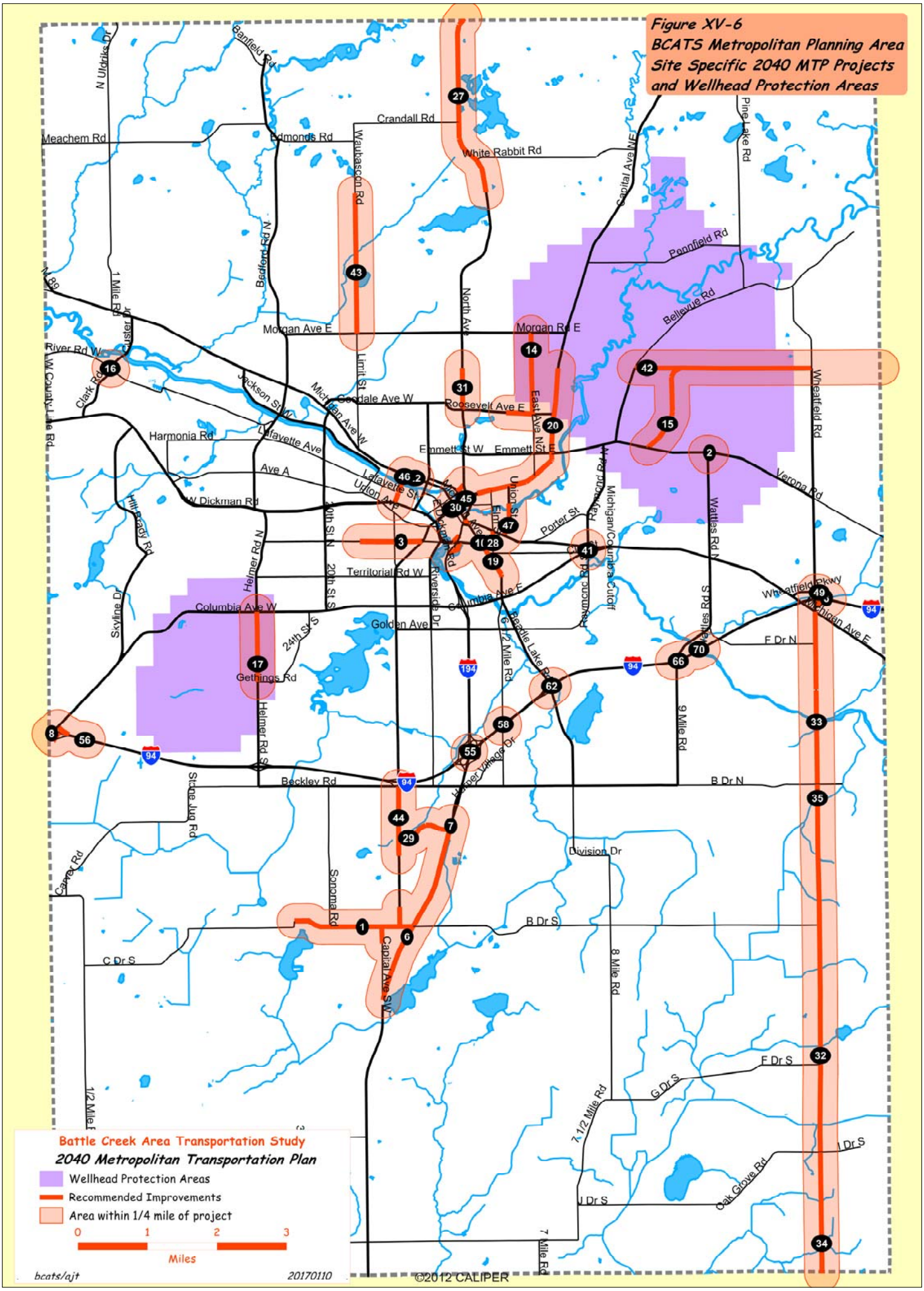


Figure XV-6
BCATS Metropolitan Planning Area
Site Specific 2040 MTP Projects
and Wellhead Protection Areas
Battle Creek Area Transportation Study
2040 Metropolitan Transportation Plan
Wellhead Protection Areas
Recommended Improvements
Area within 1/4 mile of project
0 1 2 3
Miles
bcats/ajt
20170110
©2012 CALIPER

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TABLE XV-1 (page 1 of 2)
Michigan County Elements Lists
Calhoun County - Threatened and Endangered Species
Current as of 5/16/2016

Scientific Name	Common Name	State Status	Federal Status
Acella haldemani	Spindle lymnaea	SC	
Acris crepitans blanchardi	Blanchard's cricket frog	T	
Agrimonia rostellata	Beaked agrimony	T	
Alasmidonta marginata	Elktoe	SC	
Alasmidonta viridis	Slippershell	T	
Ammodramus henslowii	Henslow's sparrow	E	
Ammodramus savannarum	Grasshopper sparrow	SC	
Amorpha canescens	Leadplant	SC	
Angelica venenosa	Hairy angelica	SC	
Baptisia lactea	White or prairie false indigo	SC	
Cacalia plantaginea	Prairie indian-plantain	SC	
Catinella protracta	A land snail (no common name)	E	
Clemmys guttata	Spotted turtle	T	
Corydalis flavula	Yellow fumewort	T	
Cypripedium candidum	White lady slipper	T	
Dendroica cerulea	Cerulean warbler	T	
Dichanthelium leibergii	Leiberg's panic grass	T	
Dichanthelium microcarpon	Small-fruited panic-grass	SC	
Eleocharis compressa	Flattened spike rush	T	
Eleocharis engelmannii	Engelmann's spike rush	SC	
Eleocharis radicans	Spike rush	X	
Emydoidea blandingii	Blanding's turtle	SC	
Erimyzon claviformis	Creek chubsucker	E	
Eryngium yuccifolium	Rattlesnake-master or button snakeroot	T	
Eupatorium sessilifolium	Upland boneset	T	
Falco peregrinus	Peregrine falcon	E	
Filipendula rubra	Queen-of-the-prairie	T	
Fontigens nickliniana	Watercress snail	SC	
Fraxinus profunda	Pumpkin ash	T	
Galearis spectabilis	Showy orchis	T	
Geum virginianum	Pale avens	SC	
Haliaeetus leucocephalus	Bald eagle	SC	
Helianthus hirsutus	Whiskered sunflower	SC	
Helianthus mollis	Downy sunflower	T	
Hydrastis canadensis	Goldenseal	T	
Isotria verticillata	Whorled pogonia	T	
Kuhnia eupatorioides	False boneset	SC	
Lechea minor	Least pinweed	X	
Lepisosteus oculatus	Spotted gar	SC	
Lepyronia angulifera	Angular spittlebug	SC	
Liparis liliifolia	Purple twayblade	SC	

State status: E= endangered -- T=threatened -- SC=special concern -- X=presumed extirpated

Federal status: LE=listed endangered -- LT=listed threatened -- LELT=partly listed endangered and partly listed threatened -- PDL=proposed delist -- E(S/A)=endanged based on similarities/appearance -- PS=partial status (only in part of range) -- C=species being considered for federal status

TABLE XV-1 (page 2 of 2)

Michigan County Elements Lists
Calhoun County - Threatened and Endangered Species
Current as of 5/16/2016

Scientific Name	Common Name	State Status	Federal Status
Mertensia virginica	Virginia bluebells	E	
Mesomphix cupreus	Copper button	SC	
Moxostoma carinatum	River redhorse	T	
Myotis septentrionalis	Northern long-eared bat	SC	LT
Myotis sodalis	Indiana bat	E	LE
Nerodia erythrogaster neglecta	Copperbelly water snake	E	LT
Notropis anogenus	Pugnose shiner	E	
Notropis chalybaeus	Ironcolor shiner	X	
Notropis texanus	Weed shiner	X	
Oecanthus laricis	Tamarack tree cricket	SC	
Panax quinquefolius	Ginseng	T	
Papaipema beeriana	Blazing star borer	SC	
Perimyotis subflavus	Eastern pipistrelle	SC	
Platanthera ciliaris	Orange- or yellow-fringed orchid	E	
Platanthera leucophaea	Prairie white-fringed orchid	E	LT
Pleurobema sintoxia	Round pigtoe	SC	
Protonotaria citrea	Prothonotary warbler	SC	
Rallus elegans	King rail	E	
Silene stellata	Starry campion	T	
Sistrurus catenatus catenatus	Eastern massasauga	SC	C
Speyeria idalia	Regal fritillary	E	
Spiza americana	Dickcissel	SC	
Stenelmis douglasensis	Douglas stenelmis riffle beetle	SC	
Terrapene carolina carolina	Eastern box turtle	SC	
Utterbackia imbecillis	Paper pondshell	SC	
Venustaconcha ellipsiformis	Ellipse	SC	
Villosa iris	Rainbow	SC	
Viola pedatifida	Prairie birdfoot violet	T	
Wilsonia citrina	Hooded warbler	SC	
Zizania aquatica var. aquatica	Wild rice	T	

State status: E= endangered -- T=threatened -- SC=special concern -- X=presumed extirpated

Federal status: LE=listed endangered -- LT=listed threatened -- LELT=partly listed endangered and partly listed threatened -- PDL=proposed delist -- E(S/A)=endanged based on similarities/appearance -- PS=partial status (only in part of range) -- C=species being considered for federal status

Source: https://mnfi.anr.msu.edu/data/cnty_dat.cfm?county=13

NOTE: This list includes all elements (species and natural communities) for which locations have been recorded in the Michigan Natural Features Inventory (MNFI) Biological and Conservation Datasystem for each county. Information from the database cannot provide a definitive statement on the presence, absence, or condition of the natural features in any given locality, since much of the state has not been specifically or thoroughly surveyed for their occurrence and the conditions at previously surveyed sites are constantly changing. The County Elements Lists should be used as a reference of which natural features currently or historically were recorded in the county and should be considered when developing land use plans. Included in the list is the scientific name, common name, federal status, and state status for each element.

ANALYSIS

Potential impact issues for each location specific *Plan* recommended & "illustrative" project are noted on the summary table of "Potentially Impacted Environmental Resources", Table XV-2.

The purpose of Table XV-2 is to identify projects that may have the potential to impact an environmental or cultural resource. Such identification will not necessarily mean a project can not be built. However, the provided guidelines should be used to assess the process needed to mitigate as much of the impact from the project as possible.

Projects involving the location of new roadway facilities or widening of existing roads have the greatest potential for impacting multiple resource areas. Since there are no projects of this type in the 2040 Plan project list, it is not necessary to assess this type of impact at this time.

Following Table XV-2 (on the next page) are the "Guidelines" that have been provided to all of the road agencies in the BCATS area, and to the transit agencies, for use in developing future projects.

BCATS

TABLE XV-2

Potentially Impacted Environmental Resources

Site Specific
2040 Metropolitan Transportation Plan
Recommended Projects

✔ = Environmental or Cultural Factor within 1/4 Mile of Proposed Project

Project #	Project/Description	Project Limits	Environmental & Cultural Factors									
			Impaired Rivers & Streams	Other Rivers & Streams	Lakes and Ponds	Wetlands	Forests	Farmland Preservation Areas	Parks and Trails	Historic Sites	Cemetaries	Wellhead Protection Areas
1	B Dr S and Capital Ave SW	B Dr S from 3.5 Mile Rd eastward to M-66 (1.7 mi); Capital Ave SW, 0.25 mi north & south of B Dr S			✔	✔	✔			✔		
2	Intersection Geometrics Improvement - Wattles Rd (9.5 Mile Rd) @ Verona Rd	Wattles Rd @ Verona Rd intersection & approaches, in Emmett Twp				✔	✔	✔				✔
3	Goguac St, McCamly St, & Roosevelt Ave	Goguac: from Capital Ave SW westward to Carl Ave, 4750'. McCamly: from VanBuren St northward to North Ave, 620'. Roosevelt: from East Ave westward to Garrison Ave, 1996'.	✔		✔	✔	✔		✔	✔		✔
6	M-66 - CON/1	from south of D Dr S northward to north of Glenn Cross Rd		✔	✔	✔	✔					
7	M-66 - CON/2	from 0.10 mi north of Glenn Cross Rd to Glenn Cross Rd				✔	✔					
8	Wrong-Way Crash Reduction at Ramp Terminals (CON)	interchange ramps at I-94 exits 92 & 104, and I-194 exit 3		✔	✔	✔	✔				✔	
10	Community Action (formerly Community Action Agency) Capital Assistance - Computers & Office Furniture	in Community Action central office, 175 Main St (east side of Main St just north of Dickman Rd E & railroad tracks).					✔					
14	East Ave	from Roosevelt Ave northward to Morgan Rd					✔		✔			✔
15	McAllister Rd	from Verona Rd northward to N Dr N				✔	✔	✔				✔
16	Clark Rd @ River Rd	Intersection of Clark Rd/Custer Dr N @ River Rd W, & all four approaches	✔			✔	✔					
17	Helmer Rd	from Gethings Rd northward to Columbia Ave					✔	✔	✔		✔	✔
18	Intersection Signal Modernization - Capital @ Jackson	Capital Ave @ Jackson St					✔		✔	✔		
19	Main St	from Mary St southward to south city limits (~200' south of Kingman Ave), ~0.5 mi; and from M-66 (Division St) southward to Hamblin Ave, ~0.1 mi.	✔		✔	✔	✔		✔	✔	✔	
20	M-66 (Capital Ave NE)	M-66 from Capital Ave/Division St intersection northward to Frey Dr	✔			✔	✔		✔	✔		✔
22	Ancillary Equipment - Transit	BCT facilities, 339 W Michigan Ave, in southwest quadrant of M-89 (Michigan Ave) / Cass St intersection, and on-board vehicles	✔				✔		✔	✔		
27	North Ave, Pennfield Twp	from Halbert Rd northward to Calhoun County limits		✔	✔	✔	✔	✔		✔		
28	Elm St	from Mary St northward to Michigan Ave	✔			✔	✔					
29	Glenn Cross Rd	from Capital Ave eastward to M-66	✔			✔	✔		✔			
30	Intersection Signal Modernization - Capital @ Michigan	Capital Ave @ Michigan Ave	✔			✔	✔		✔	✔		
31	North Ave, City of BC	from Roosevelt Ave northward to Coolidge Ave (city limits)			✔	✔	✔		✔			
32	M-311 (11 Mile/Wheatfield Rd) - CON	from BCATS southern Metropolitan Planning Area (MPA) boundary line btwn Newton & Burlington Twps northward to I-94 BL (Michigan Ave)	✔	✔		✔	✔	✔			✔	
33	M-311 (11 Mile/Wheatfield Rd) Bridge over Kalamazoo River - CON	1/4 mile N+S of Kalamazoo River at M-311 (11 Mile/Wheatfield Rd), just north of D Dr N, including bridge.		✔		✔	✔					
34	M-311 (11 Mile/Wheatfield Rd) CON/1	from BCATS southern Metropolitan Planning Area (MPA) boundary line btwn Newton & Burlington Twps northward to B Drive S		✔		✔	✔	✔				
35	M-311 (11 Mile/Wheatfield Rd) CON/2	from B Drive S northward to I-94 BL (Michigan Avenue)	✔	✔		✔	✔	✔				
41	Intersection Signal Modernization - Cliff @ Raymond	Cliff St @ Raymond Rd, Emmett Twp		✔		✔	✔					
42	N Dr N (Gorsline Rd)	from Bellevue Rd eastward to 12 Mile Rd				✔	✔	✔				

TABLE XV-2

Potentially Impacted Environmental Resources

Site Specific
2040 Metropolitan Transportation Plan
Recommended Projects

✔ = Environmental or Cultural Factor within 1/4 Mile of Proposed Project

Project #	Project/Description	Project Limits	Environmental & Cultural Factors									
			Impaired Rivers & Streams	Other Rivers & Streams	Lakes and Ponds	Wetlands	Forests	Farmland Preservation Areas	Parks and Trails	Historic Sites	Cemetaries	Wellhead Protection Areas
43	Waubascon Rd	from Morgan Rd northward to Halbert Rd		✔	✔	✔	✔				✔	
44	Capital Ave SW	from south city limits northward to Beckley Rd	✔	✔		✔	✔		✔		✔	
45	Intersection Signal Modernization - Capital @ VanBuren	Capital Ave @ VanBuren St	✔			✔	✔		✔	✔		
46	Kendall St	from Dickman Rd northward to Michigan Ave	✔				✔		✔	✔		
47	Union St	from Michigan Ave northward to VanBuren St	✔			✔	✔		✔	✔		
49	I-94 WB entrance ramp at Exit 104 interchange CON	I-94 WB entrance ramp from I-94BL/M-311 (11 Mile/Wheatfield Rd) east-south-westward to I-94		✔		✔	✔				✔	
55	I-194/M-66 over I-94	I-194 / M-66 north+southbound bridges over I-94	✔	✔		✔	✔					
56	I-94 over CN/GTW railroad	I-94 east+westbound bridges over CN/GTW railroad, ~0.5 mi east of I-94BL exit 92				✔	✔					
58	I-94 over 6 1/2 Mile Rd	I-94 east+westbound bridges over 6 1/2 Mile Rd, ~0.6 mi east of I-194/M-66 exit 98		✔		✔	✔					
62	I-94 over M-294 (Beadle Lake Rd)	I-94 east+westbound bridges over M-294 (Beadle Lake Rd), at exit 100		✔		✔	✔					
66	I-94 over 9 Mile Rd	I-94 east+westbound bridges over 9 Mile Rd, ~2.1 mi west of M-311/11 Mile Rd exit 104		✔		✔	✔		✔			
70	I-94 over Kalamazoo River	I-94 east+westbound bridges over Kalamazoo River, ~1.8 mi west of M-311/11 Mile Rd exit 104		✔		✔	✔		✔			
72	Transit facility renovation	for Battle Creek Transit, at location of project #22	✔				✔		✔	✔		
76	Transit Computer System Upgrade	for Battle Creek Transit, at location of project #22	✔				✔		✔	✔		
79	Ancillary Equipment - Transit	BCT facilities, 339 W Michigan Ave, in southwest quadrant of M-89 (Michigan Ave) / Cass St intersection, and on-board vehicles, at location of project #22	✔				✔		✔	✔		
80	Automatic Vehicle Locator/Computer-Aided Dispatch (AVL/CAD) System Upgrade	for Battle Creek Transit, at location of project #22	✔				✔		✔	✔		
86	Ancillary Equipment - Transit	BCT facilities, 339 W Michigan Ave, in southwest quadrant of M-89 (Michigan Ave) / Cass St intersection, and on-board vehicles, at location of project #22	✔				✔		✔	✔		
89	Transit facility renovation	BCT facilities, 339 W Michigan Ave, in southwest quadrant of M-89 (Michigan Ave) / Cass St intersection, at location of project #22	✔				✔		✔	✔		

GUIDELINES (adopted 09/26/07 - Res. 07-41 by the BCATS Policy Committee)

Battle Creek Area Transportation Study (BCATS)
Considering Environmental Issues in the Transportation Planning Process

Transportation systems impact the environment, including the already built, in-place transportation systems. The environment can impact decisions about future actions to be taken on the transportation system.

SAFETEA-LU requires an areawide approach to addressing potential environmental impacts. It does not require project specific analysis at the long range plan level. MPOs are to identify environmentally sensitive resources, analyze possible impacts of transportation projects on resources, and recommend mitigation strategies to be evaluated during all project phases.

The process is not a project level analysis. It is not intended to replace NEPA. The NEPA process already analyzes impacts in detail at the project level. The process is also not a determining factor in project selection. The presence of impacts does not necessarily indicate that a project should be not selected for implementation.

The overall goal of the BCATS program is to "assist in the development and preservation of a safe, effective, well-maintained, efficient, and economical transportation system for the Battle Creek metropolitan area, which minimizes its negative impacts on the physical and social environments and related land use." This has been the goal of BCATS for several decades, and as such, the physical and social environments continue to be a prime consideration in the development of the long range plan.

This goal is augmented by goals related to the operation of the transportation system that are utilized in the development of the agency's long range transportation plan. These goals are influenced by federal emphasis areas and by the goals of the State Transportation Commission. All of these goals support having the transportation system provide the greatest benefit for the least cost. Cost is measured not only in dollars, but in safety, social, environmental, and access terms.

Overall "Best Practice" Guidelines

The following guidelines were developed by the Southeast Michigan Council of Governments (SEMCOG) and published in January, 2007. SEMCOG has made them available to other Michigan MPOs for use with their long range plan development. BCATS extends its appreciation to SEMCOG for its work in the development of these guidelines. **The BCATS' Policy Committee adopted these general guidelines for consideration of environmental issues at its meeting on September 26, 2007.** These are only guidelines and are offered to the implementing agencies to assist them in project development.

Regardless of the type of project, or the resources that may be impacted, the following guidelines are offered to assist during the planning, design, construction, and maintenance of transportation projects. The following are guidelines for best planning practices, but are not mandated for any specific project.

Planning/Design Guidelines

- Use context sensitive solutions (CSS) principles from the earliest point possible in project development. CSS is an approach to transportation design that considers the total context within which a transportation improvement will exist. It is a collaborative, interdisciplinary approach that involves all stakeholders to develop a transportation facility that fits its physical setting and preserves scenic, aesthetic, historic, and environmental resources, while maintaining safety and mobility. Key components of CSS include involvement of community officials, key stakeholders and the public at all stages of the project.
- Identify the area(s) of potential impact related to the transportation project, including the immediate project area, anticipated borrow/fill areas, haul roads, prep sites, detour routes, and other contractor areas, as well as other related project development areas.
- Conduct an inventory to determine if any environmentally sensitive resources could be impacted by the project. (Note: not all desirable data are available for collection in a usable format at this time)

- Use the County Hazard Mitigation Plan, if impacted resources are addressed in the plan; if so, coordinate with hazard mitigation planners and remain consistent with the plan.
- Use the pre-construction meeting to involve the local community officials, contractors, and subcontractors in discussing environmental protection during the project. Communicate agreed-upon preservation goals to all involved with the project. Discuss with the local community any special requirements (for example: ordinances, site plan review).
- If possible, avoid impacts to environmental resources by limiting the project scope or redesigning the project (for example: alignment, design speed, retaining walls, etc.)
- Where impacts can not be avoided, mitigate them as much as possible. Where required, coordinate the evaluation of possible impacts, exploration of alternatives, and development of mitigation strategies with appropriate federal, state, and local authorities.
- Integrate stormwater management into the design of the site. If appropriate, utilize low-impact development practices that infiltrate stormwater into the ground (for example: swales, rain gardens, native plantings).

Construction/Maintenance Guidelines

- Insert special requirements addressing sensitivity of environmental resources into plans, specifications, and estimates provided to construction contractors. Be sure to note the types of activities not allowed in sensitive areas (for example: stockpiling, clearing, construction equipment, etc.).
- Confine construction and staging areas t the smallest possible footprint and clearly mark area boundaries. Confine all construction activity and storage of materials and equipment to these designated areas.
- Use the least obtrusive construction techniques and materials.
- Install construction flagged or fencing around environmental resources to prevent encroachment.
- Minimize and, where possible, avoid site disturbance. As appropriate:
    - protect existing vegetation and sensitive habitat
    - implement erosion and sediment control
    - protect water quality
    - protect cultural resources
    - minimize noise and vibrations
    - provide for solid waste disposal and work site sanitation
- Sequence construction activities to minimize land disturbance at all times, but especially during the rainy or winter season for natural resource protection and during the high-sue season for resources open to the public.
- When utilizing heavy equipment, pay close attention to the potential of uncovering archeological remains.
- Before site disturbance occurs, implement erosion control best management practices to capture sediments and control runoff:
    - minimize the extent and duration of exposed bare ground to prevent erosion
    - establish permanent vegetative cover immediately after grading is complete
    - do not stockpile materials within sensitive areas
    - employ erosion control techniques
    - prevent tracking of sediment onto paved surfaces
- Incorporate stormwater management into the construction phase:
    - prevent the direct runoff of water containing sediment into waterways - all runoff from the work area should drain through sedimentation control devices prior to entering a water body
    - during and after construction activities, sweep the streets to reduce sediment entering the storm drainage system
    - block or add best management practices to storm drains in areas where construction debris, sediment, or runoff could pollute waterways
- Do not dispose of spoil material in or near natural or cultural resources.
- Properly handle, store, and dispose of hazardous materials (for example: paint, solvents, epoxy) and utilize less hazardous materials when possible. Implement spill control and clean up practices for leaks and spills of fuel, oil, or hazardous materials.

Utilize dry clean up methods (for example: absorbents) if possible. Never allow a spill to enter the storm drain system or waterways.

- Keep equipment in good working condition and free of leaks. Avoid equipment maintenance or fueling near sensitive areas. If mobile fueling is required, keep a spill kit on the fueling truck. Avoid hosing down construction equipment at the site, unless the water is contained and does not get into the storm drain system or waterways.
- Identify and implement salt management techniques to reduce the impacts of salt on area waterways.
- Utilize integrated pest management techniques if using pesticides during maintenance operations.
- Conduct on-site monitoring during and immediately after construction to ensure environmental resources are protected as planned.

(Source: SEMCOG. *Integrating Environmental Issues in the Transportation Planning Process: Guidelines for Road and Transit Agencies*. January, 2007. SEMCOG's sources are listed as: AASHTO Center for Environmental Excellence. *Environmental Stewardship Practices, Procedures, and Policies for Highway Construction and Maintenance* and SEMCOG. *Land Use Tools and Techniques. 2003.*)

For more detailed information about preliminary evaluation of sensitive environmental resources see the Michigan Department of Natural Resources Endangered Species Assessment at http://www.mcgi.state.mi.us/esa/ This website provides a preliminary evaluation of whether endangered, threatened, or special concern species, high quality natural communities, or other unique natural features have been known to occur at, or near, a site of interest. The purpose of this site is to provide a simplified and efficient assessment of rate species and other unique natural features at user-identified locations.

Other Contacts

Endangered Species Specialist
Wildlife Division
P.O. Box Box 30444, Lansing, MI 48909
(517) 373-9418

Michigan Office of the State Archeologist
Michigan State Housing Development Authority
www.michigan.gov/mshda
(This office was merged in MSHDA in October, 2009)

Michigan Department of Environmental Quality
Remediation Division
P.O. Box 30426, Lansing, MI 48909-7926
(517) 373-9837
www.michigan.gov/deq (then go to "Inside DEQ" followed by clicking on the "Remediation Division")

Michigan Natural Features Inventory
https://mnfi.anr.msu.edu/

BCATS

CHAPTER XVI

RECOMMENDED IMPROVEMENTS

2040 METROPOLITAN TRANSPORTATION PLAN

In this *2040 MTP*, recommended projects include those programmed for implementation in BCATS' current *FY17-20 Transportation Improvement Program (TIP)*, one 2021 MDOT project from the State's 2017-2021 Five-Year Transportation Program (approved by the State Transportation Commission on 9/22/16), several I-94 bridge projects (all beyond 2020) included in the previous 2035 MTP and carried over into this 2040 MTP, specific capital projects for Battle Creek Transit over 2021-2040, and five projects representing annual expenditures, summed over 2017-2040, for transit operations, transit security, transit capital assistance to local human services agencies, local pavement preservation, and MDOT pavement preservation. The collection of recommended projects formed the "package" of projects tested for fiscal constraint (Chapter XIV). The results of the financial analysis supports the selection of all the recommended projects for inclusion in this *Plan*, as listed in the project list, Table XVI-1, beginning on the next page.

The "BCATS 2040 MTP ID" project numbers correspond to the map locations depicted on Figure XVI-1, which follows after the project list.

For discussion and evaluation, the proposed projects were designated one or more of ten project "Types":

1. Non-motorized
2. Expansion (new or widened roads)
3. Preservation (of pavement)
4. Security (generally for transit)
5. Traffic Safety/Operations
6. Economic Development
7. Transit Operating
8. Transit Capital
9. Bridges
10. Air Quality

For projects of multiple "Type", the first category listed is the predominant focus of the project and the category used in tabulating numbers of projects and total project costs by category. At the end of this chapter, Figure XVI-2 graphically displays a breakdown by project type, by the number of projects and by the total estimated costs of projects in each category.

Thirty "illustrative" projects are also referenced in this *2040 MTP*, as discussed in Chapter XII and listed at the end of that chapter. "Illustrative" projects are generally less developed, without cost estimates or likely funding, but are identified in this *Plan* as options to be further developed over the next five years for possible recommendation in the next plan, to provide alternatives for situations considered "deficient" now or into the future, and to highlight conditions to be more closely monitored. The "illustrative" projects listed in this *2040 MTP* were <u>not</u> included in the "Demonstration of Financial Constraint" presented in Chapter XIV - Financial Plan, but are included in the environmental justice analysis (Chapter XVIII).

XVI-2

2040 Metropolitan Transportation Plan -- Table XVI-1

Recommended Improvements

YEAR	BCATS 2040 MTP ID #	NAME	LIMITS	DESCRIPTION	COST ($)	AGENCY	PROJECT TYPE*
2017	*1*	B Dr S and Capital Ave SW	B Dr S from 3.5 Mile Rd eastward to M-66 (1.7 mi); Capital Ave SW, 0.25 mi north & south of B Dr S	Resurfacing	$ 700,000	CCRD	Preservation
2017	*2*	Intersection Geometrics Improvement - Wattles Rd (9.5 Mile Rd) @ Verona Rd	Wattles Rd @ Verona Rd intersection & approaches, in Emmett Twp	Add dedicated left turn lanes on westbound Verona Rd approach and northbound Wattles Rd approach. Intersection is a "T", with northbound Wattles Rd ending at Verona Rd.	$ 168,354	CCRD	Traffic Safety/Operations & Air Quality
2017	*3*	Goguac St, McCamly St, & Roosevelt Ave	Goguac: from Capital Ave SW westward to Carl Ave, 4750'. McCamly: from VanBuren St northward to North Ave, 620'. Roosevelt: from East Ave westward to Garrison Ave, 1996'.	Resurfacing (2" mill & overlay) with spot sidewalk & ramp replacement	$ 445,180	City of Battle Creek	Preservation
2017	*4*	Propane Conversion / Retrofit, 18 Light-Duty Vehicles	Vehicles used within City of BC & adjacent area as necessary	Conversion of up to 18 (eighteen) Class 1 [(<6,001 lb gross vehicle weight (GVW)] or Class 2 (6,001-10,000 lb GVW) "light-duty" pickups or vans, to utilize propane as primary fuel.	$ 127,800	City of Battle Creek	Air Quality
2017	*5*	BC Areawide Roadway Preventive Maintenance (crack fill and/or chip seal)	selected Fed-aid eligible non-trunkline roadways in the BCATS metropolitan area	Capital preventive maintenance with spot HMA overlay, overband crack filling, and/or single chip sealing as appropriate	$ 283,653	Local Road Agencies	Preservation
2017	*6*	M-66 - CON/1	from south of D Dr S northward to north of Glenn Cross Rd	3/4" mill & 1.5" overlay	$ 635,027	MDOT	Preservation
2017	*7*	M-66 - CON/2	from 0.10 mi north of Glenn Cross Rd to Glenn Cross Rd	add right turn lane on southbound approach to Glenn Cross Rd	$ 93,052	MDOT	Traffic Safety/Operations & Air Quality
2017	*8*	Wrong-Way Crash Reduction at Ramp Terminals (CON)	interchange ramps at I-94 exits 92 & 104, and I-194 exit 3	Improvements to reduce potential for wrong-way entry to freeway ramps	$ 31,952	MDOT	Traffic Safety/Operations
2017	*9*	2 (two) Heavy-Duty - Low Floor Buses, for fixed-route service	Battle Creek Transit (BCT) fixed-routes	Replace two buses used in fixed-route service	$ 850,000	Transit - City of Battle Creek	Transit Capital & Air Quality
2017	*10*	Community Action (formerly Community Action Agency) Capital Assistance - Computers & Office Furniture	in Community Action central office, 175 Main St (east side of Main St just north of Dickman Rd E & railroad tracks).	Replacement of computers & furniture at 3 workstations in Community Action central office.	$ 6,226	Transit - City of Battle Creek	Transit Capital
2017	*11*	Community Action (formerly Community Action Agency) Capital Assistance - Software	in Community Action central office & in Community Action vehicles in-service within Calhoun County	New (expansion) transportation dispatch/vehicle maintenance software with mobile vehicle data devices.	$ 99,152	Transit - City of Battle Creek	Transit Capital
2017	*12*	Community Inclusive Recreation (CIR) Capital Assistance - 2017 Application	within Calhoun County	Acquisition of two (2) new small (15-psngr) light-duty cutaway buses, 138" wheelbase, w/lift, gas engine, to REPLACE two vehicles in existing fleet.	$ 116,000	Transit - City of Battle Creek	Transit Capital
2018	*13*	1 (one) Clean Diesel Dump Truck (replacement), double-axle, cab+chassis only Fed-aid eligible	within Calhoun County	Replace one dump truck in existing fleet	$ 243,820	CCRD	Air Quality
2018	*14*	East Ave	from Roosevelt Ave northward to Morgan Rd	Resurfacing	$ 325,000	CCRD	Preservation
2018	*15*	McAllister Rd	from Verona Rd northward to N Dr N	Resurfacing	$ 335,000	CCRD	Preservation
2018	*16*	Clark Rd @ River Rd	Intersection of Clark Rd/Custer Dr N @ River Rd W, & all four approaches	installation of intersection control beacon & supports for span wire mount	$ 24,080	City of Battle Creek	Traffic Safety/Operations
2018	*17*	Helmer Rd	from Gethings Rd northward to Columbia Ave	Resurfacing with spot sidewalk & ramp replacement	$ 368,900	City of Battle Creek	Preservation & Non-Motorized
2018	*18*	Intersection Signal Modernization - Capital @ Jackson	Capital Ave @ Jackson St	Upgrade/modernize signal & interconnection to nearby signals and City's Traffic Management Center	$ 325,000	City of Battle Creek	Traffic Safety/Operations & Air Quality
2018	*19*	Main St	from Mary St southward to south city limits (~200' south of Kingman Ave), ~0.5 mi; and from M-66 (Division St) southward to Hamblin Ave, ~0.1 mi.	Resurfacing (2" mill & overlay)	$ 194,090	City of Battle Creek	Preservation
2018	*20*	M-66 (Capital Ave NE)	M-66 from Capital Ave/Division St intersection northward to Frey Dr	1.5" mill & 1.5" overlay with ADA ramps	$ 1,452,123	MDOT	Preservation
2018	*21*	1 (one) Heavy-Duty - Low Floor Bus, for fixed-route service	Battle Creek Transit (BCT) fixed-routes	Replace one bus used in fixed-route service	$ 433,500	Transit - City of Battle Creek	Transit Capital
2018	*22*	Ancillary Equipment - Transit	BCT facilities, 339 W Michigan Ave, in southwest quadrant of M-89 (Michigan Ave) / Cass St intersection, and on-board vehicles	Computers and vehicle technology	$ 120,000	Transit - City of Battle Creek	Transit Capital
2018	*23*	Community Action (formerly Community Action Agency) Capital Assistance - Planned 2018 Application	within Calhoun County	Acquisition of one (1) new small light-duty cutaway bus, 138" wheelbase, w/lift, gas engine, to REPLACE one vehicle in existing fleet.	$ 58,000	Transit - City of Battle Creek	Transit Capital
2018	*24*	Community Action (formerly Community Action Agency) Capital Assistance - Planned 2018 Application	within Calhoun County	Acquisition of one (1) new 15-psngr van, to REPLACE one vehicle in existing fleet.	$ 44,000	Transit - City of Battle Creek	Transit Capital
2018	*25*	Community Inclusive Recreation (CIR) Capital Assistance - Planned 2018 Application	within Calhoun County	Acquisition of one (1) new small (15-psngr) light-duty cutaway buses, 138" wheelbase, w/lift, gas engine, to REPLACE one vehicle in existing fleet.	$ 59,160	Transit - City of Battle Creek	Transit Capital

2040 Metropolitan Transportation Plan -- Table XVI-1

Recommended Improvements

YEAR	BCATS 2040 MTP ID #	NAME	LIMITS	DESCRIPTION	COST ($)	AGENCY	PROJECT TYPE*
2018	26	Marian Burch Adult Daycare Center (MBADC) Capital Assistance - Planned 2018 Application	within Calhoun County	Replacement of one mini-van	$ 23,800	Transit - City of Battle Creek	Transit Capital
2019	27	North Ave, Pennfield Twp	from Halbert Rd northward to Calhoun County limits	Resurfacing	$ 650,000	CCRD	Preservation
2019	28	Elm St	from Mary St northward to Michigan Ave	Resurfacing with spot sidewalk & ramp replacement	$ 102,420	City of Battle Creek	Preservation & Non-Motorized
2019	29	Glenn Cross Rd	from Capital Ave eastward to M-66	Resurfacing	$ 260,580	City of Battle Creek	Preservation
2019	30	Intersection Signal Modernization - Capital @ Michigan	Capital Ave @ Michigan Ave	Upgrade/modernize signal & interconnection to nearby signals and City's Traffic Management Center	$ 325,000	City of Battle Creek	Traffic Safety/Operations & Air Quality
2019	31	North Ave, City of BC	from Roosevelt Ave northward to Coolidge Ave (city limits)	Resurfacing with spot sidewalk & ramp replacement	$ 240,000	City of Battle Creek	Preservation & Non-Motorized
2019	32	M-311 (11 Mile/Wheatfield Rd) - CON	from BCATS southern Metropolitan Planning Area (MPA) boundary line btwn Newton & Burlington Twps northward to I-94 BL (Michigan Ave)	Multi-course HMA overlay	$ 4,347,668	MDOT	Preservation
2019	33	M-311 (11 Mile/Wheatfield Rd) Bridge over Kalamazoo River - CON	1/4 mile N+S of Kalamazoo River at M-311 (11 Mile/Wheatfield Rd), just north of D Dr N, including bridge.	Construction to replace bridge & rehabilitate approaches	$ 3,407,000	MDOT	Bridges
2019	34	M-311 (11 Mile/Wheatfield Rd) CON/1	from BCATS southern Metropolitan Planning Area (MPA) boundary line btwn Newton & Burlington Twps northward to B Drive S	fixed object removal - tree removal and culvert replacement	$ 522,760	MDOT	Traffic Safety/Operations
2019	35	M-311 (11 Mile/Wheatfield Rd) CON/2	from B Drive S northward to I-94 BL (Michigan Avenue)	fixed object removal - tree removal	$ 135,500	MDOT	Traffic Safety/Operations
2019	36	1 (one) Heavy-Duty - Low Floor Bus, for fixed-route service	within BCATS metropolitan planning area in Calhoun County	Replace one large bus in existing fleet	$ 442,170	Transit - City of Battle Creek	Transit Capital & Air Quality
2019	37	Community Inclusive Recreation (CIR) Capital Assistance - Planned 2019 Application	within Calhoun County	Acquisition of one (1) new pickup truck to REPLACE one 2006 Chevy Silverado, used to transport program participants & equipment.	$ 42,000	Transit - City of Battle Creek	Transit Capital
2019	38	Community Inclusive Recreation (CIR) Capital Assistance - Planned 2019 Application	within Calhoun County	Acquisition & installation of "Viamente" route planning software, replacement	$ 2,800	Transit - City of Battle Creek	Transit Capital
2019	39	Marian Burch Adult Daycare Center (MBADC) Capital Assistance - Planned 2019 Application 1	within Calhoun County	Replacement of one cutaway small bus	$ 66,800	Transit - City of Battle Creek	Transit Capital
2019	40	Marian Burch Adult Daycare Center (MBADC) Capital Assistance - Planned 2019 Application 2	within Calhoun County	Replacement of one medium-duty large bus	$ 121,800	Transit - City of Battle Creek	Transit Capital
2020	41	Intersection Signal Modernization - Cliff @ Raymond	Cliff St @ Raymond Rd, Emmett Twp	Modernization & upgrade of traffic signal(s) at intersection	$ 200,000	CCRD	Traffic Safety/Operations & Air Quality
2020	42	N Dr N (Gorsline Rd)	from Bellevue Rd eastward to 12 Mile Rd	Resurfacing	$ 760,000	CCRD	Preservation
2020	43	Waubascon Rd	from Morgan Rdd northward to Halbert Rd	Resurfacing	$ 490,000	CCRD	Preservation
2020	44	Capital Ave SW	from south city limits northward to Beckley Rd	Resurfacing with spot sidewalk & ramp replacement	$ 372,050	City of Battle Creek	Preservation & Non-Motorized
2020	45	Intersection Signal Modernization - Capital @ VanBuren	Capital Ave @ VanBuren St	Upgrade/modernize signal & interconnection to nearby signals and City's Traffic Management Center	$ 325,000	City of Battle Creek	Traffic Safety/Operations & Air Quality
2020	46	Kendall St	from Dickman Rd northward to Michigan Ave	Resurfacing with spot sidewalk & ramp replacement	$ 168,600	City of Battle Creek	Preservation & Non-Motorized
2020	47	Union St	from Michigan Ave northward to VanBuren St	Resurfacing with spot sidewalk & ramp replacement	$ 176,120	City of Battle Creek	Preservation & Non-Motorized
2020	48	1 (one) Clean Diesel Dump Truck (replacement), single-axle, only cab+chassis Fed-aid eligible	within City of Springfield & adjoining areas as necessary in Calhoun County	Replace one dump truck in existing fleet	$ 152,230	City of Springfield	Air Quality
2020	49	I-94 WB entrance ramp at Exit 104 interchange CON	I-94 WB entrance ramp from I-94BL/M-311 (11 Mile/Wheatfield Rd) east-south-westward to I-94	Reconstruction of the loop entrance ramp	$ 1,123,000	MDOT	Preservation, & Traffic Safety/Operations
2020	50	1 (one) Propane-Fueled Small Bus/Van for demand-response service	Battle Creek Transit demand-response service area, generally within City of Battle Creek & limited service into adjoining townships	1 (one) Propane-Fueled 10-Passenger Lift-Equipped Light-Duty 20' Cutaway Bus, replacement, for demand-response service	$ 80,000	Transit - City of Battle Creek	Transit Capital & Air Quality
2020	51	Community Action (formerly Community Action Agency) Capital Assistance - Planned 2020 Application	within Calhoun County	Acquisition of two (2) new small light-duty cutaway buses, 138" wheelbase, w/lift, gas engine, to REPLACE two vehicles in existing fleet.	$ 120,686	Transit - City of Battle Creek	Transit Capital
2020	52	Community Action (formerly Community Action Agency) Capital Assistance - Planned 2020 Application	within Calhoun County	Acquisition of two (2) new 15-psngr van, to REPLACE two vehicles in existing fleet.	$ 91,555	Transit - City of Battle Creek	Transit Capital

2040 Metropolitan Transportation Plan -- Table XVI-1

Recommended Improvements

YEAR	BCATS 2040 MTP ID #	NAME	LIMITS	DESCRIPTION	COST ($)	AGENCY	PROJECT TYPE*
2020	*53*	Community Inclusive Recreation (CIR) Capital Assistance - Planned 2020 Application	within Calhoun County	Acquisition of one (1) new small (15-psngr) light-duty cutaway buses, 138" wheelbase, w/lift, gas engine, to REPLACE one vehicle in existing fleet.	$ 61,550	Transit - City of Battle Creek	Transit Capital
2020	*54*	Marian Burch Adult Daycare Center (MBADC) Capital Assistance - Planned 2020 Application	within Calhoun County	Replacement of one cutaway small bus	$ 69,936	Transit - City of Battle Creek	Transit Capital
2021	*55*	I-194/M-66 over I-94	I-194 / M-66 north+southbound bridges over I-94	Bridge railing replacement, Epoxy overlay, Concrete deck patching, Zone Paint, Reseal Joints, Concrete surface coating	$ 1,778,000	MDOT	Bridges
2021	*56*	I-94 over CN/GTW railroad	I-94 east+westbound bridges over CN/GTW railroad, ~0.5 mi east of I-94BL exit 92	minor widening and rehabilitation	$ 3,668,000	MDOT	Bridges
2022	*57*	2 (two) Small Buses/Vans for demand-response service	Battle Creek Transit demand-response service area, generally within City of Battle Creek & limited service into adjoining townships	2 (two) 10-Passenger Lift-Equipped Light-Duty 20' Cutaway Buses, replacement, for demand-response service	$ 167,000	Transit - City of Battle Creek	Transit Capital
2023	*58*	I-94 over 6 1/2 Mile Rd	I-94 east+westbound bridges over 6 1/2 Mile Rd, ~0.6 mi east of I-194/M-66 exit 98	minor widening and rehabilitation	$ 4,618,000	MDOT	Bridges
2023	*59*	1 (one) Heavy-Duty - Low Floor Bus, for fixed-route service	within BCATS metropolitan planning area in Calhoun County	Replace one large bus in existing fleet	$ 476,000	Transit - City of Battle Creek	Transit Capital
2024	*60*	1 (one) Small Bus/Van for demand-response service	Battle Creek Transit demand-response service area, generally within City of Battle Creek & limited service into adjoining townships	1 (one) 10-Passenger Lift-Equipped Light-Duty 20' Cutaway Bus, replacement, for demand-response service	$ 87,000	Transit - City of Battle Creek	Transit Capital
2024	*61*	Fare System Upgrade	for Battle Creek Transit	update and upgrade fare system	$ 517,000	Transit - City of Battle Creek	Transit Capital
2025	*62*	I-94 over M-294 (Beadle Lake Rd)	I-94 east+westbound bridges over M-294 (Beadle Lake Rd), at exit 100	minor widening and rehabilitation of bridge, with allowances for future widening of M-294 under bridge	$ 3,884,000	MDOT	Bridges
2025	*63*	Transit Computer System Upgrade	for Battle Creek Transit	upgrade/replacement of transit computer system	$ 150,000	Transit - City of Battle Creek	Transit Capital
2026	*64*	4 (four) Small Buses/Vans for demand-response service	Battle Creek Transit demand-response service area, generally within City of Battle Creek & limited service into adjoining townships	4 (four) 10-Passenger Lift-Equipped Light-Duty 20' Cutaway Buses, replacement, for demand-response service	$ 361,000	Transit - City of Battle Creek	Transit Capital
2026	*65*	Transit Passenger Shelters	for Battle Creek Transit	purchase 10 replacement shelters	$ 67,000	Transit - City of Battle Creek	Transit Capital
2027	*66*	I-94 over 9 Mile Rd	I-94 east+westbound bridges over 9 Mile Rd, ~2.1 mi west of M-311/11 Mile Rd exit 104	minor widening and rehabilitation	$ 4,162,000	MDOT	Bridges
2027	*67*	3 (three) Small Buses/Vans for demand-response service	Battle Creek Transit demand-response service area, generally within City of Battle Creek & limited service into adjoining townships	3 (three) 10-Passenger Lift-Equipped Light-Duty 20' Cutaway Buses, replacement, for demand-response service	$ 276,000	Transit - City of Battle Creek	Transit Capital
2027	*68*	Automatic Vehicle Locator/Computer-Aided Dispatch (AVL/CAD) System Upgrade	for Battle Creek Transit	upgrade AVL/CAD system	$ 175,000	Transit - City of Battle Creek	Transit Capital
2029	*69*	1 (one) Heavy-Duty - Low Floor Bus, for fixed-route service	within BCATS metropolitan planning area in Calhoun County	Replace one large bus in existing fleet	$ 500,000	Transit - City of Battle Creek	Transit Capital
2030	*70*	I-94 over Kalamazoo River	I-94 east+westbound bridges over Kalamazoo River, ~1.8 mi west of M-311/11 Mile Rd exit 104	replacement of bridges	$ 15,764,000	MDOT	Bridges
2030	*71*	6 (six) Heavy-Duty - Low Floor Buses, for fixed-route service	within BCATS metropolitan planning area in Calhoun County	Replace six large buses in existing fleet	$ 3,232,000	Transit - City of Battle Creek	Transit Capital
2030	*72*	Transit facility renovation	for Battle Creek Transit, at location of project #22	renovation of facilities	$ 1,457,000	Transit - City of Battle Creek	Transit Capital
2031	*73*	1 (one) Small Bus/Van for demand-response service	Battle Creek Transit demand-response service area, generally within City of Battle Creek & limited service into adjoining townships	1 (one) 10-Passenger Lift-Equipped Light-Duty 20' Cutaway Bus, replacement, for demand-response service	$ 100,000	Transit - City of Battle Creek	Transit Capital
2032	*74*	4 (four) Heavy-Duty - Low Floor Buses, for fixed-route service	within BCATS metropolitan planning area in Calhoun County	Replace four large buses in existing fleet	$ 2,274,000	Transit - City of Battle Creek	Transit Capital
2033	*75*	4 (four) Small Buses/Vans for demand-response service	Battle Creek Transit demand-response service area, generally within City of Battle Creek & limited service into adjoining townships	4 (four) 10-Passenger Lift-Equipped Light-Duty 20' Cutaway Buses, replacement, for demand-response service	$ 440,000	Transit - City of Battle Creek	Transit Capital
2033	*76*	Transit Computer System Upgrade	for Battle Creek Transit, at location of project #22	upgrade/replacement of transit computer system	$ 250,000	Transit - City of Battle Creek	Transit Capital
2034	*77*	3 (three) Small Buses/Vans for demand-response service	Battle Creek Transit demand-response service area, generally within City of Battle Creek & limited service into adjoining townships	3 (three) 10-Passenger Lift-Equipped Light-Duty 20' Cutaway Buses, replacement, for demand-response service	$ 330,000	Transit - City of Battle Creek	Transit Capital

2040 Metropolitan Transportation Plan -- Table XVI-1

Recommended Improvements

YEAR	BCATS 2040 MTP ID #	NAME	LIMITS	DESCRIPTION	COST ($)	AGENCY	PROJECT TYPE*
2035	*78*	1 (one) Heavy-Duty - Low Floor Bus, for fixed-route service	within BCATS metropolitan planning area in Calhoun County	Replace one large bus in existing fleet	$ 550,000	Transit - City of Battle Creek	Transit Capital
2035	*79*	Ancillary Equipment - Transit	BCT facilities, 339 W Michigan Ave, in southwest quadrant of M-89 (Michigan Ave) / Cass St intersection, and on-board vehicles, at location of project #22	Computers, vehicle technology, & furniture (replacement)	$ 250,000	Transit - City of Battle Creek	Transit Capital
2035	*80*	Automatic Vehicle Locator/Computer-Aided Dispatch (AVL/CAD) System Upgrade	for Battle Creek Transit, at location of project #22	upgrade AVL/CAD system	$ 161,000	Transit - City of Battle Creek	Transit Capital
2035	*81*	Fare System Upgrade	for Battle Creek Transit	update and upgrade fare system	$ 643,000	Transit - City of Battle Creek	Transit Capital
2035	*82*	Transit Passenger Shelters	for Battle Creek Transit	purchase 10 replacement shelters	$ 80,000	Transit - City of Battle Creek	Transit Capital
2035	*83*	Transit Radio System	for Battle Creek Transit	replace transit radio system	$ 350,000	Transit - City of Battle Creek	Transit Capital
2038	*84*	1 (one) Small Bus/Van for demand-response service	Battle Creek Transit demand-response service area, generally within City of Battle Creek & limited service into adjoining townships	1 (one) 10-Passenger Lift-Equipped Light-Duty 20' Cutaway Bus, replacement, for demand-response service	$ 120,000	Transit - City of Battle Creek	Transit Capital
2039	*85*	1 (one) Heavy-Duty - Low Floor Bus, for fixed-route service	within BCATS metropolitan planning area in Calhoun County	Replace one large bus in existing fleet	$ 600,000	Transit - City of Battle Creek	Transit Capital
2039	*86*	Ancillary Equipment - Transit	BCT facilities, 339 W Michigan Ave, in southwest quadrant of M-89 (Michigan Ave) / Cass St intersection, and on-board vehicles, at location of project #22	Computers and vehicle technology	$ 250,000	Transit - City of Battle Creek	Transit Capital
2040	*87*	4 (four) Small Buses/Vans for demand-response service	Battle Creek Transit demand-response service area, generally within City of Battle Creek & limited service into adjoining townships	4 (four) 10-Passenger Lift-Equipped Light-Duty 20' Cutaway Buses, replacement, for demand-response service	$ 560,000	Transit - City of Battle Creek	Transit Capital
2040	*88*	6 (six) Heavy-Duty - Low Floor Buses, for fixed-route service	within BCATS metropolitan planning area in Calhoun County	Replace six large buses in existing fleet	$ 3,600,000	Transit - City of Battle Creek	Transit Capital
2040	*89*	Transit facility renovation	BCT facilities, 339 W Michigan Ave, in southwest quadrant of M-89 (Michigan Ave) / Cass St intersection, at location of project #22	renovation of facilities	$ 1,700,000	Transit - City of Battle Creek	Transit Capital
2017-2040	*90*	Annual Specialized Services Transit OPERATING Assistance (total expected over 2017-40, $92,624/year.	for local human services agencies	State transit operating assistance "passed thru" Battle Creek Transit to local human services agencies	$ 2,222,976	Transit - City of Battle Creek	Transit Operating
2017-2040	*91*	Annual Transit Operating Assistance (total expected over 2017-40, average $4.7M/year)	for Battle Creek Transit	Federal, State, & Local Operating Assistance. Local $ includes "farebox revenue" from fares, tokens/tickets, passes, misc transp contracts, Auxiliary Trans Revenues (i.e.advertising), NonTrans Revenues, and contribution from City of Battle Creek general fund.	$ 113,304,000	Transit - City of Battle Creek	Transit Operating
2017-2040	*92*	Annual Transit Security (total expected over 2017-2040, average $15,970/year)	for Battle Creek Transit	Security related improvements (1% of Federal operating assistance annually)	$ 383,280	Transit - City of Battle Creek	Security
2021-2040	*93*	Annual Pavement Preservation Strategy Local Agencies (75% of STP Urban Local Allocation) (total planned over 2021-40, average $1.4M/year)	Capital Preventive Maintenance (CPM) on Federal-aid eligible roadways	resurfacing and reconstruction	$ 27,517,433	Local Road Agencies (Cities of BC & Springfield, & CCRD)	Preservation
2021-2040	*94*	Annual Pavement Preservation Strategy MDOT (total planned over 2021-40, average $6.2M/year)	Capital Preventive Maintenance (CPM) on State system roadways	resurfacing and reconstruction	$ 124,701,102	MDOT	Preservation
2021-2040	*95*	Annual Specialized Services Transit CAPITAL Assistance (total expected over 2021-40, $135,150/year.	for local human services agencies	Fed Sec 5310 (with match from State) transit capital assistance "passed thru" Battle Creek Transit to local human services agencies	$ 2,703,000	Transit - City of Battle Creek	Transit Capital
				(Planned Capital Expenditures on Table XIV-8) **TOTAL**	**$346,848,885**		

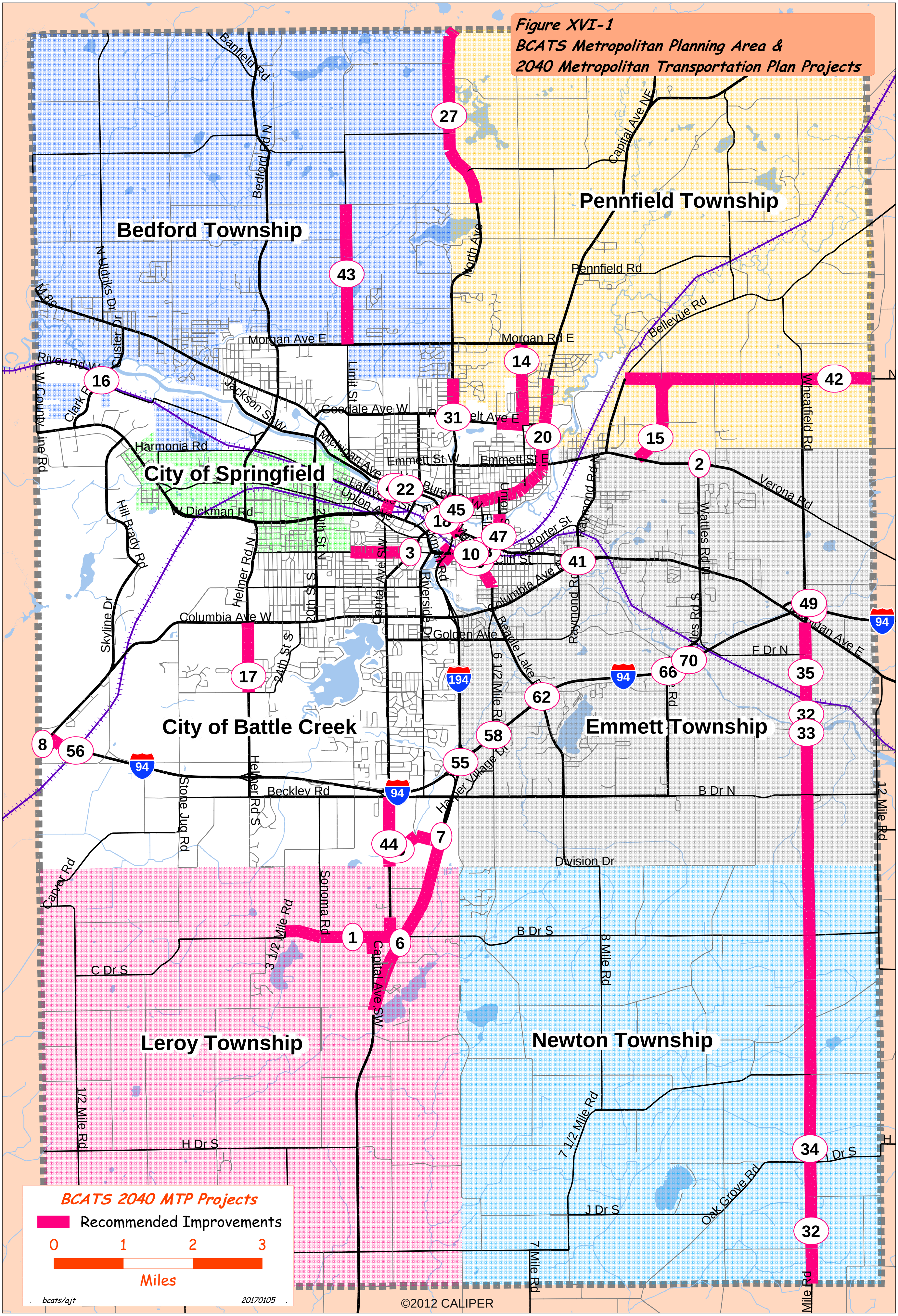
Figure XVI-1
BCATS Metropolitan Planning Area &
2040 Metropolitan Transportation Plan Projects
Bedford Township
Pennfield Township
City of Springfield
City of Battle Creek
Emmett Township
Leroy Township
Newton Township
BCATS 2040 MTP Projects
Recommended Improvements
0
1
2
3
Miles
bcats/ajt
20170105
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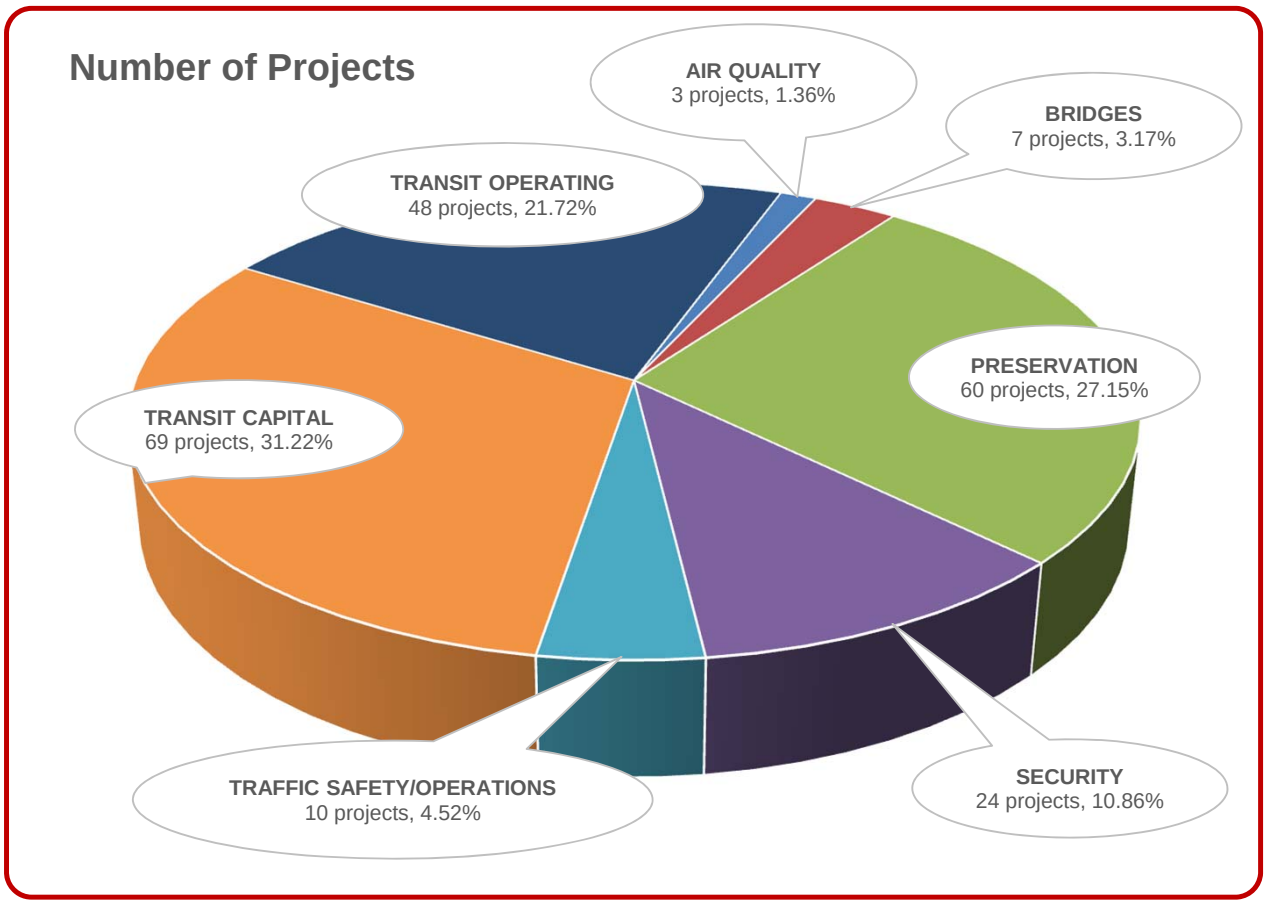
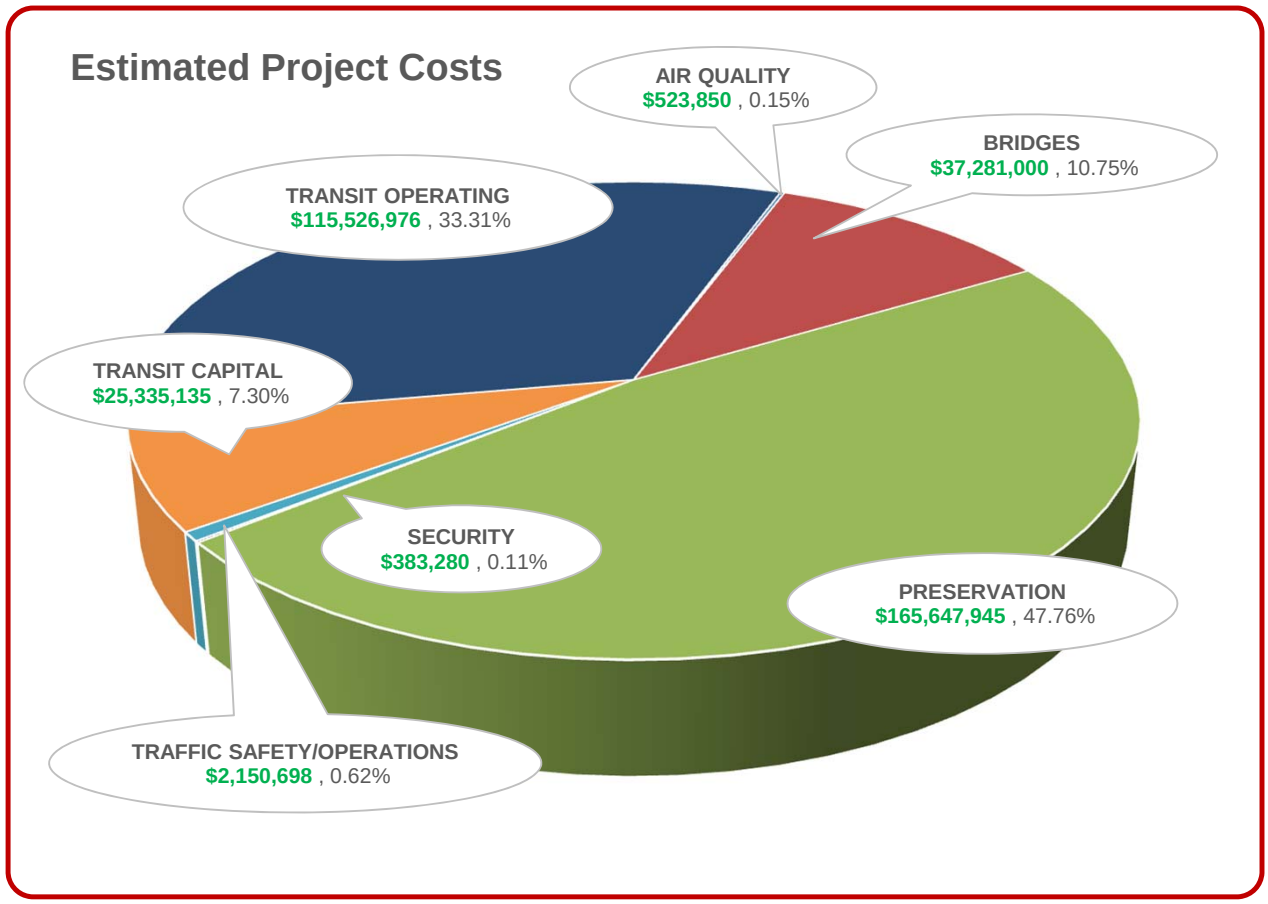
Figure XVI-2

2040 Metropolitan Transportation Plan

Recommended Projects by Type





CHAPTER XVII

AIR QUALITY

The Clean Air Act Amendments of 1990 (CAAA) established the mandate for better coordination between air quality and transportation planning. The CAAA requires that all transportation plans and transportation investments in non-attainment and maintenance areas be subject to an air quality conformity determination. The purpose of such a determination is to demonstrate that the Transportation Plan and Transportation Improvement Program (TIP) conform to the intent and purpose of the State Implementation Plan (SIP). The intent of the SIP is to achieve and maintain clean air and meet National Ambient Air Quality Standards (NAAQS). Therefore, for non-attainment and maintenance areas, the Transportation Plan and the TIP must demonstrate that the implementation of these projects do not result in greater mobile source emissions than the emissions budget.

However, effective July 20, 2013 the United States Environmental Protection Agency (USEPA) revoked the 1997 8-hour 0.080 parts per million (ppm) ozone standard for the purposes of regional transportation conformity. On July 20, 2013, the USEPA issued designations for the new 2008 8-hour 0.075ppm ozone standard. This resulted in the Kalamazoo-Battle Creek, MI area being designated attainment under the 2008 standard. This attainment/maintenance area included the counties of Kalamazoo, Calhoun and Van Buren. Effective July 20, 2013, as a result of this action, the Kalamazoo-Battle Creek MI attainment/maintenance area was no longer required to demonstrate regional transportation conformity of Long Range Plans or Transportation Improvement Programs (TIPs). On April 6, 2015, the USEPA revoked completely the 1997 ozone standard.

Subsequently, as of October 1, 2015, the USEPA set new NAAQS for ozone at 0.070ppm, thereby imposing a stricter standard for ozone. This set into motion a timeline for a new Ozone NAAQS Designation Process as follows:

- in February 2016 the Michigan Department of Environmental Quality (DEQ) released quality assured air quality monitoring data for the years 2013 to 2015
- following the USEPA release of guidance documents to the states for defining non-attainment areas under the new standard, states will work on recommendations to be submitted to USEPA of non-attainment areas in their states
- by October 1, 2016 the Michigan DEQ will recommend designations and boundaries for the non-attainment areas to the USEPA. All areas of the state will be categorized as either attainment, non-attainment or unclassifiable
- by June 2, 2017 the USEPA will respond to the states and indicate where the agency intends to modify the state's recommendations
- by August 7, 2017 the states can submit additional information to respond to the USEPA's intended modifications
- by October 1, 2017 the USEPA will issue final area designations with classifications based on quality assured data for 2014 to 2016 - note this is different than the data the MDEQ used for its recommendations
- by October 1, 2018 the areas that are designated as non-attainment must have formed Interagency Work Groups, conducted air quality conformity analysis, and must demonstrate conformity of the Metropolitan Transportation Plan (MTP) and TIP

The Kalamazoo monitor did not exceed the new standard when the analyzed 2013-2015 data was released. However, it is unknown how the area will fare once the data for the, as yet un-experienced, 2016 year is considered by the USEPA. The status of the BCATS area will be tracked to determine if conformity determination needs to be made on the MTP before the next regular MTP update cycle.

XVII-2

CHAPTER XVIII

ENVIRONMENTAL JUSTICE ANALYSIS

In accordance with Federal guidelines on Environmental Justice (EJ) that amplify Title VI of the Civil Rights Act, attention has been placed on the need to incorporate environmental justice principles into the processes and projects of transportation planning. While procedural and analytical processes for meeting these requirements are largely unspecified, the potential for disproportionate impacts of transportation improvement projects on racial minorities and impoverished neighborhoods is to be considered. BCATS has conducted an analytical process within the metropolitan planning area to identify the size and location of racial minority populations, and populations below poverty level in the 2010 Census. The distribution of Hispanic residents has also been assessed. Transportation improvements recommended for 2017-2040 implementation as listed in this *Plan* were placed, as possible, on thematic maps of percent African-American; American Indian & Alaska Native; Asian, Native Hawaiian, & Other Pacific Islander; Hispanic; and below poverty level populations (by Census block) to visually assess whether or not imminent transportation system investments may disproportionately burden or fail to meet the needs of any segment of the population. Summary statistics of the racial minorities, Hispanic, and below poverty level populations within .10, .25, and .50 mile of a site-specific *Plan* recommended improvement or "illustrative" project were also calculated. Maps, tables, and additional discussion are presented in this chapter.

The following tables display percentages quantifying the varying racial composition of the overall metropolitan area population compared to the populations within .10, .25, and .50 mile of BCATS' major projects proposed in this *Plan*, as either recommended or "illustrative", for 2017-2040.

TABLE XVIII-1	BCATS Metropolitan Planning Area		EJ Zones - Distance from FY 2017-2040 Site-specific Plan project					
			within .50 mile		within .25 mile		within .10 mile	
Area (sq mi)	217.20	----	74.14	34.1%	37.29	17.2%	15.01	6.9%
Total Population	**93,998**	----	**60,074**	63.9%	**35,113**	37.4%	**14,815**	15.8%
White	74,322	79.1%	44,814	74.6%	25,684	73.1%	10,501	70.9%
African-American	11,945	12.7%	9,434	15.7%	5,572	15.9%	2,570	17.3%
American Indian & Alaska Native	605	0.6%	442	0.7%	293	0.8%	135	0.9%
Asian, Native Hawaiian, & Other Pacific Islander	1,982	2.1%	1,418	2.4%	988	2.8%	489	3.3%
Other Race or 2+ Races	5,144	5.5%	3,965	6.6%	2,576	7.3%	1,121	7.6%
Individuals of Hispanic Origin	4,848	5.2%	3,696	6.2%	2,568	7.3%	1,111	7.5%
Individuals Below Poverty Level	16,388	17.4%	11,985	20.0%	6,846	19.5%	2,839	19.2%

The above table displays the composition of the 2010 Census population within the three EJ Zones, or "bands" within .50, .25, and .10 mile of 2017-2040 site-specific *Plan* projects. The bands, or "buffer" zones, surrounding the proposed site-specific Plan projects are highlighted in Figure XVIII-1 on the following page. The percentages can be compared across columns to the percentage under "BCATS Metropolitan Planning Area", to determine how the makeup of the EJ Zones' population matches that of the overall area. For instance, 17.4% of the metropolitan area total population is below poverty level, while 20.0.% of the population within .50 mile of a 2017-2040 site-specific *Plan* project is below poverty level.

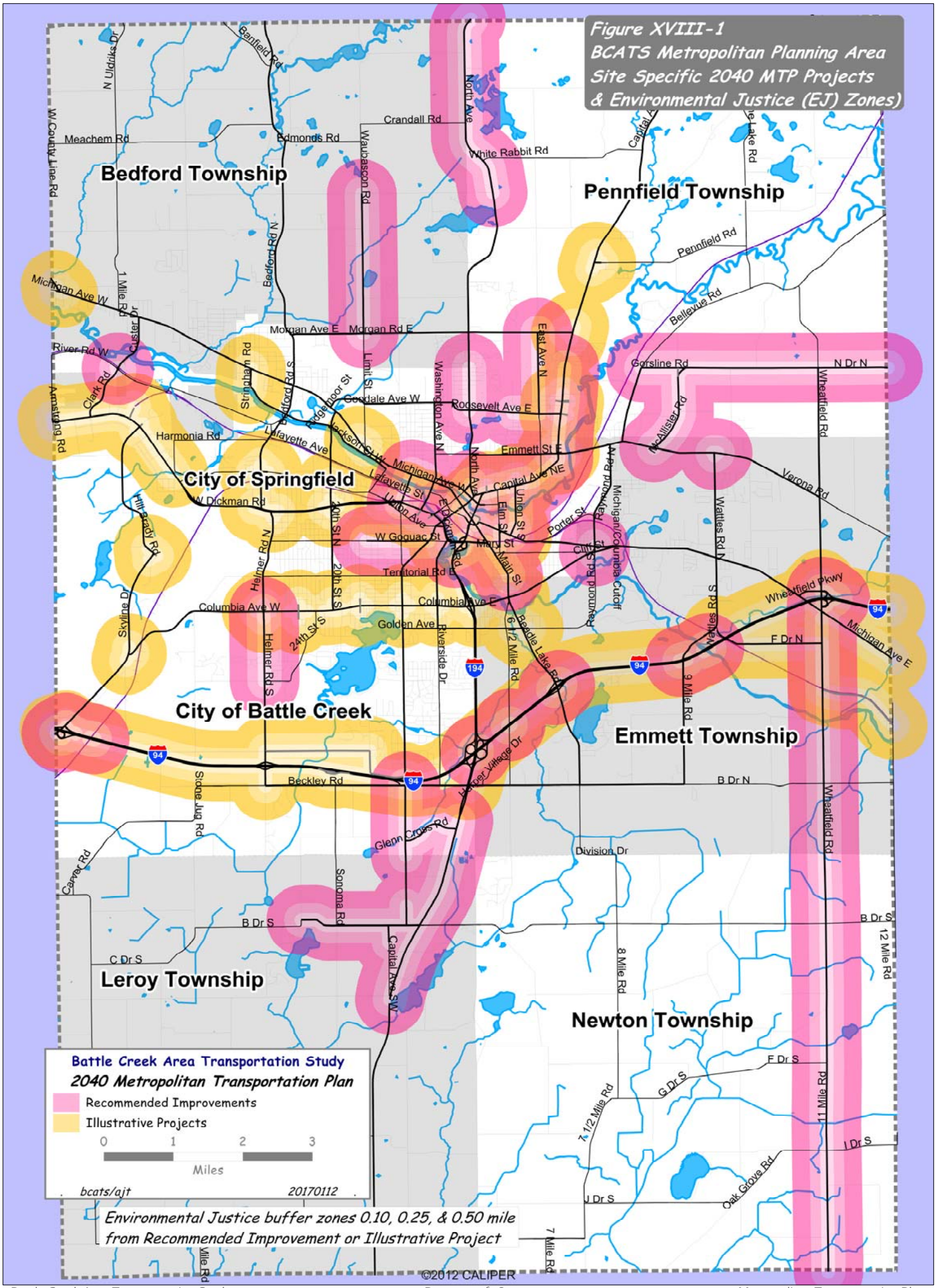


Figure XVIII-1
BCATS Metropolitan Planning Area
Site Specific 2040 MTP Projects
& Environmental Justice (EJ) Zones)
Bedford Township
Pennfield Township
City of Springfield
City of Battle Creek
Emmett Township
Leroy Township
Newton Township
Battle Creek Area Transportation Study
2040 Metropolitan Transportation Plan
Recommended Improvements
Illustrative Projects
0 1 2 3
Miles
bcats/ajt 20170112
Environmental Justice buffer zones 0.10, 0.25, & 0.50 mile
from Recommended Improvement or Illustrative Project
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The next table calculates a different statistic, that is how the percentage of each subject population group in each sub-area EJ Zone compares to each EJ Zone's percentage of the total metropolitan area population. In this case, the percentages for each EJ Zone should be compared up & down rows to the Total Population % to see if the given zone's proportion of the subject variable population is more concentrated than it is for the whole metropolitan area. For instance here, while 37.4% of the total metropolitan area population resides within .25 mile of a 2017-2040 site-specific *Plan* project, 46.6% of the area's African-American individuals do so.

TABLE XVIII-2	BCATS Metropolitan Planning Area	EJ Zones - Distance from FY 2017-2040 Site-specific Plan project					
		within .50 mile		within .25 mile		within .10 mile	
Area (sq mi)	217.20	74.14	34.1%	37.29	17.2%	15.01	6.9%
Total Population	**93,998**	**60,074**	63.9%	**35,113**	37.4%	**14,815**	15.8%
White	74,322	44,814	60.3%	25,684	34.6%	10,501	14.1%
African-American	11,945	9,434	79.0%	5,572	46.6%	2,570	21.5%
American Indian & Alaska Native	605	442	73.1%	293	48.4%	135	22.3%
Asian, Native Hawaiian, & Other Pacific Islander	1,982	1,418	71.5%	988	49.8%	489	24.7%
Other Race or 2+ Races	5,144	3,965	77.1%	2,576	50.1%	1,121	21.8%
Individuals of Hispanic Origin	4,848	3,696	76.2%	2,568	53.0%	1,111	22.9%
Individuals Below Poverty Level	16,388	11,985	73.1%	6,846	41.8%	2,839	17.3%

Maps on the following pages (Figures XVIII–2-6) depict concentrations of racial minorities, Hispanic, and below poverty level populations with the major projects proposed in this *Plan* for 2017-2040. Figure XVIII-1 on the previous page highlights the .10, .25, and .50 mile zones around each project. The bold, black lines on the maps are roads that generally comprise the Federal-aid eligible network used with BCATS' "Travel Demand Forecast Model", or TDFM.

Review of the preceding tables and the maps indicates that BCATS' site-specific *2040 Plan* projects will impact non-minority as well as minority and low-income populations. The figures in the tables suggest that larger percentages of the non-white populations may be impacted during the construction phase of the projects. However, the completion of these projects will, in turn, provide a higher benefit to those project areas than the overall population. None of the planned projects involve residential displacements. Other construction related project impacts, such as noise, dust, and access inconvenience will be short-lived and confined to the traditional construction season.

When looking at the most directly impacted residents (those within .10 mile of the planned improvements), there appears to be no highly disproportional impact to any of the identified groups as compared to the area as a whole.

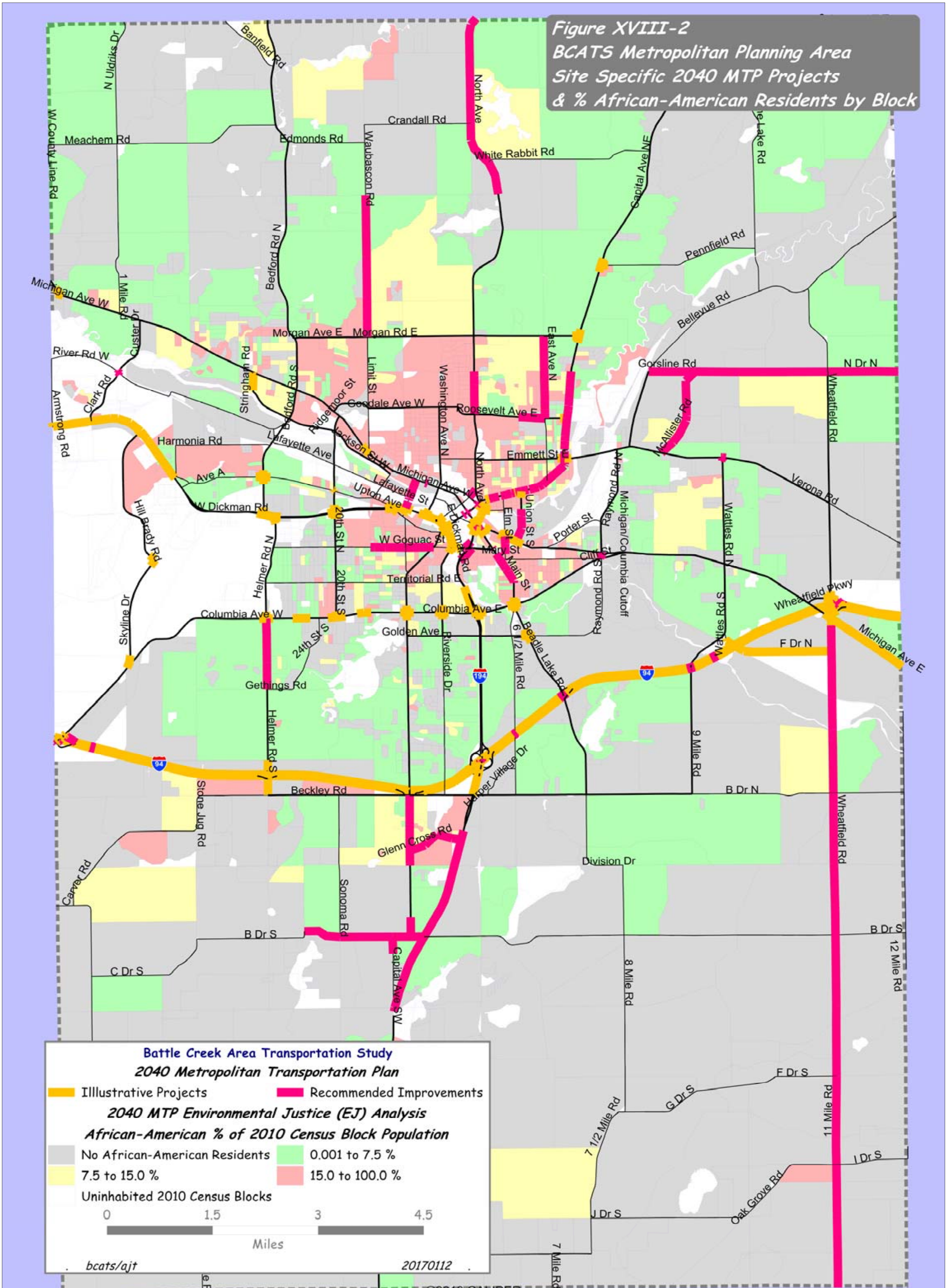


Figure XVIII-2
BCATS Metropolitan Planning Area
Site Specific 2040 MTP Projects
& % African-American Residents by Block
Battle Creek Area Transportation Study
2040 Metropolitan Transportation Plan
Illlustrative Projects
Recommended Improvements
2040 MTP Environmental Justice (EJ) Analysis
African-American % of 2010 Census Block Population
No African-American Residents
0.001 to 7.5 %
7.5 to 15.0 %
15.0 to 100.0 %
Uninhabited 2010 Census Blocks
0
1.5
3
4.5
Miles
bcats/ajt
20170112
©2013 CALIPER

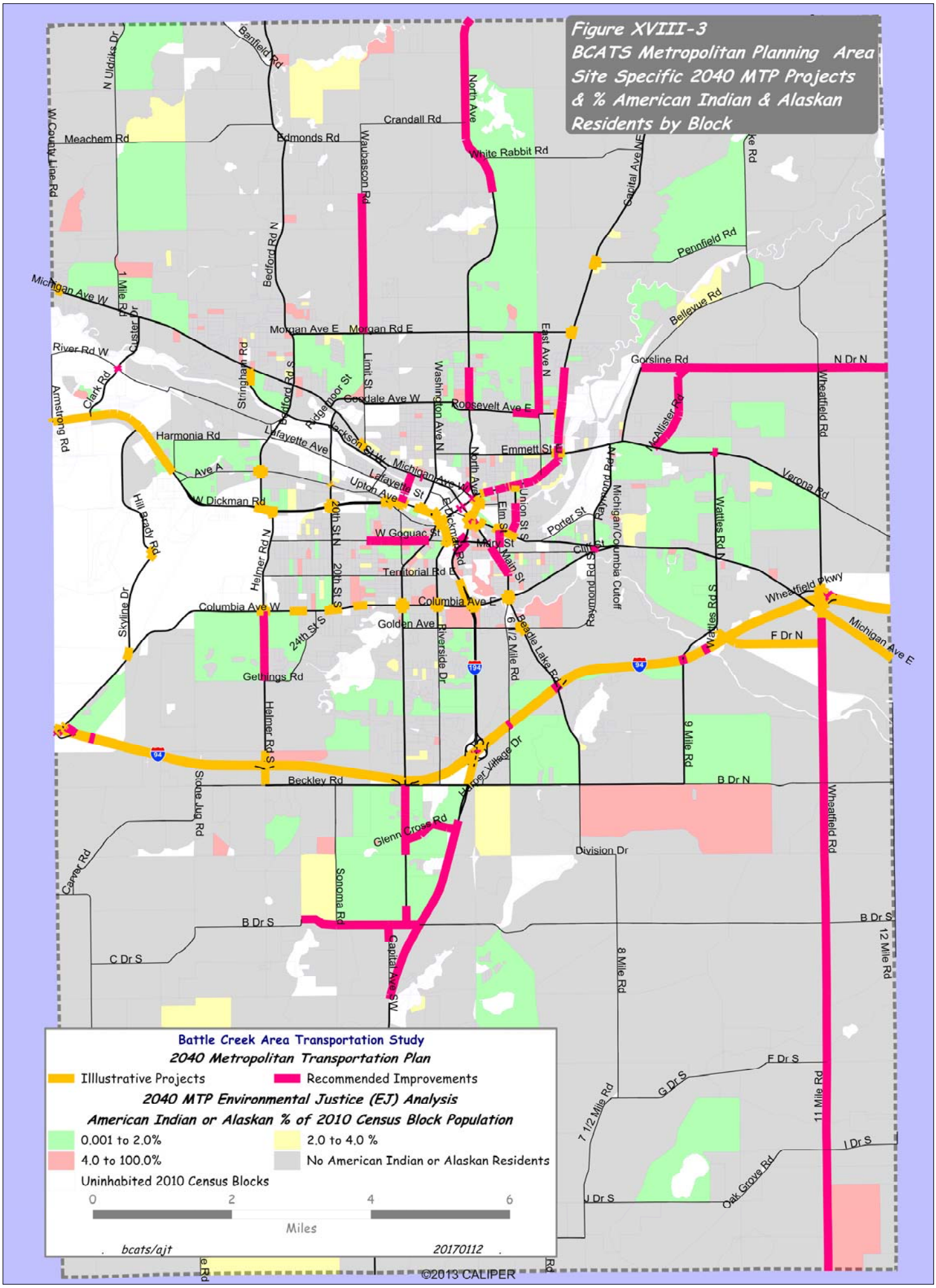


Figure XVIII-3
BCATS Metropolitan Planning Area
Site Specific 2040 MTP Projects
& % American Indian & Alaskan
Residents by Block
Battle Creek Area Transportation Study
2040 Metropolitan Transportation Plan
Illustrative Projects
Recommended Improvements
2040 MTP Environmental Justice (EJ) Analysis
American Indian or Alaskan % of 2010 Census Block Population
0.001 to 2.0%
2.0 to 4.0 %
4.0 to 100.0%
No American Indian or Alaskan Residents
Uninhabited 2010 Census Blocks
0
2
4
6
Miles
bcats/ajt
20170112
©2013 CALIPER
Banfield Rd
N Uldriks Dr
W County Line Rd
Meachem Rd
Edmonds Rd
Crandall Rd
North Ave
White Rabbit Rd
Waubascon Rd
Capital Ave NE
Pennfield Rd
Bellevue Rd
Michigan Ave W
1 Mile Rd
Custer Dr
Bedford Rd N
Morgan Ave E
Morgan Rd E
East Ave N
River Rd W
Clark Rd
Armstrong Rd
Stringham Rd
Bedford Rd S
Ridgehoor St
Limit St
Washington Ave N
Goodale Ave W
Roosevelt Ave E
Gorsline Rd
N Dr N
Wheatfield Rd
McAllister Rd
Harmonia Rd
Lafayette Ave
Jackson St W
Emmett St E
Ave A
Michigan Ave W
Lafayette St
Upton Ave
North Ave
Verona Rd
W Dickman Rd
Hill Brady Rd
20th St N
Elm St
Union St S
Porter St
Michigan/Columbia Cutoff
Watles Rd N
W Goguac St
Main St
Helmer Rd N
Territorial Rd E
Cliff St
Raymond Rd
Wheatfield Pkwy
Skyline Dr
Columbia Ave W
Columbia Ave E
Golden Ave
24th St S
Riverside Dr
6 1/2 Mile Rd
Beadle Lake Rd
F Dr N
Michigan Ave E
Gethings Rd
Helmer Rd S
Harper Village Dr
9 Mile Rd
Beckley Rd
B Dr N
Sidnaw Rd
Glenn Cross Rd
Division Dr
Carver Rd
Sonoma Rd
B Dr S
12 Mile Rd
C Dr S
Capital Ave SW
8 Mile Rd
F Dr S
G Dr S
7 1/2 Mile Rd
11 Mile Rd
I Dr S
J Dr S
Oak Grove Rd

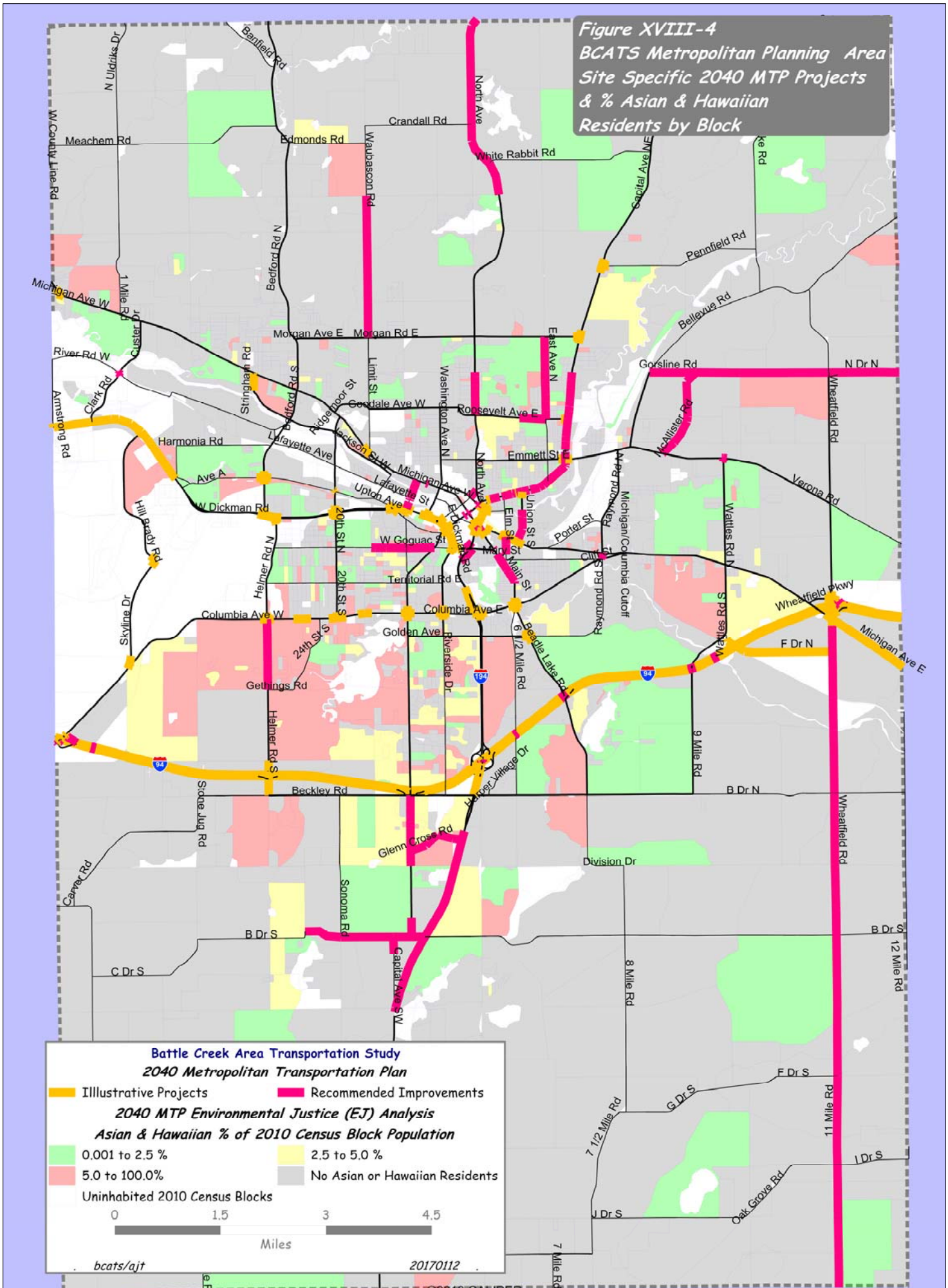


Figure XVIII-4
BCATS Metropolitan Planning Area
Site Specific 2040 MTP Projects
& % Asian & Hawaiian
Residents by Block
Battle Creek Area Transportation Study
2040 Metropolitan Transportation Plan
Illlustrative Projects
Recommended Improvements
2040 MTP Environmental Justice (EJ) Analysis
Asian & Hawaiian % of 2010 Census Block Population
0.001 to 2.5 %
2.5 to 5.0 %
5.0 to 100.0%
No Asian or Hawaiian Residents
Uninhabited 2010 Census Blocks
0
1.5
3
4.5
Miles
bcats/ajt
20170112
©2013 CALIPER

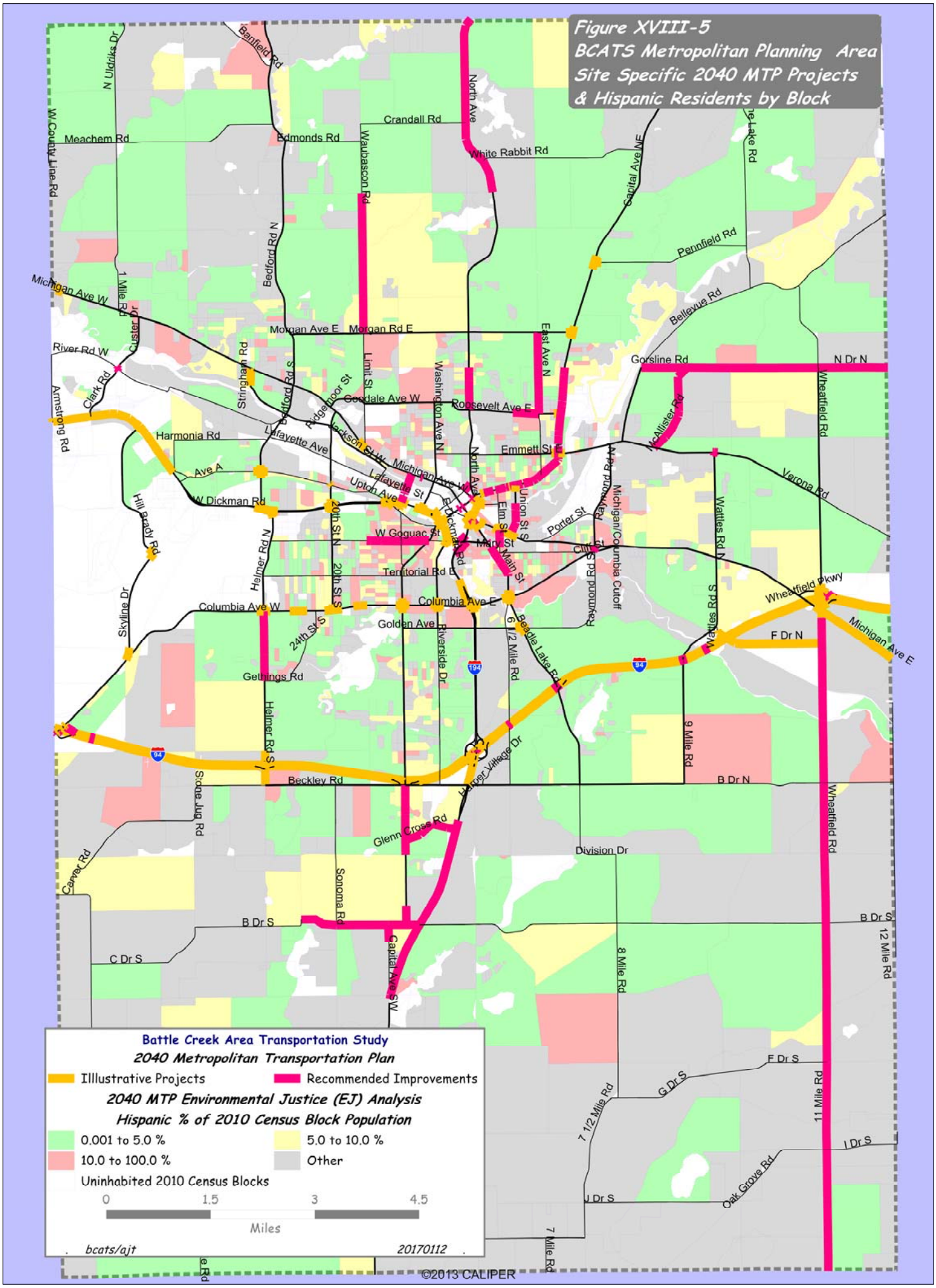


Figure XVIII-5
BCATS Metropolitan Planning Area
Site Specific 2040 MTP Projects
& Hispanic Residents by Block
Battle Creek Area Transportation Study
2040 Metropolitan Transportation Plan
Illustrative Projects
Recommended Improvements
2040 MTP Environmental Justice (EJ) Analysis
Hispanic % of 2010 Census Block Population
0.001 to 5.0 %
5.0 to 10.0 %
10.0 to 100.0 %
Other
Uninhabited 2010 Census Blocks
0
1.5
3
4.5
Miles
bcats/ajt
20170112
©2013 CALIPER

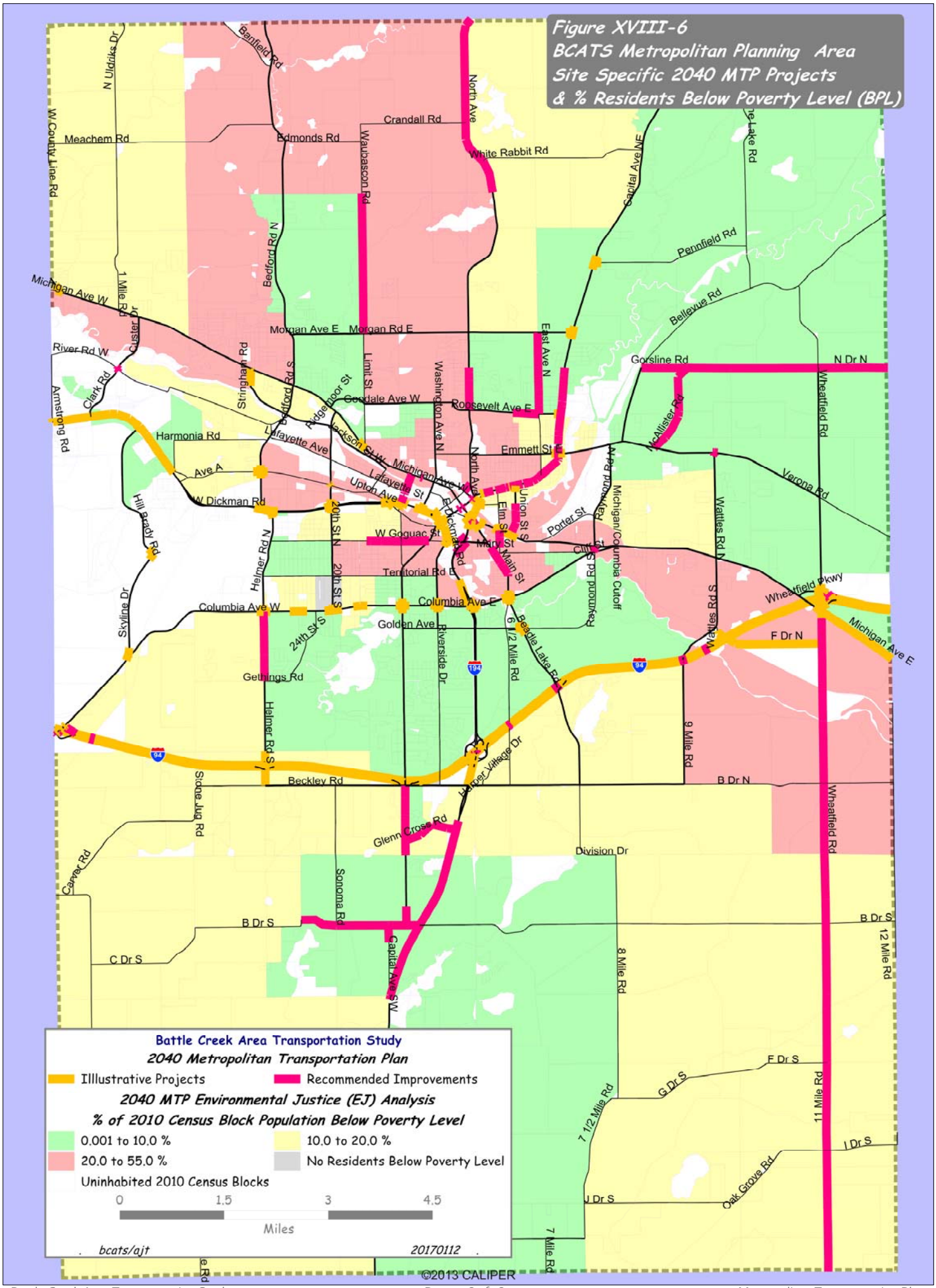


Figure XVIII-6
BCATS Metropolitan Planning Area
Site Specific 2040 MTP Projects
& % Residents Below Poverty Level (BPL)
Battle Creek Area Transportation Study
2040 Metropolitan Transportation Plan
Illlustrative Projects
Recommended Improvements
2040 MTP Environmental Justice (EJ) Analysis
% of 2010 Census Block Population Below Poverty Level
0.001 to 10.0 %
10.0 to 20.0 %
20.0 to 55.0 %
No Residents Below Poverty Level
Uninhabited 2010 Census Blocks
0
1.5
3
4.5
Miles
bcats/ajt
20170112
©2013 CALIPER

Battle Creek Area Transportation Study

2040 Metropolitan Transportation Plan

November 2016

Appendix

BCATS

COMMITTEE LISTS

The membership of the BCATS Policy and Technical Committees as of November 1, 2016, is shown below:

POLICY COMMITTEE

Voting Members

Tom Sprau (Chair), Supervisor, Charter Township of Bedford
Angela Kline (Vice-Chair), County Engineer, Calhoun County Road Department
Tim Hill, Supervisor - Steve Buller, Trustee (Sec/Treas) permanent alternate, Charter Township of Emmett
Rob Behnke, Supervisor, Charter Township of Pennfield
Harry Burdett, Mayor, City of Springfield
Mark Dionise, Manager, MDOT Transportation Service Center, Marshall
Steve Frisbie, County Commissioner, Calhoun County Board of Commissioners
Laveta Hardish, Supervisor, Leroy Township
John Lanum, Unit Supervisor, MDOT Planning, Lansing
Dave Walters, Mayor - Deb Owens, City Commissioner permanent alternate, City of Battle Creek
Mark Behnke, Commissioner - Rich Werner Transit Administrator permanent alternate, City of Battle Creek

Non-Voting Members

Andy Pickard, Federal Highway Administration
Chair, Southcentral Michigan Planning Council

TECHNICAL COMMITTEE

Voting Members

Chris Dopp (Chair), Public Works Director, City of Battle Creek
Angela Kline (Vice-Chair), County Engineer, Calhoun County Road Department
Terry Blaniar, Public Works Director, City of Springfield
Rick Fowler, Planner, MDOT Planning, Lansing
Jason Latham, Planner, MDOT SW Region, Kalamazoo
Rich Werner, Battle Creek Transit Administrator, Battle Creek Transit
Christine Zuzga/Glenn Perian, Planning Department, City of Battle Creek

Non-Voting Members

Lee Adams, Southcentral Michigan Planning Council
Andy Pickard, Federal Highway Administration

STAFF

Patricia Karr, Executive Director
Andrew Tilma, Principal Planner

A-2

BATTLE CREEK AREA TRANSPORTATION STUDY
Policy Committee
Minutes of November 30, 2016 Meeting

VOTING MEMBERS PRESENT: Steve Buller, Harry Burdett, Mark Dionise, Steve Frisbie, Adam Heikkila, Angela Kline, John Lanum, Dave Morgan, Deb Owens, and Donna Hutchison (for Rich Werner)
NON-VOTING MEMBERS PRESENT: None
VOTING MEMBERS ABSENT: Laveta Hardish
NON-VOTING MEMBERS ABSENT: Andy Pickard (FHWA) and SMPC
OTHERS PRESENT: Christopher Bolt, Pat Karr and Andrew Tilma

Vice-Chair Kline called the meeting to order at 1:40 p.m. in the Council Room at Springfield City Hall, 601 Avenue A, Springfield, MI 49037.

ROLL CALL

A quorum was present (see above for voting members present) and introductions were conducted for the benefit of all in attendance. As a result of the November 8, 2016 elections, two new township supervisors were welcomed to the Policy Committee. Mr. Adam Heikkila will represent the Charter Township of Bedford and Mr. Dave Morgan will represent the Charter Township of Pennfield.

APPROVAL OF THE AGENDA

It was moved by Buller, supported by Owens, to approve the agenda with the addition of Item 7.G. Resolution of Appreciation for Tom Sprau, out-going Policy Committee chair. MOTION CARRIED UNANIMOUSLY.

Res.
16-46

PUBLIC COMMENTS

Vice-Chair Kline opened the public hearing for the Metropolitan Transportation Plan. There being no public in attendance at the beginning of the meeting, she then closed the public hearing. There were no general public comments either at this point in the meeting.

APPROVAL OF THE MINUTES

It was moved by Buller, supported by Dionise, to approve the minutes of the October 26, 2016 meeting, as presented, subject to any additions, corrections or changes. MOTION CARRIED UNANIMOUSLY.

Res.
16-47

COMMUNICATIONS

Karr reported the following items of communication:

- The pass-through agreement for the 5303 Transit Planning funds has been completed with the City of Battle Creek and has been provided to MDOT. The work on the study can now proceed through Battle Creek Transit.
- Information was provided to the Committee members about a MDOT website with helpful information for dealing with transportation topics that can be misconceived by the public. The site has "Reality Check" information sheets on a variety of topics. A sample information sheet about sign replacement was distributed.

- The auditor was at the BCATS' office at the end of October. Karr has been working with her ever since on finalizing the materials for the FY 2016 audit. Based on the internal schedule for the audit firm, it is unknown if the final audit document will be a December 2016 or January 2017 action item for the Policy Committee.
- Karr attended a meeting on November 17th held by the BC Vision effort in regard to transportation issues. Calhoun County representatives were there also to discuss their efforts in evaluating transit service options outside of the Battle Creek Transit service area.
- Karr is working on the annual list of obligated projects report, which will be completed in December.

UNFINISHED BUSINESS

There was no unfinished business at this time.

NEW BUSINESS

A. FY 2017-2020 Transportation Improvement Program (TIP) Amendment #1

Tilma reviewed this item with the Committee and indicated that there are five items included in the proposed amendment. He reviewed the nature of each of the five changes for the amendment. Tilma also noted that public notice of the amendment was published in the *Battle Creek Enquirer* on November 10th. The published notice also included information about the BCATS 2040 Metropolitan Transportation Plan. Tilma stated that the Technical Committee reviewed these changes and recommended approval by the Policy Committee.

It was moved by Burdett, supported by Lanum, to approve Amendment #1 to the FY 2017-2020 Transportation Improvement Program (TIP), as presented. MOTION CARRIED UNANIMOUSLY.

Res.
16-48

B. 2040 Metropolitan Transportation Plan & Adopting Resolution

Karr provided an overview of the project, which has been on-going. Additional material related to the final plan was distributed. Karr highlighted the Financial Constraint table from the financial chapter and the project list of recommended improvements, two key parts of the Plan update.

Tilma reviewed information about the project list for the Plan as well as projects that will be included on an "illustrative list" and not included in the financial constraint considerations. Karr indicated that Technical Committee recommended Policy Committee approval of the 2040 Metropolitan Transportation Plan. She indicated that the action today would approve the plan and the adopting resolution associated with the Plan.

It was moved by Frisbie, supported by Owens, to approve 2040 Metropolitan Transportation Plan and Adopting Resolution, with the understanding that staff will be finalizing the materials for the document before submission to the funding sources. MOTION CARRIED UNANIMOUSLY.

Res.
16-49

C. Appointment of Nominating Committee for 2017 Policy Committee Officers

Kline asked Steve Buller and Harry Burdett to serve on the Nominating Committee and to present a slate of officers for the Policy Committee for calendar year 2017. They both agreed to serve and were tasked with providing a recommendation to the BCATS staff office by December 14th.

D. National Drunk and Drugged Driving Prevention Month Resolution

Karr read the proposed resolution into the record to recognize December, 2016 as National Drunk and Drugged Driving Prevention Month and December 18, 2016 to January 3, 2017 as "Drive Sober or Get Pulled Over" National Mobilization time period.

It was moved by Frisbie, supported by Owens, to adopt the National Drunk and Drugged Driving Prevention Month December 2016 and December 18, 2016 to January 3, 2017 "Drive Sober or Get Pulled Over" National Mobilization resolution, as presented. MOTION CARRIED UNANIMOUSLY.

Res.
16-50

E. Health Insurance for FY 2017

1). Health insurance and HSA Accounts

Karr referred to the memo provided as background information for this item. She discussed the current insurance provisions and indicated that the rates have increased by 12% for 2017 over 2016. She reported that the City of Battle Creek is making several changes to the plans offered and they are working with all of their employee bargaining groups regarding a variety of changes to how the insurance will be administered for each of those groups.

It was moved by Owens, supported by Frisbie, to accept the recommendation to maintain the status quo relative to the structure of health insurance for BCATS' employees, including providing $2,000 of the deductible to employee HSA accounts for 2017, to be paid into the accounts in January, 2017, with the notation that this is a one year decision and that the structure for the health insurance will be re-evaluated next year for 2018. There was a lot of discussion about this issue and what other governmental units are doing this year in regard to their health insurance options. Karr added that the total cost for BCATS staff for medical insurance under the recommendation will be within the budget that has been set for this item in the FY 2017 Unified Work Program. After additional discussion, the Committee voted on the motion. **MOTION CARRIED UNANIMOUSLY.**

Res.
16-51

2). Public Act 152 of 2011 Resolution

Karr presented the proposed resolution that would address the issue of reconciling the health insurance cost total for 2017 with the requirements of Public Act 152 of 2011.

It was moved by Frisbie, supported by Owens, to adopt the resolution regarding Public Act 152 of 2011, as presented. MOTION CARRIED UNANIMOUSLY.

Res.
16-52

F. Letter of Support for Regional Prosperity Committee Funding Application for 2017

Karr reviewed the request from the Region 8 Prosperity Committee regarding its application for funding from the State of Michigan for FY 2017 and highlighted the contents of the proposed support letter that would be signed by Kline.

It was moved by Buller, supported by Dionise, to authorize a Letter of Support to be signed by the Vice-Chair relative to the Regional Prosperity Committee Funding Application for 2017, as presented. MOTION CARRIED UNANIMOUSLY.

Res.
16-53

G. Resolution of Appreciation for Thomas J. Sprau

Karr noted that this was an added item to the agenda. Tom Sprau was a valued active member of the BCATS Policy Committee and served as Policy Committee chairperson since the retirement of long-time chair Tom Matson. Karr read the Resolution of Appreciation for Mr. Sprau and asked for Policy Committee approval of the resolution.

It was moved by Burdett, supported by Buller, to adopt the Resolution of Appreciation for Thomas J. Sprau, as presented. MOTION CARRIED UNANIMOUSLY.

Res.
16-54

COMMENTS

A. Next Meeting

Vice-Chair Kline announced that the next Policy Committee meeting is scheduled for Wednesday, December 21, 2016, 1:30 p.m. in the City of Springfield Council Chambers.

B. Committee Member Comments

Karr again welcomed the two new members to the Committee.

Dionise reported on some changes to MDOT's winter operations this year. When snowplow warning lights are being replaced, new legislation allows for those lights to be changed from amber to green. MDOT will not change out lights until a normal maintenance schedule. MDOT will be using "towplows", additional plows towed behind a snowplow, to expand the width of each truck's ability to remove snow. This configuration will be used on the sections of I-94 that are three lanes in width.

Buller asked about the new software being instituted by the County Road Department for the reporting of road issues. Kline indicated that the new program will have lots of possibilities for reporting data out to the public and to governmental units.

C. Public Comments

Christopher Bolt, Managing Director for the Calhoun County and Jackson County Road Departments reported that the engineering department for the Calhoun County Road Department is nearing full staffing, with the last vacancy expected to be filled in January. He indicated that 10% of Calhoun County's roads under the jurisdiction of the County were improved in 2016. This is due in large part to the local funding participation of Bedford and Pennfield townships.

ADJOURNMENT

Vice-Chair Kline adjourned the meeting at 2:45 p.m.

BCATS
BATTLE CREEK AREA TRANSPORTATION STUDY
601 Avenue A ● Springfield, MI 49037 ● 269-963-1158 ● Fax 269-963-4951

Resolution #16-49
Resolution to Approve the *2040 METROPOLITAN TRANSPORTATION PLAN* for the Battle Creek Area Transportation Study

WHEREAS, the Battle Creek Area Transportation Study (BCATS) is the designated Policy Committee and Metropolitan Planning Organization (MPO) for the Battle Creek, Michigan urban area; and

WHEREAS, the development of a long range transportation plan is a requirement of both the Federal Highway Administration and the Federal Transit Administration; and

WHEREAS, the BCATS *2040 Metropolitan Transportation Plan* as been developed pursuant to USC 23 Section 134, as amended by the Moving Ahead for Progress in the 21st Century (MAP-21) and subsequent Fixing America's Surface Transportation (FAST) Act federal transportation legislation, with a planning horizon of at least 20 years; and

WHEREAS, the BCATS *2040 Metropolitan Transportation Plan* identifies transportation facilities that should function as an integrated metropolitan transportation system; and

WHEREAS, the BCATS *2040 Metropolitan Transportation Plan* includes a financial analysis that demonstrates how the projects that have been identified will have adequate funding, and indicates the resources that are reasonably expected to be made available to carry out the Plan; and

WHEREAS, the BCATS *2040 Metropolitan Transportation Plan* recognizes the necessity of preserving the existing transportation system and includes projects that will enhance the efficiency of the existing transportation system to relieve vehicular congestion and improve the mobility of people and goods; and

WHEREAS, the BCATS *2040 Metropolitan Transportation Plan* was developed through a process that included input from private citizens, private providers of transportation, affected public agencies, and other interested parties; and

WHEREAS, the BCATS *2040 Metropolitan Transportation Plan* was developed utilizing a consultation process taking into consideration the plans and programs of other agencies; and using information obtained through the consultation process, recognizes potential environmental mitigation needs as related to projects in the Plan; and

WHEREAS, this Plan can be amended periodically upon request and with appropriate documentation supporting such a request;

NOW THEREFORE BE IT RESOLVED, that the Policy Committee of the Battle Creek Area Transportation Study finds the *2040 Metropolitan Transportation Plan* to be compliant with federal requirements and approves its submission to the Michigan Department of Transportation, the Federal Highway Administration, and the Federal Transit Administration.

ATTEST: Angela Kline
Angela Kline
Vice-Chair, BCATS Policy Committee

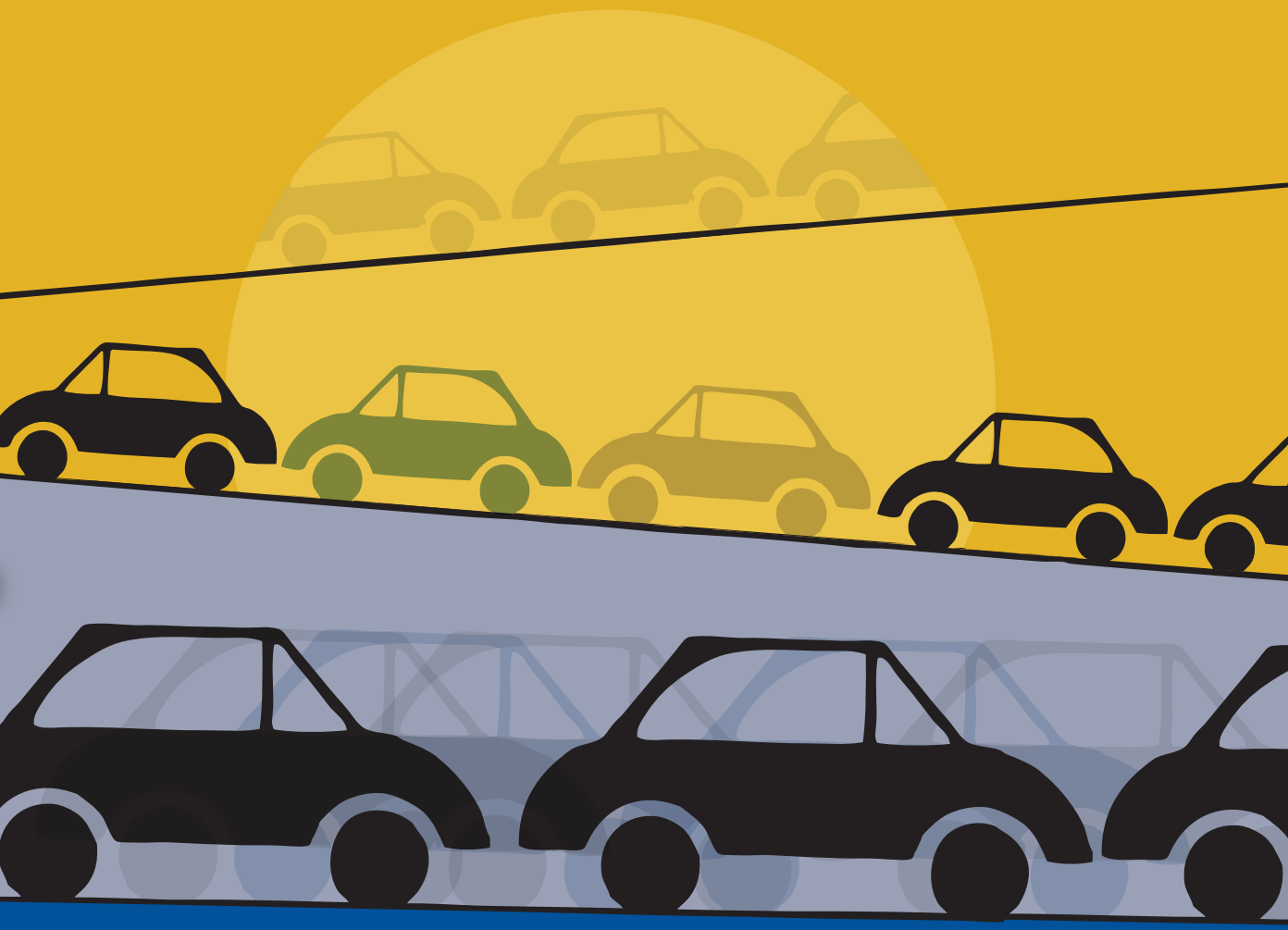
Date: November 30, 2016

Adopted by the Battle Creek Area Transportation Study Policy Committee at its meeting of November 30, 2016

BCATS

TRAVEL TIME RELIABILITY

MAKING IT THERE ON TIME, ALL THE TIME



U.S. Department of Transportation
Federal Highway Administration

TRAFFIC CONGESTION IS A DAILY REALITY IN MOST OF THE LARGE URBAN AREAS IN THE UNITED STATES.

It's to be expected—large numbers of people all trying to reach their destinations at the same time, usually during peak hours. Drivers are used to the everyday congestion and they plan for it. They don't like it, but they leave home early enough to get to work on time. It's the unexpected congestion that troubles travelers the most from day to day. A trip that usually takes a half-hour, with little or no warning, takes an hour.

Now the motorist is late for work, has missed a doctor's appointment, or is facing hefty childcare penalties for picking up the kids late. Maybe a trucker gets held up in unexpected traffic, making shipments late to the manufacturer, disrupting just-in-time delivery, and losing the competitive edge on other shippers.

Travelers want travel time reliability—a consistency or dependability in travel times, as measured from day to day or across different times of day. Drivers want to know that a trip will take a half-hour today, a half-hour tomorrow, and so on.

WHY IS TRAVEL TIME RELIABILITY IMPORTANT?

Most travelers are less tolerant of *unexpected delays* because such delays have larger consequences than drivers face with everyday congestion. Travelers also tend to remember the few bad days they spent in traffic, rather than an average time for travel throughout the year (see Figure 1).

In order to improve travel time reliability, the first step is to measure it. Measures of travel time reliability better represent a commuter's experience than a simple average travel time. For example, a typical before-and-after study attempts to show the benefits of an incident management program (see Figure 2). Looking at average travel time, the improvement may seem modest. However, travel time reliability provides a different perspective of the improvement: the worst few days have been dramatically improved. Travelers make it to their destinations on time more often or with fewer significant delays.

HOW DO AGENCIES MEASURE TRAVEL TIME RELIABILITY?

Travel time reliability measures are relatively new, but a few have proven effective. Most measures compare high-delay days to those with an average delay. The most effective methods of measuring travel time reliability are 90th or 95th percentile travel times, buffer index, and planning time index, explained in the following sections.

Several statistical measures, such as standard deviation and coefficient of variation, have been used to quantify travel time reliability. However, they are not easy for a nontechnical audience to understand and would be less-effective communication tools. They also treat early and late arrivals with equal weight. But the public cares much more about late arrivals.

Figure 1. Averages don't tell the full story

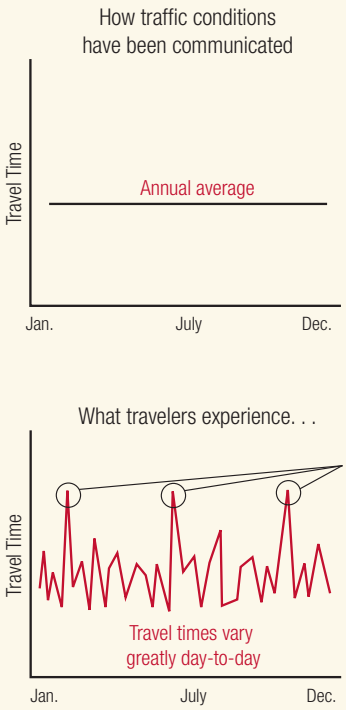
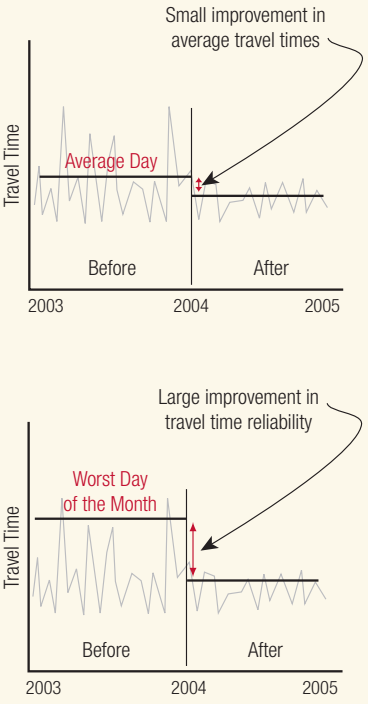


Figure 2. Reliability measures capture the benefits of traffic management



90th or 95th percentile travel times

This method, the *90th or 95th percentile travel times*, is perhaps the simplest method to measure travel time reliability. It estimates how bad delay will be on specific routes during the heaviest traffic days. The one or two bad days each month mark the 95th or 90th percentile, respectively. Users familiar with the route (such as commuters) can see how bad traffic is during those few bad days and plan their trips accordingly. This measure is reported in minutes (as shown in Figure 6).

Buffer index

The *buffer index* represents the extra time (or time cushion) that travelers must add to their average travel time when planning trips to ensure on-time arrival.

For example, a buffer index of 40 percent means that for a trip that usually takes 20 minutes a traveler should budget an additional 8 minutes to ensure on-time arrival most of the time.

Average travel time = 20 minutes
Buffer index = 40 percent
Buffer time = 20 minutes × 0.40 = 8 minutes

The 8 extra minutes is called the buffer time. Therefore, the traveler should allow 28 minutes for the trip in order to ensure on-time arrival 95 percent of the time.

Planning time index

The *planning time index* represents how much total time a traveler should allow to ensure on-time arrival. While the buffer index shows the *additional* travel time that is necessary, the planning time index shows the *total* travel time that is necessary (see Figure 3).

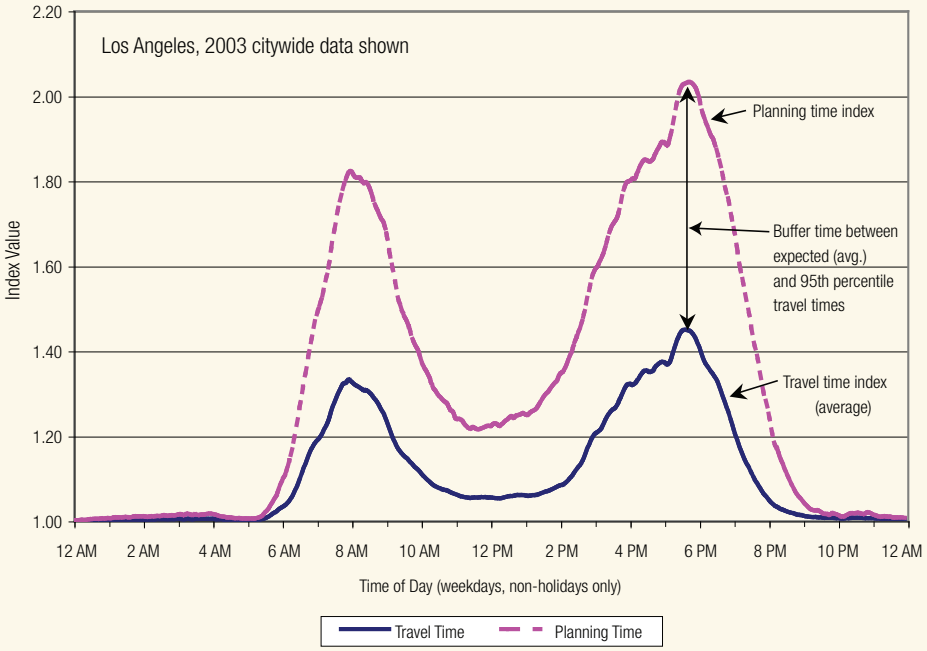
For example, a planning time index of 1.60 means that for a trip that takes 15 minutes in light traffic a traveler should budget a total of 24 minutes to ensure on-time arrival 95 percent of the time.

Free-flow travel time = 15 minutes
Planning time index = 1.60
Planning time = 15 minutes × 1.60 = 24 minutes

The planning time index is especially useful because it can be directly compared to the travel time index (a measure of average congestion) on similar numeric scales. The travel time index is a measure of average conditions that tells one how much longer, on average, travel times are during congestion compared to during light traffic.

Figure 3 illustrates the relationship between the buffer index and the planning time index. The buffer index represents the *additional* time that is necessary, whereas the planning time index represents the *total* travel time that is necessary.

Figure 3. Reliability measures compared to average congestion measures (Source: http://mobility.tamu.edu/mmp/)



HOW DOES AN AGENCY BEGIN USING TRAVEL TIME RELIABILITY MEASURES?

Putting these methods to work requires an overall evaluation and implementation process. Figure 4 briefly shows the steps involved in measuring travel time reliability and how to put that information to work for travelers and traffic managers.

WHO IS CURRENTLY USING TRAVEL TIME RELIABILITY MEASURES?

Even though travel time reliability measures are relatively new, several agencies have already begun using them. Agencies such as the Federal Highway Administration (FHWA), Minnesota Department of Transportation (Mn/DOT), and the Washington State Department of Transportation (WSDOT) have primarily used travel time reliability as a performance measure to supplement measures of average congestion.

FHWA

FHWA supports a national traffic monitoring program that tracks reliability measures in more than 30 cities. FHWA communicates this information to key decision-makers through a monthly dashboard report (see Figure 5). The report includes trend information on the duration (hours of congested travel per day), magnitude (travel time index), and reliability (planning time index).

Figure 4. A methodical approach can be used to develop reliability measures

STEP 1. Determine how measures will be used

- Define the structure and content of program
- Quantify benefits for elected officials and key decision-makers
- Monitor conditions for fine-tuning operational procedures
- Compare alternative multi-modal investment scenarios

STEP 2. Develop a plan based on uses and users

- Define travel modes, routes, trips, days, times of interest
- Define data source and calculation procedures
- Develop communication tools for results

STEP 3. Collect and process required data

- Continuous data collection from Intelligent Transportation Systems (ITS) most desirable
- Other methods to collect or estimate data are possible
- Use quality assurance methods
- Calculate route or trip travel times (basic data element)

STEP 4. Calculate reliability measures

- 95th or other percentile travel time
- Buffer index
- Planning time index

STEP 5. Communicate measures in meaningful way

- Annotated graphics that avoid "tech-speak"
- Relate to traveler's experience

Figure 5. A reliability measure is included in FHWA's Monthly Congestion Dashboard Report

Status: Green Progress: Green	NATIONAL CONGESTION INDICATORS								
	Hours of Congested Travel Per Day			Travel Time Index			Planning Time Index		
Current Quarter	4.823			1.284			1.690		
Same Quarter, Previous Year	5.181			1.294			1.707		
Change vs. Previous Year	6.91% ↓			0.77% ↓			1.00% ↓		
National Congestion Pattern	# of Cities DOWN >5%	# of Cities NO CHANGE	# of Cities UP >5%	# of Cities DOWN >5%	# of Cities NO CHANGE	# of Cities UP >5%	# of Cities DOWN >5%	# of Cities NO CHANGE	# of Cities UP >5%
Total Cities: 19	9	4	6	2	17	0	4	13	2

Mn/DOT

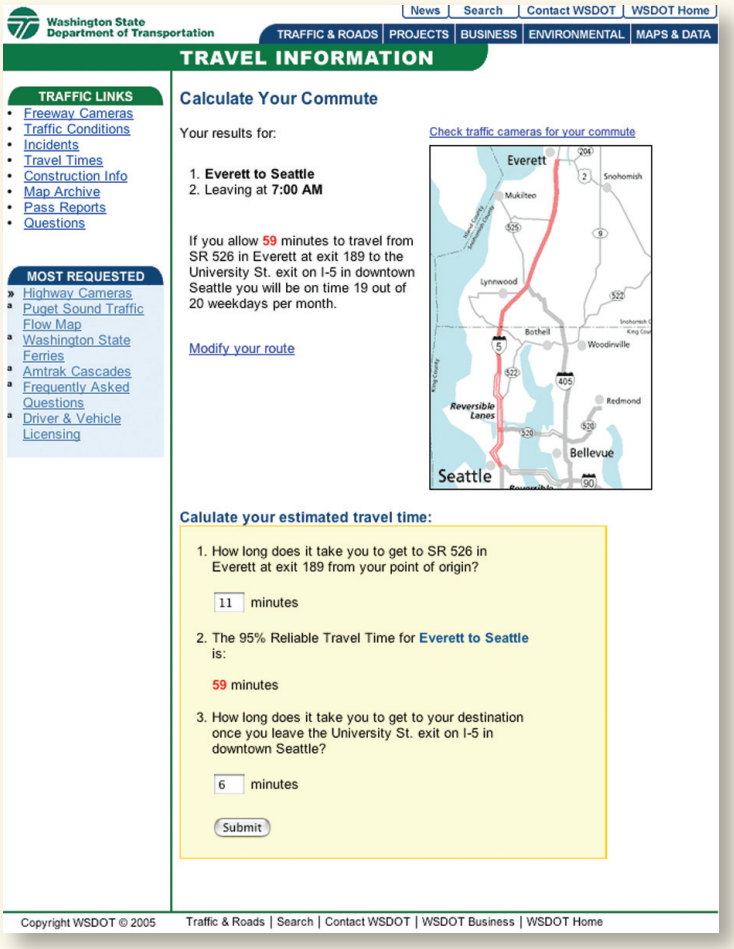
In 2000, Mn/DOT used travel time reliability measures to study the effects of a ramp meter shutdown on Minneapolis-St. Paul freeways. In this study, Mn/DOT reported that turning off the ramp metering system caused travel time reliability to worsen by 91 percent. In comparison, the average travel times worsened by only 22 percent. These findings support the concepts presented in Figure 2—operational improvements have a greater effect on day-to-day travel time reliability than on average travel times. As a result of this legislatively mandated study, Mn/DOT was able to continue operating its ramp metering program in 2001.

WSDOT

WSDOT tracks travel time reliability in its performance-monitoring efforts and provides reliability estimates to commuters. A page on the WSDOT website (see Figure 6) allows commuters to select a trip and generate a 95th percentile travel time based on historical data. Commuters can then use the travel time estimate to ensure they arrive on time for that particular trip.

WSDOT also uses reliability measures in reporting the performance of freeways and high-occupancy vehicle (HOV) lanes (http://depts.washington.edu/hov). In particular, WSDOT uses the 90th percentile travel time and the frequency of congestion performance measures to determine operating strategies and prioritize improvements.

Figure 6. WSDOT provides reliability measures for traveler information (Source: http://www.wsdot.wa.gov/traffic/seattle/traveltimes/reliability/)



WHERE CAN I FIND MORE INFORMATION?

A guide to travel time reliability is available at http://www.ops.fhwa.dot.gov/. It contains supporting information and technical details on developing travel time reliability measures.

CONTACT INFORMATION

For more information, contact:
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Rich.Taylor@fhwa.dot.gov

Produced by Texas Transportation Institute with Cambridge Systematics, Inc.

FHWA-HOP-06-070
TTI0601.0106.2M

U.S. Department of Transportation
Federal Highway Administration
November 2015

Transportation System Resilience to Extreme Weather and Climate Change

Resilience: The ability to prepare for changing conditions and withstand, respond to, and recover rapidly from disruptions.

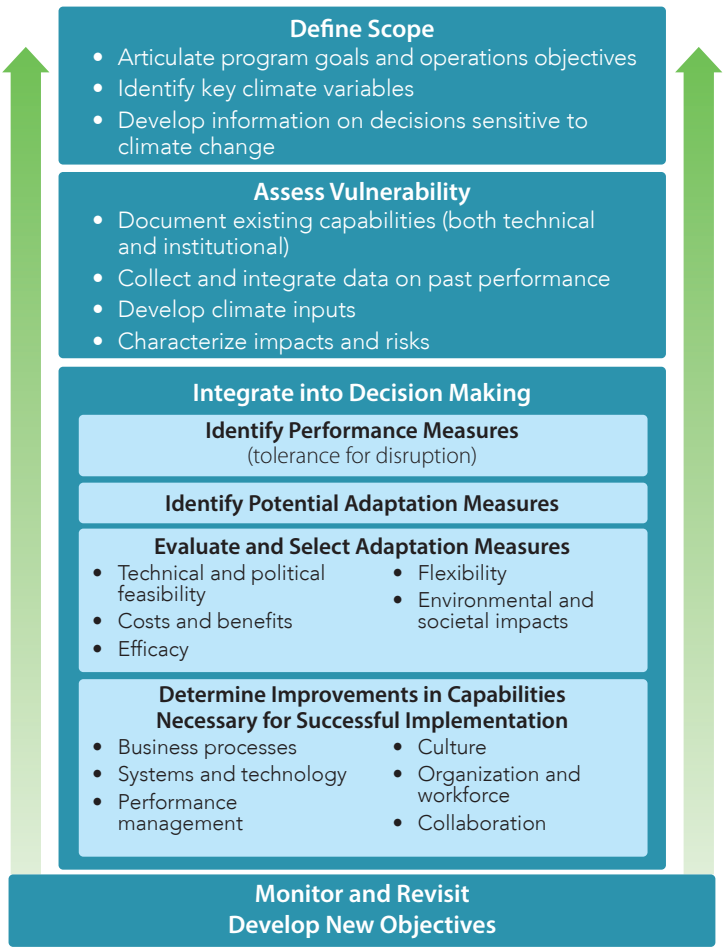
The ability of transportation agencies' to effectively manage, operate, and maintain a safe, reliable transportation system is being threatened by a changing climate. Extreme weather events are becoming more frequent and intense due to climate change, and long-term climatological trends are slowly but inexorably changing how transportation systems need to be planned, designed, operated, and maintained. A "new normal" is evolving and State departments of transportation (DOTs) are turning their focus toward building resilience.

Climate change will necessitate adjustments by DOT transportation systems management and operations (TSMO) and maintenance managers to ensure the resilience of activities such as traffic monitoring and management, providing traveler information, traffic incident management, and maintenance management.

Take Action to Increase Resilience

TSMO and maintenance functions at DOTs are often responsive to conditions as they arise. There are nevertheless some activities that, if done in advance, can enhance the resilience of the transportation system overall and with greater efficiency to the public agency than if actions had not been taken. Adapting TSMO and maintenance programs is largely about improving capability rather than a major technology development and deployment initiative. Many of the technology elements used to support safety, congestion mitigation, and traveler information objectives are already in place. To adapt to climate change, agencies need to consider how these existing capabilities that already help to improve operations and reliability need to evolve to meet the new and emerging requirements of a changing climate.

The framework shown at right provides an overview of how TSMO and maintenance managers can begin to take action through steps to: define the scope of adaptation efforts; assess vulnerabilities to inform the development of adaptation strategies; and integrate climate change into decision making. The checklist that follows provides further detail on these steps. Additional information, including additional steps, sub-steps, and details, are found in the Federal Highway Administration (FHWA) *Climate Change Adaptation Guide for Transportation Systems Management, Operations, and Maintenance.*



✓ Checklist for Technical Staff

Define Scope


Source: Fotolia

- ☐ Define TSMO or maintenance program goals and operations objectives that could be sensitive to climate change.
- ☐ Identify the extreme weather events and trends that could affect the agency's TSMO and maintenance programs.

Assess Vulnerability

- ☐ Document current capabilities (both technical and institutional).
- ☐ Review traffic incident reports, maintenance records, after-action reports, emergency reimbursement forms, and other sources to determine how extreme weather events have affected performance in the past.
- ☐ Interview staff across departments about extreme weather-related vulnerabilities (e.g., "what keeps you up at night?").
- ☐ Identify points and thresholds where extreme weather affects TSMO and maintenance decisions (e.g., establishing future workforce needs, weather response budgeting, setting operational objectives).
- ☐ Document how TSMO and maintenance practices relate to different weather thresholds (e.g., place sandbags when forecast calls for X amount of rain).
- ☐ Gather information on historic trends in relevant weather variables and/or how those variables may change in the future.
- ☐ Characterize extreme weather risks via data-driven or workshop-based qualitative or quantitative analysis.

Integrate into Decision-Making


Source: Fotolia

- ☐ Identify performance measures and targets (i.e., the acceptable level of operational performance if threat occurs).
- ☐ Identify potential adaptation strategies (selected examples provided below – see more in Tables 6 and 8 of the FHWA *Climate Change Adaptation Guide for Transportation Systems Management, Operations, and Maintenance*).

Policy-based strategy examples

- ☐ Review and update performance measures in light of extreme weather vulnerabilities.
- ☐ Establish work order codes for weather events or use other methods to improve tracking of labor, equipment, and materials costs over time.
- ☐ Develop a strategy for incorporating weather trends in budget-setting processes.
- ☐ Require after-action reports with clear recommendations for improvement following extreme events.
- ☐ Update emergency response plans to factor in potential for greater frequency of extreme weather events.
- ☐ Improve cross-training across staff (including across operations, maintenance, and emergency management).

- ☐ Establish regular coordination between on-the-ground staff and other departments to discuss vulnerabilities and inform investment decisions based on past performance.
- ☐ Establish transition plans for retiring staff to maintain institutional knowledge.
- ☐ Modify current design and procurement criteria to favor durable materials and designs.

Operational and maintenance strategy examples

- ☐ Establish stand-by contracts for extreme event response.
- ☐ Improve intra-agency coordination and information sharing about conditions, closures, resources, etc.
- ☐ Improve inter-agency coordination to promote establishment of resource-sharing agreements and information sharing about plans, initiatives, risks, and resources (e.g., include key stakeholders in routine communications to streamline process during emergency events).
- ☐ Invest in redundant communications systems and data servers.
- ☐ Expand both coverage and quality of fixed and mobile monitoring capabilities.
- ☐ Modify procurement specifications to ensure performance over a wider range of conditions.

Maintenance strategy examples

- ☐ Purchase equipment, factoring in likely future needs based on extreme weather events or climate changes (e.g., versatile equipment in Alabama to double as snow plows, mobile stockpiles of traffic control devices).
- ☐ Stockpile materials (e.g., culvert pipe, temporary bridge components, fuel) and equipment (e.g., generators, chain saws, traffic control devices) and stage them in strategic areas prior to events.
- ☐ Increase or change vegetation control practices to keep pace with climate changes (e.g., increase trimming frequency or plant more drought- or heat-tolerant species).
- ☐ Review and consider mitigating vulnerabilities when conducting scheduled maintenance activities.

Emergency management strategy examples

- ☐ Incorporate changes in extreme event frequency into emergency management planning, including anticipated staffing, training, and equipment needs.
- ☐ Establish stand-by contracts for extreme event response.
- ☐ Conduct tabletop exercises and use routine events to drill emergency management protocols.

Adaptive management strategy examples

- ☐ Develop a system to track weather-related trends and costs over time (e.g., number of potholes repaired, snow removal costs, number of emergency event triggers, labor hours devoted to weather preparation, response, and recovery), such as through designated "weather-related" charge codes.
- ☐ Use asset management systems to track relevant information to inform decision-making over time.
- ☐ Configure asset management or maintenance systems to issue alerts when vulnerable assets are due for maintenance, repair, or replacement.
- ☐ Develop and track performance metrics related to extreme weather (e.g., number/duration of weather-related road closures).
- ☐ Evaluate and select adaptation strategies based on factors such as technical and political feasibility, costs and benefits, efficacy, flexibility, and sustainability.
- ☐ Determine improvements in agency capabilities necessary for successful implementation of adaptation strategies (e.g., improvements in business processes, systems and technologies, performance management, culture, organization and workforce, and collaboration).

Monitor progress and revisit

- ☐ Establish a plan for monitoring and evaluating progress toward extreme weather resilience.
- ☐ Engage stakeholders needed to support monitoring and evaluation efforts.
- ☐ Monitor trends in extreme weather events and their impacts (e.g., frequency of particular events, weather-related costs and disruptions).
- ☐ Analyze data on weather trends and impacts to inform decision making about future strategies.
- ☐ Continually revisit TSMO, maintenance, and emergency programs in light of extreme weather and climate trends.

For More Information

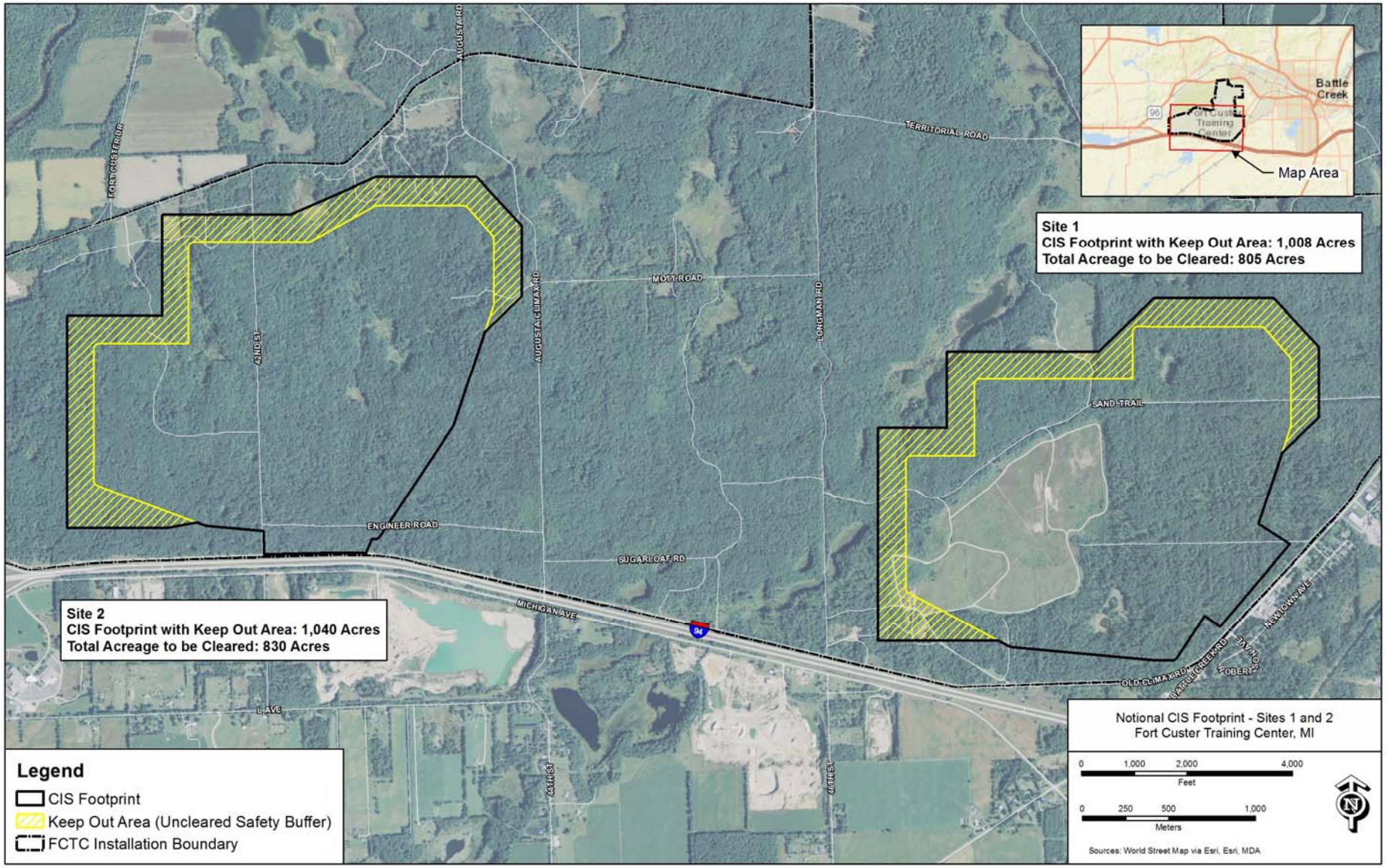
Additional information, including more detailed checklists, strategies, and "getting started" resources are available in the FHWA *Climate Change Adaptation Guide for Transportation Systems Management, Operations, and Maintenance* at http://www.ops.fhwa.dot.gov/publications/fhwahop15026/index.htm.

Source: Fotolia

Source: Fotolia


Source: Fotolia

Fort Custer Potential CIS Footprint



Fort Custer Socioeconomics

Construction (Sites 1 and 2)

- 400 – 600 workers onsite for up to 5 years
- Approximately $925K/year in potential sales tax revenue in Kalamazoo and Calhoun Counties (combined)
- Total value added in region: >$193M/yr
- Indirect jobs created: Approx. 2,008

Operation (Sites 1 and 2)

- 650 – 850 workers onsite full-time
- Approximately $1.4M/year sales tax revenue in Kalamazoo and Calhoun Counties (combined)
- Total value added in region: >$29M/year
- Indirect jobs created: Approx. 416

Impacts are largely positive for both sites
No mitigation proposed

Figure 3.3.12-2 Road Network – FCTC Site 1

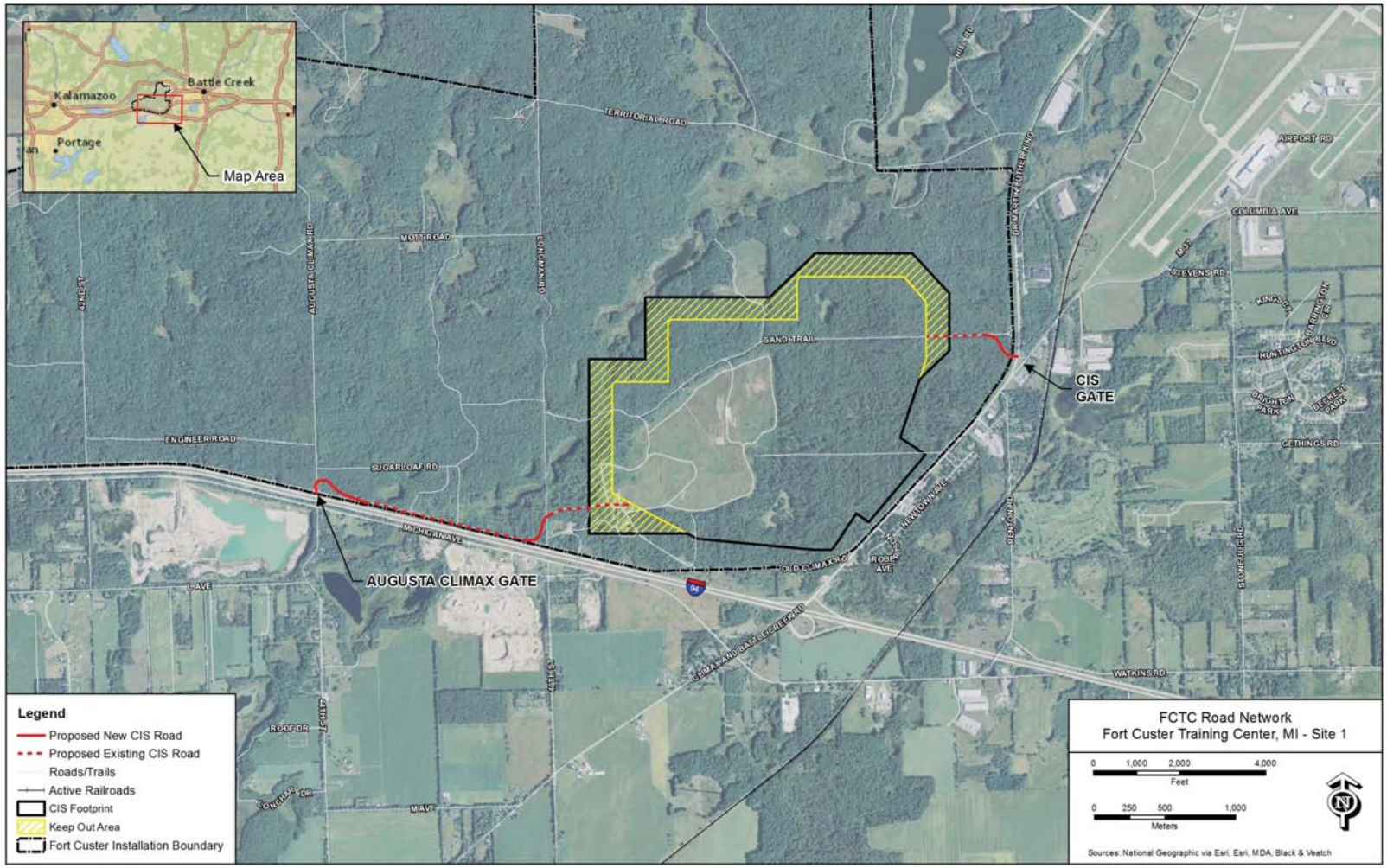
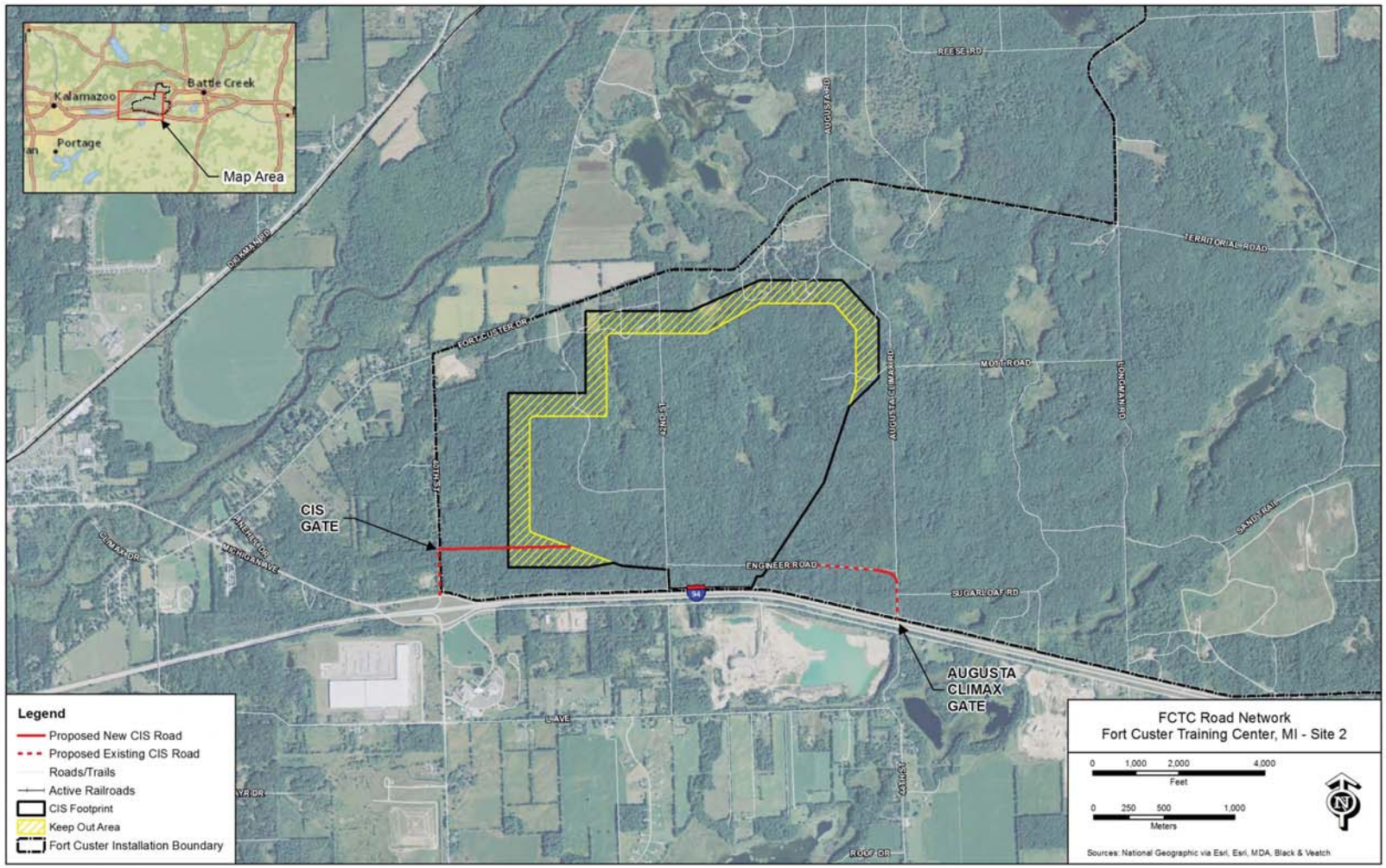


Figure 3.3.12-3 Road Network – FCTC Site 2



BCATS

BCATS