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SEWRPC Planning Report No. 55
VISION 2050: A REGIONAL LAND USE AND
TRANSPORTATION SYSTEM PLAN FOR SOUTHEASTERN WISCONSIN

Volume I, Chapter IV

INVENTORY OF TRANSPORTATION FACILITIES AND SERVICES

(Tables, figures, and maps are at end of Chapter)

INTRODUCTION

This chapter describes the existing regional transportation system of Southeastern Wisconsin in 2011, the plan base year, including streets and highways, public transit, intermodal parking facilities, bicycle and pedestrian facilities, and transportation system operations and management systems. The supply and use of the existing regional transportation system is presented, along with trends in transportation system supply and use over the past 50 years, comparing the current plan base year data to that of previous generation plan base years of 2001, 1991, 1972, and 1963.

STREETS AND HIGHWAYS

Classification of Streets and Highways

The street and highway system must serve several important functions, including providing for the movement of through vehicular traffic; providing for access of vehicular traffic to abutting land uses; providing for the movement of pedestrian and bicycle traffic; and serving as the location for utilities and stormwater drainage facilities. Two of these functions—traffic movement and land access—are basically incompatible. As a result, street and highway system design is based upon a functional grouping or classification of streets and highways, based upon primary function served. Three functional classifications of streets and highways are recognized: 1) arterial streets; 2) collector streets; and 3) land access streets.

Arterial streets are defined as streets and highways which are principally intended to provide a high degree of travel mobility, serving the through movement of traffic and providing transportation service between major subareas of an

urban area or through the area. Together, the arterial streets should form an integrated, areawide system. Access to abutting property may be a secondary function of some types of arterial streets and highways, but it should always be subordinate to the primary function of traffic movement.

Collector streets are defined as streets and highways which are intended to serve primarily as connections between the arterial system and the land access street system. In addition to collecting traffic from, and distributing traffic to, the land access streets, the collector streets usually provide the same principal function as land access streets, that of providing access to abutting property. As a result, collector and land access streets are sometimes combined and referred to as nonarterial, or local, streets.

Land access streets are defined as streets and highways which are intended to serve primarily as a means of access to abutting properties, principally serving the residential areas of a community.

Arterial streets generally account for about 30 percent of the mileage of the total street and highway system, and carry about 90 percent of the total average weekday traffic in the Region. Arterial streets are typically spaced at about one-half mile intervals in high-density areas, one-mile intervals in medium-density areas, two-mile intervals in low-density areas, and intervals of more than two miles in rural areas. To serve travel effectively, and to make efficient use of public resources, the arterial street system should be planned as an integrated system, irrespective of jurisdictional boundaries and jurisdictional responsibilities for streets and highways, with consideration of existing and future traffic volumes, and with traffic capacities fitted to serve those traffic volumes. The Commission's regional transportation planning addresses only the arterial street and highway element of the total street and highway system. Arterial streets and highways are the only element of the total street and highway system for which existing and future traffic volume, and the need for additional traffic lanes or for a new arterial facility to relieve traffic, is a consideration in facility and system design. Working with local governments and the Wisconsin Department of Transportation, the Commission has defined the arterial street system of the Region for over 40 years. The definition of arterials has been determined by an evaluation of four major factors: 1) traffic characteristics—traffic volume and type, operating speeds, and average trip length; 2) physical characteristics—horizontal and vertical alignment, pavement width, and pavement type; 3) system integration—system continuity and facility spacing; and 4) land use service—the areawide significance of the land use activities served.

Collector and land access streets should form a street system within neighborhoods, with the boundaries of those neighborhoods determined by arterial streets, or other built or natural boundaries. Desirably, collector and land access streets should not extend directly through a neighborhood, or from neighborhood to neighborhood. Otherwise, traffic may begin to occur on the collector and land access streets, particularly if the arterial street system is experiencing

traffic congestion. Neighborhood residents experience traffic concerns at relatively low levels of traffic volume, specifically, 1,500 to 2,500 vehicles per average weekday, or about one-ninth to one-sixth of the potential traffic-carrying design capacity of a two-lane urban arterial street. The collector and land access street system within a neighborhood should be designed to discourage through traffic from traveling within the neighborhood, but should also be designed to permit reasonably direct travel—by personal vehicle, bicycle, and walking—within the neighborhood by its residents to neighborhood parks, neighborhood schools, neighborhood commercial centers, and as well to all parts of the neighborhood, and to each arterial street along the neighborhood boundary. Otherwise, traffic internal to a neighborhood may be made almost exclusively by automobile, and unnecessarily over the arterials which form the boundaries of the neighborhood.

Arterial Street and Highway System

The arterial street and highway system of the Region may be further described and classified in a number of different ways. The arterial street system may be divided into freeway facilities and non-freeway or standard arterial streets and highways. A freeway is a special type of arterial—the highest type of arterial—providing the highest degree of mobility and the most limited degree of access. A freeway is defined as a divided arterial highway with full control of access and grade separations at all interchanges. Standard arterial streets and highways are arterials with at-grade intersections and may as well provide direct access to abutting property through driveways. Table IV-1 shows the mileage of arterials in the Region in 2011, and as well for previous regional plan base years of 1963, 1972, 1991, and 2001. The existing and historic mileage of collector and land access streets and of the total street and highway system within the Region are also shown. Over the past nearly 50 years, the mileage of arterials in the Region has increased from 3,188 miles in 1963 to 3,323 miles in 2011, an increase of 135 miles, or 4.2 percent. The lane-miles of arterials have increased over that same period by about 15 percent. During this same time period, vehicle-miles of travel on an average weekday on the arterial street and highway system has increased by over 200 percent.

Streets and highways may also be classified according to jurisdiction. Jurisdictional classification establishes which level of government—State, county, or local—has responsibility for the design, construction, maintenance, and operation of each segment of the total street and highway system. The existing jurisdictional highway subsystems are the result of a long evolutionary process influenced by many complex political, administrative, financial, and engineering considerations and constraints. Over the last 45 years, the Commission has recommended changes in the jurisdictional classification of the arterial street and highway system so that the arterial street system is grouped into logical subsystems of jurisdictional responsibility with the appropriate streets and highways under the jurisdiction of each level of government—State, county, and local. The county jurisdictional highway system plans prepared by the Commission are based upon criteria established by the Commission in cooperation with Federal, State, and local units of government and include: 1) trip service—the average trip length on each segment during an average weekday; 2)

land use service—the areawide significance of land use activities to be connected and served; and 3) facility operational characteristics and system continuity, including facility spacing, traffic volume, traffic mobility, and land access. State trunk highways should be those facilities intended to provide the highest level of mobility, to serve trips with the longest length, to provide minimal land access, to serve land uses of regional and statewide significance, and to have interregional continuity. State trunk highways are those arterial facilities which would principally serve travel through a county, and travel between counties. County trunk highways should be those arterial facilities intended to provide an intermediate level of traffic mobility and land access, to serve land uses of countywide significance, and to have intercommunity continuity. County trunk highways are those arterial facilities which would principally serve travel between the various municipalities of a county. Local or municipal arterial streets are intended to be those facilities that provide the lowest level of arterial traffic mobility and the highest degree of arterial land access, and which have intracommunity continuity and serve principally arterial travel within a municipality. Table IV-2 presents the distribution of existing arterial highway mileage within the Region in 2010 by State, county, and local jurisdictional classification.

Arterial Street and Highway System Traffic Volume

The average weekday traffic volume on each segment of the arterial street and highway system within the Region in 2011 is graphically displayed on Map IV-1, and compared to arterial street and traffic volume patterns of 1963, 1972, 1991, 2001 and 2011. The estimate of average weekday traffic volume is based upon traffic volume counting conducted principally by the Wisconsin Department of Transportation, supplemented by certain county and municipal governments, particularly the City of Milwaukee. The effect of the completion of the freeway system between 1963 and 1972 is apparent in the significant reduction of traffic volume on the standard arterials in Milwaukee County.

The magnitude of arterial street and highway traffic volume can also be measured in terms of total arterial system average weekday vehicle-miles of travel, which is the average weekday traffic volume on each segment of arterial highway multiplied by the length in miles of each segment of arterial highway. As shown in Table IV-3, about 40.9 million vehicle-miles of travel occurred on the arterial street and highway system within the Region on an average weekday in 2011. Table IV-3 also compares the arterial vehicle-miles of travel within each County and the Region for the years 1963, 1972, 1991, 2001, 2005, and 2011. Between 2005 and 2011, the arterial vehicle-miles of travel within the Region on an average weekday decreased from 42.4 million vehicle-miles of travel to 40.9 million vehicle-miles of travel, a decrease of 3.5 percent, or 0.6 percent annually. Between 2001 and 2005, the arterial vehicle-miles of travel within the Region on an average weekday increased from 39.7 million vehicle-miles of travel to 42.4 million vehicle-miles of travel, an increase of 7 percent, or 1.7 percent annually. Overall, the arterial vehicle-miles of travel within the Region on an average weekday increased by 3 percent, or 0.3 percent annually, between 2001 and 2011. Between 1991 and 2001, the arterial vehicle-miles of travel within the Region on an average weekday increased from 33.1

million vehicle-miles of travel to 39.7 million vehicle-miles of travel, an increase of 20 percent, or 1.8 percent annually. Between 1972 and 1991, arterial vehicle-miles of travel within the Region on an average weekday increased from 20.1 million vehicle-miles of travel to 33.1 million vehicle-miles of travel, an increase of approximately 64 percent, or an annual increase of 2.6 percent. Between 1963 and 1972, the vehicles-miles of travel in the Region on an average weekday increased from 13.1 million to 20.1 million vehicle-miles of travel, an increase of 53 percent, or an annual increase of 4.8 percent. The annual rate of growth of average weekday vehicle-miles of travel for the Region and for each county is shown on Table IV-4.

Figure IV-1 compares the growth in vehicle-miles of travel in the Region from 1963 to 2011, with changes in travel characteristics over the same period, and with changes in the Region's population and economy. Contributing to the growth in vehicle-miles of travel was a growth in person-trip making due to increases in households and jobs, a decline in vehicle occupancy due to growth in vehicle availability and a change in population lifestyles including household size, and an increase in vehicle trip length. Per mile, freeways in the seven county Southeastern Wisconsin Region carried substantially more traffic than arterials and nonarterials. In 2011, freeways in Southeastern Wisconsin carried 57,400 vehicle-miles of traffic per mile on an average weekday, as compared to 8,300 vehicle-miles of traffic per mile on standard surface arterials, and 500 vehicle-miles of traffic per mile on collector and land access streets. Within Milwaukee County in 2011, freeways carried an average 102,900 vehicle-miles of traffic per mile on an average weekday.

The freeway system in Southeastern Wisconsin carries about 34 percent of all travel on an average weekday, and about 38 percent of all arterial street and highway system travel. The arterial street and highway system carries about 90 percent of all street and highway traffic, and in total, streets and highways carry about 90 to 95 percent of all travel occurring within Southeastern Wisconsin.

Arterial Street System Traffic Congestion

The traffic congestion on the arterial street and highway system can be assessed by comparing the average weekday traffic volume on each segment of arterial street and highway to its design capacity. Table IV-5 presents the estimated design capacity of freeway and surface arterial facilities, and the estimated impacts on traffic—estimated average speed and typical operating conditions—as those design capacities are exceeded.

Table IV-6 and Map IV-2 present the existing level of traffic congestion experienced in the year 2011 on the arterial street system. Table IV-7, Figure IV-2, and Map IV-3 present more detail on existing year 2011 congestion on the freeway system, and historic freeway congestion, including the number of hours of congestion experienced on congested freeway segments on an average weekday.

Table IV-8 and Figure IV-3 compare the estimated change in traffic congestion on the arterial street and highway system over the years 1972, 1991, 2001, 2005, and 2011. The miles of arterials experiencing traffic congestion declined from 217 miles in 1963 to 160 miles in 1972, even though traffic grew during that period by over 50 percent. The decline in traffic congestion may be attributed to the completion of the freeway system during that period. Between 1972 and 1991, the miles of arterials experiencing traffic congestion is estimated to have increased from 160 miles to 273 miles, as traffic grew during that period by nearly 65 percent, as regional employment and households increased by about 30 percent, and vehicle occupancy and carpooling significantly declined. The decline in vehicle occupancy from an average of 1.39 persons per vehicle to 1.22 persons per vehicle alone is estimated to have resulted in nearly a 15 percent increase in vehicle traffic. As well, limited transportation system improvement and expansion was completed between 1972 and 1991 in southeastern Wisconsin. The miles of arterials carrying traffic volumes exceeding their design capacity and experiencing traffic congestion is estimated to have increased modestly from 273 miles in 1991 to 290 miles in 2001, and to 310 miles in 2005. From 2005 to 2011, the miles of arterials carrying traffic volumes exceeding their design capacity and experiencing traffic congestion have decreased from 310 miles to 274 miles.. From 1991 to 2001, traffic is estimated to have increased by about 21 percent, and from 2001 to 2011 by about 3 percent. The modest increase in traffic congestion from 1991 to 2011 may be attributed to the implementation of an extensive number of significant surface arterial street and highway widening and new construction projects between 1991 and 2011. The estimated modest increase in congestion between 1991 and 2011 is not uniform systemwide, as the extent and severity of congestion on the Milwaukee area freeway system is estimated to have substantially increased between 1991 and 2011 (see Table IV-7).

While the extent of congestion on the Milwaukee area freeway system is estimated to have increased between 2001 and 2011, some segments of the freeway system have experienced a decrease in congestion. This decrease in congestion is likely attributed to the requisite maintenance and reconstruction of the freeway system, and attendant diversion of traffic. Most notably in 2011, traffic volumes on IH 894 between the Hale Interchange and Zoo Interchange, IH 43/894 between the Hale Interchange and Mitchell Interchange, IH 43/94 between the Mitchell Interchange and Zoo Interchange, and USH 45 south of W. Hampton Avenue were likely impacted by the necessary lane closures attendant to the resurfacing of IH 94 generally between STH 16 and the Stadium Interchange and the reconstruction and reconfiguration of the Mitchell Interchange in Milwaukee County. It is anticipated that traffic volume estimates on various segments of the Milwaukee area freeway system will continue to be impacted as the Milwaukee area freeway system is reconstructed segment by segment.

Congestion on Designated Truck Routes and National Highway System

Table IV-9 and Map IV-4 present the existing level of traffic congestion experienced on designated truck routes and the National Highway System in the year 2011 and compared to the congestion level experience in 2001. The State of

Wisconsin maintains a truck operations map that identifies streets and highways for operation of vehicles and combination of vehicles for which the overall lengths cannot be limited. In addition, the truck operators map identifies restricted truck routes where the overall lengths are limited. The National Highway System includes highways important to the nation's economy, defense, and mobility. In 2012, the National Highway System was expanded to include interstate highways, multi-modal connections, and roadways functionally classified as a principal arterial previously not on the National Highway System. The coverage of these two systems illustrates the ability of freight to move throughout the region. The miles of designated truck routes and the expanded National Highway System carrying traffic volumes exceeding their design capacity decreased from 249 miles in 2001 to 243 miles in 2011, or by about 2.4 percent. Reductions in congestion on these roadways favorably affect the travel time of freight movement.

Traffic Safety—Vehicular Crashes

Number of Vehicular Crashes

Historic vehicular crash data over a 19-year period—1994-2012—were collated from data maintained for WisDOT by the Wisconsin Traffic Operations and Safety Laboratory at the University of Wisconsin. Figure IV-4 shows that there has been a general decline in the number and severity of vehicular crashes over this time period. Vehicular crashes in the Region totaled about 35,600 in 2012, representing a nearly 27 percent decline in vehicular crashes since 1994. Crashes involving an injury or a fatality totaled about 11,500 crashes in 2012, representing about one-third of all crashes. Over the period 1994-2012, crashes involving an injury or a fatality have decreased by about 35 percent. Property damage only crashes decreased by 24 percent over the 19-year period to about 24,200 crashes in 2012, representing the remaining two-thirds of all crashes. The overall decrease in vehicular crashes since 1994 is particularly significant given the increase in annual vehicle mile traveled over that same period of about 17 percent.

There were 140 vehicular crashes in the Region in 2012 that resulted in 156 fatalities. As shown in Figure IV-5, roadway crash fatalities over the period 1994-2005 dropped from a peak of 190 in 2005 to a low of 130 fatalities in 2009, and then rose again by about 20 percent over the period 2009-2012. Figure IV-6 presents selected characteristic of vehicle-related fatalities in the Region during 2012. Alcohol was cited as a contributing factor in about 40 percent of all fatalities.

In 2012 there were about 830 vehicle crashes in the Region that resulted in at least one serious injury. While serious injury vehicular crashes increased by about 3 percent since 2011 as shown in Figure IV-7, such injury crashes have declined significantly—about 62 percent—since 1994.

Vehicular Crash Rate

Traffic safety problems are typically identified by reviewing a five-year history of traffic crash records and determining the crash rate—crashes per 100 million vehicle-miles of travel—on a roadway segment. Using the traffic crash history of the freeway and state trunk highway surface arterial systems over a recent five-year period of 2008 to 2012, the traffic crash rate for each segment of the regional freeway system and state trunk highway surface arterial system was estimated for the five-year period. The estimated traffic crash rate, expressed as the number of crashes per 100 million vehicle-miles for each freeway segment, was compared to both the regional freeway system average crash rates and the average crash rate for freeways within the county within which the freeway segment was located.

The average freeway and state trunk highway surface arterial crash rates within southeastern Wisconsin and within each of the seven counties of southeastern Wisconsin are shown on Table IV-10. Only the Milwaukee County freeway crash rate, 120.2 crashes per 100 million vehicle-miles, is greater than the Region average freeway crash rate of 72.5 crashes per 100 million vehicle-miles. Only Milwaukee County state trunk highway surface arterials, with 372.8 crashes per 100 million vehicle-miles, exceed the Region average surface arterial crash rate of 265.0 crashes per 100 million vehicle-miles.

Map IV-5 displays those freeway and state trunk highway surface arterial segments within southeastern Wisconsin with average traffic crash rates which exceed the regional average freeway crash rate. Within each county there are freeway and state trunk highway surface arterial segments which exceed the regional average crash rate.

Maps IV-6 through IV-12 display, for each of the seven counties, those freeway and state trunk highway surface arterial segments which exceed the average crash rate for freeways within each county.

Bicycle and Pedestrian Crashes

Figure IV-8 shows the total vehicular crashes involving either a bicycle or a pedestrian over the 19-year time period of 1994 through 2012. Following about a 44 percent decline in the number of reported vehicular crashes involving a bicycle from 1994 to a low of 391 crashes in 2008, the number of such crashes has increased since 2008 by about 8 percent to 424 crashes in 2012. While the number of reported vehicular crashes involving pedestrians increased to 723 crashes in 2012 from the 19-year low of 653 crashes in 2011, such crashes have declined by about 37 percent from 1994 through 2012.

While the number of reported vehicular crashes involving either a bicycle or a pedestrian accounted for only three percent of all vehicular crashes in the Region in 2012, they accounted for 17 percent of vehicular crashes resulting in a fatality (as shown on Figure IV-6) and 18 percent of vehicular crashes resulting in a serious injury. Map IV-13 shows

the location of the reported vehicular crashes involving a bicycle or a pedestrian that resulted in either a fatality or serious injury. The number of reported vehicular crashes involving a bicycle that resulted in either a fatality or a serious injury declined between 1994 and 2000 by 56 percent. As shown on Figure IV-9, following an increase between 2000 and 2002 of about 33 percent, such crashes have only slightly decreased—35 percent—between 2003 and 2012 to 44 crashes. Four of these 44 crashes reported in 2012 resulted in a fatality, consistent with the 19-year annual average of four vehicular crashes involving a bicycle that resulted in a fatality. Figure IV-9 also shows that the number of reported vehicular crashes involving a pedestrian that resulted in either a fatality or a serious injury decreased between 1994 and 2003 by 59 percent. Except for an increase in 2006, the number has remained steady between 2003 and 2012, with 134 such crashes reported in 2012. Of these 134 crashes, 23 crashes resulted in a fatality, which is slightly above the 19-year annual average of 22 vehicular crashes involving a pedestrian that resulted in a fatality each year.

Transit Crashes and Passenger Injuries

Table IV-11 provides a comparison of the number and rate of transit crashes resulting in property damage and the number of passenger injuries for the six-year period 2006-2011. The rate of transit crashes has decreased from 261 crashes per 100 million vehicle revenue miles in 2006 to 179 crashes per 100 million vehicle revenue miles in 2011, or a decrease of about 31 percent over that time period. Following an increase in the rate of passenger injuries from 564 passenger injuries per 100 million vehicle revenue miles in 2006 to 711 passenger injuries per 100 million vehicle revenue miles in 2007, the rate of passenger injuries decreased in each of the following years to 140 passenger injuries per 100 million vehicle revenue miles in 2011.

PUBLIC TRANSIT

This section of the chapter describes the existing provision and utilization of public transit within the Region. Public transit may be defined as the transportation of people by publicly operated vehicles between trip origins and destinations. A classification of all public transportation provided in the Region is shown in Figure IV-10. Public transportation may be divided into service provided for the general public and service provided to special population groups. Examples of special group public transportation include yellow school bus service operated by area school districts, and fixed-route bus and paratransit van service provided by counties or municipalities for the elderly and disabled. Service to special population groups is considered only implicitly in the planning process, with the exception of paratransit operated within urban fixed-route transit service areas to meet the transportation needs of those persons who because of mental or physical disability are unable to use conventional transit service. Such service is required to be provided within fixed-route urban transit service areas under the Federal Americans with Disabilities Act of 1990, and the costs of such service are explicitly considered by the Commission in regional transportation planning.

As shown in Figure IV-10, public transit service to the general public may further be divided into three categories: intercity, urban, and rural. Intercity or interregional public transportation provides service across regional boundaries and includes Amtrak railway passenger service, interregional bus service, and commercial air travel. Rural—and small urban community—public transportation provides service in and between small urban communities and rural areas, and may provide connections to urban areas. Urban public transportation, commonly referred to as public transit, provides service within and between the large urban areas of the Region. Public transit is essential in any metropolitan area to meet the travel needs of persons unable to use personal automobile transportation; to provide an alternative mode of travel, particularly in heavily traveled corridors within and between urban areas and in densely developed urban communities and activity centers; and to provide choice in transportation modes as an enhancement of quality of life and to support and enhance the Region's economy.

The public transit principally addressed in the Commission's regional transportation system planning is urban public transit—the public transit which serves intraregional travel demand, which is open to serving the general public, and which operates within and between the Region's large urban areas. This includes the urban fixed-route bus transit systems operated by Ozaukee, Milwaukee, Washington, and Waukesha Counties and the Cities of Kenosha, Racine, and Waukesha. The Commission's regional transportation planning also addresses rural and small urban community public transit—public transit which also serves intraregional travel demand, is open to the general public, and operates within the Region's small urban communities and rural areas. This includes fixed-route service in western Kenosha County and nonfixed-route shared-ride taxi systems operated by Ozaukee and Washington Counties, and the Cities of Hartford, Whitewater, and West Bend.[1] Interregional public transit service is considered by the Wisconsin Department of Transportation in statewide transportation planning. Regional transportation planning incorporates this statewide planning, and recognizes that terminal and intermodal facilities, such as airports and intercity bus and railway stations, may comprise major trip generators affecting internal travel demand and patterns. Interregional commercial air travel is explicitly considered by the Commission under a separate comprehensive regional airport system planning program. Interregional public transportation travel has historically represented about 5 to 15 percent of all public transportation travel on an average weekday, about 5 percent of all interregional travel on an average weekday, and less than 0.5 percent of all person travel within the Region on an average weekday.

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[1]*Fixed-route public transportation operates relatively large vehicles over predetermined routes on regular schedules between or along concentrations of related trip origins and destinations. Nonfixed-route public transportation provides service on a demand-responsive or as-requested basis, and is characterized by the flexible routing and scheduling of relatively small vehicles to provide shared-occupancy door-to-door transportation. Such nonfixed-route demand-responsive transit service is also referred to as paratransit service.*

Urban public transit may be further divided into rapid, express, and local levels of service. Rapid transit is intended to facilitate relatively fast and convenient transportation along heavily traveled corridors and between major activity centers and high- and medium-density urban centers and communities within the Region. Rapid transit has relatively high average operating speeds and relatively low accessibility, with station spacing one to three miles or more apart. Rapid transit service can be provided by commuter, heavy, or light rail operating over exclusive, grade-separated rights-of-way or by motor buses operating over exclusive, grade-separated busways. Rapid transit can also be provided by motor buses operating in mixed traffic on freeways and by light rail operating over exclusive, though not fully grade-separated, rights-of-way.

Express transit service is provided over arterial streets and highways or on exclusive rights-of-way with stops generally one-quarter to two miles apart at intersecting transit routes, intersecting arterial streets, and major traffic generators. Express transit serves trips of moderate length and can be provided by motor bus, guided electric bus, or by light rail operating in mixed traffic on shared rights-of-way, in reserved street lanes, or on exclusive rights-of-way. Express transit service provides a greater degree of accessibility at somewhat slower operating speeds than rapid transit and may provide "feeder" service to the rapid transit system.

Local transit service is characterized by a high degree of accessibility and low operating speeds. Local service is provided over arterial and collector streets with stops generally one-eighth to one-quarter miles apart. Such service can be provided by motor bus, electric trolleybus, or streetcar. Local transit service can also be provided on a demand-responsive basis, such as with automobiles or vans operating as a shared-ride taxi.

Urban Public Transit

Rapid Transit

Rapid transit service within the Region in 2012 consisted of 19 bus routes operating primarily over the freeway system with extensions over major arterial highways to serve communities or major trip generators located off the freeway system. These routes principally served and connected the Milwaukee urban area with extensions beyond the urban areas in Ozaukee, Washington, and Waukesha Counties. Six "freeway flyer" bus routes were provided by Milwaukee County and operated by the Milwaukee County Transit System. Four UBUS routes are operated over the freeway system and arterial streets between outlying areas and park-ride lots to and from the University of Wisconsin-Milwaukee (UWM) campus, Concordia University, Cardinal Stritch University, MATC North Campus, MATC Downtown Campus, and MATC South Campus. The UBUS routes operate on only weekdays and only during the fall and spring semesters at the colleges and universities. Five routes were provided by Waukesha County. One route between the Village of Menomonee Falls and the central business district (CBD) of Milwaukee was operated for Waukesha County by the Milwaukee County Transit System. The other four routes between the City of Waukesha,

City of Oconomowoc, and the Village of Mukwonago and the Milwaukee CBD were operated for Waukesha County by Wisconsin Coach Lines, Inc., a private transit operator (see Map IV-14 and Map IV-15). Selected bus trips on the Waukesha-Milwaukee route were extended to serve the University of Wisconsin-Milwaukee. The City of Racine sponsored the Kenosha-Racine-Milwaukee commuter bus, also operated by Wisconsin Coach Lines, between downtown Kenosha, downtown Racine, and the Milwaukee CBD. Ozaukee County provided one route between the City of Port Washington and central Milwaukee County, including the Milwaukee CBD, operated by the Milwaukee County Transit System. Ozaukee County also provided connecting shared-ride services as an extension of their rapid bus route to serve major employment centers. Washington County provided two routes between the City of West Bend and central Milwaukee County, including the Milwaukee CBD, Froedtert Hospital, and the Veterans Administration Medical Center. These routes were operated under contract by Riteway Bus Service, Inc.

During 2012, rapid transit service was operated primarily during weekday peak periods from 6:00 a.m. to 8:30 a.m. and from 3:30 p.m. to 6:30 p.m. Rapid service during weekday off-peak periods was limited to that provided only over selected routes in Milwaukee County serving the University of Wisconsin-Milwaukee (UWM), on the Waukesha County route operated between Waukesha and Milwaukee, on the Kenosha-Racine-Milwaukee bus, and on the Washington County route operated between West Bend and the Milwaukee CBD. On weekends, service was provided on the Waukesha-Milwaukee route and on the Kenosha-Racine-Milwaukee bus. During weekday peak periods, headways on the rapid transit services ranged from 12 to 30 minutes on the routes operated within Milwaukee County and from 15 to 60 minutes on the routes serving Kenosha, Ozaukee, Racine, Washington, and Waukesha Counties. Headways were generally hourly on the service operated during weekday midday and evening periods, and at least two to three hours on the Waukesha-Milwaukee service provided on weekends. The adult cash fare for rapid transit service within Milwaukee County was $3.25, while the adult fares charged between points in the nearby counties and Milwaukee County ranged from $3.25 to $4.50.

Express Transit

In 2012, the Milwaukee County Transit System began operating three express routes using Federal Congestion Mitigation and Air Quality (CMAQ) funding. Two of these routes served downtown Milwaukee and the third served the Capitol Avenue corridor in north Milwaukee. Express service was also provided to UWM, Mitchell Airport, Bayshore Mall, and the Veterans Administration Center. These routes provided service from 4:30 a.m. to 2:00 a.m. seven days a week, with 10-30 minute headways during the week and 25-45 minute headways on weekends. The adult cash fare for these routes was $2.25.

Local Transit: Fixed-Route

Fixed-route local public transit service was provided in 2012 within the Kenosha, Milwaukee, and Racine urban areas. Local transit in the Kenosha urban area was provided by Kenosha Area Transit and Western Kenosha County Transit. Local transit in the Milwaukee urban area was provided by Milwaukee County Transit System, Waukesha Metro Transit, and Waukesha County Transit. Local transit in the Racine urban area was provided by the Racine Belle Urban System.

Kenosha Area Transit

In 2012, Kenosha Area Transit operated service over 20 fixed routes. The City system included six regular bus routes, radial in design and emanating from downtown Kenosha, with direct, nontransfer service from the downtown area to all portions of the City and its immediate environs, including the University of Wisconsin-Parkside (see Map IV-14). One other bus route provided local transit service to major commercial, recreational, and employment centers which have developed west of Green Bay Road (STH 31) outside the regular Kenosha local transit service area. The system also included additional school day bus routes in the morning and afternoon to serve Kenosha secondary schools and an electric streetcar line in downtown Kenosha which connected the central transfer terminal for the bus routes, the Metra commuter rail station, the Kenosha central business district, and the Harborpark development. In 2012, the bus system provided service on most routes from 6:00 a.m. to 7:30 p.m., Monday through Friday and 6:00 a.m. to 5:00 p.m. on Saturday, with 30- to 60-minute headways during weekday peak-periods and 60-minute headways during weekday off-peak periods and on Saturday. Service was provided on the streetcar line with 15 minute headways from 11:00 a.m. to 6:30 p.m. on weekdays and from 10:00 a.m. to 5:30 p.m. on Saturdays, with limited hours from January to March. The adult cash fares charged by the Kenosha transit system were $1.50 per trip for bus service and $1.00 per trip for the streetcar line.

Western Kenosha County Transit

In 2012, Western Kenosha County Transit operated three fixed routes serving communities in rural western Kenosha County, with additional service provided to the City of Lake Geneva in Walworth County, the City of Kenosha and the Village of Antioch, Illinois. Service to the Village of Antioch included connections to Metra commuter trains to Chicago. The adult cash fare charged by Western Kenosha County Transit was $2 per one way trip.

Racine Belle Urban System

In 2012 the City of Racine Belle Urban System operated local service over 10 fixed routes, including nine regular routes and one school day route to serve Racine secondary schools. As shown on Map IV-14, eight of the nine regular fixed routes were radial in design, emanating from the Racine Metro Transit Center, and provided service to all portions of the City and to its immediate environs. The ninth regular route acted as an extension of one of the fixed

routes serving downtown and the Metro Transit Center. In 2012, the system provided service from 5:30 a.m. to 10:00 p.m. on weekdays, 5:30 a.m. to 6:30 p.m. on Saturdays, and from 9:30 a.m. to 6:30 p.m. on Sundays. Headways on the bus routes were between 30 and 60 minutes on weekdays and were 60 minutes on Saturdays and Sundays. The adult cash fares charged by the City of Racine were $2.00 per trip for local bus service.

Racine County Link

From June of 2012 through January of 2013, Racine County operated a cross-county shuttle with Federal Section 5317 New Freedom funding called the Racine County Link. The service was open to the general public and was designed to serve cross-county trips between the City of Racine, the Village of Union Grove, and the Burlington/Rochester areas. Racine County eliminated the service in January 2013 because of its low ridership.

Milwaukee County Transit System

As shown on Map IV-15, the Milwaukee County Transit System (MCTS) provided local transit service in the Milwaukee area in 2012 over 44 fixed routes. Of these local routes, 11 were radial routes serving downtown Milwaukee; 21 were crosstown or feeder routes not serving downtown Milwaukee; two were shuttle routes providing connections from other routes to major concentrations of jobs in industrial parks and commercial development in the outlying portions of the County; and 10 were school day routes principally designed to serve secondary schools in Milwaukee County. The system provided local bus service seven days a week, typically from 5:00 a.m. to 1:00 a.m. at an adult cash fare of $2.25 per trip. On most routes serving central Milwaukee County, weekday headways were between 10 and 20 minutes during peak periods and between 15 and 30 minutes during off-peak periods. Headways of between 15 and 60 minutes were operated on the routes serving the outer portions of the County on weekdays and on most routes on weekends.

Waukesha Metro Transit

Waukesha Metro Transit provided service over ten fixed radial routes in 2012. The routes began in downtown Waukesha and provided direct nontransfer service from the downtown to all portions of the City and its immediate environs. In addition, one route operating twice a day each weekday provides service from downtown Waukesha to the Easter Seals Training Center. As shown on Map IV-15, two of the routes served traffic generators outside of the City: the Waukesha County Technical College in the Village of Pewaukee, the Goerke's Corners public transit station in the Town of Brookfield, and the commercial district along Bluemound Road in the Town and City of Brookfield, including Brookfield Square Mall. In 2011, the system provided service from 6:00 a.m. to 10:30 p.m. on weekdays, from 8:00 a.m. to 10:00 p.m. on Saturdays, and from 9:00 a.m. to 7:00 p.m. on Sundays. Headways on the routes ranged from 30 to 60 minutes. The adult cash fare was $2.00 per trip for the local bus service provided by the City of Waukesha.

In 2012, the Waukesha County transit system provided local bus service over one route operated for Waukesha County by the Milwaukee County Transit System. This route provided service seven days a week from Brookfield Square Mall east along Bluemound Road into Milwaukee County as an extension of MCTS Route 10. Headway on this route ranges from 9 to 30 minutes during weekday peak periods and from 20 to 35 minutes during all other times of operation. The adult cash fare charged on this route was $2.25 per trip.

Rural and Small Urban Community Transit: Demand-Responsive

Demand-responsive rural public transit in the form of publicly operated shared-ride taxicab service was also provided in the Region in 2012 (see Map IV-16). Shared-ride taxicab service was provided by the Hartford City Taxi Service and City of West Bend Taxi Service in Washington County. These two systems served local travel in and immediately adjacent to the sponsoring municipality. In addition, both Ozaukee and Washington Counties provided shared-ride taxicab service on a countywide basis. The two county taxi systems principally served travel in the small urban communities and rural areas in each county and between the rural areas and all communities. The Ozaukee County taxi system also served travel within the City of Port Washington, which discontinued its separate taxi system in 2012. The Ozaukee and Washington County taxi systems did serve some communities located within the Milwaukee urban area including the communities of Germantown in Washington County, the northern portion of the Village of Menomonee Falls in Waukesha County, and Mequon, Cedarburg and Grafton in Ozaukee County. The Washington County taxi system, however, did not serve trips that could be made on the Hartford and West Bend municipal systems in the county. Public shared-ride taxicab service was also provided in Walworth County by Browns Cab Service which served local travel in and immediately adjacent to the City of Whitewater.

Each of the taxicab systems in the Region operated seven days a week in 2012 with the hours of operation varying by system. Typically, the most extensive service was provided on weekdays and Saturdays when taxicab service was available for between 12 and 16 hours a day. The four municipally operated systems provided service with approximately 30-minute response times. The two County systems provided 24-hour advance reservation service, requiring passengers to call a day in advance to guarantee service. Adult cash fares for the municipal taxi systems ranged from $3.00 to $4.00 per trip, with extra charges for trips with origins or destinations within 1 or 2 miles of the city limits. The adult fares charged by the county taxi systems varied by the length of the trip and were between $4.00 and $4.25 per trip for short trips and between $8.75 and $9.00 per trip for the longest trips in each County. Rather than using public employees, four of the five taxi systems—al but the City of Hartford—contract with private companies to provide the service including: F.O.S. Enterprises, LLC, which operated the West Bend taxi system; Specialized Transportation Services, Inc., which operated both the Ozaukee and Washington County taxi systems; and Browns Cab Service which operated the Whitewater taxi system.

Extent of Transit Service

The extent of public fixed-route transit service provided within the Region may be measured by the vehicle-miles of transit service provided on an average weekday. Vehicle-miles of fixed route transit service is a measure of the extent of transit routes, and the amount of service provided on those routes. As shown on Table IV-12, between 2001 and 2011 the average weekday vehicle-miles of fixed route transit service provided within the Region decreased significantly, by about 30 percent. The level of fixed route vehicle-miles of transit service provided in the Region was also less than the levels provided in 1972 and 1963. In general, transit vehicle-miles of service provided in the Region declined significantly throughout the 1950s, 1960s, and early 1970s. Public transit service began to increase in the mid-1970s with the initiation of public acquisition and operation of transit service. Public transit service continued to increase to the early 1980s due to motor fuel price increases in the mid and late 1970s, and attendant transit ridership increases. Transit service in the Region then declined slightly through the middle and late 1980s. During the 1990s, transit service increased substantially through the year 2000. Since 2001, transit service has decreased each year, due to continued reductions in Federal funding and State and local budget constraints.

The level of demand-responsive service provided by public shared-ride taxicab systems increased significantly since 1991 as the number of public systems in the Region increased from two in 1991 to six in 2011 (the City of Port Washington ceased its share-ride taxi service at the end of 2011). In 2011, about 10,300 vehicle miles of service were provided on an average weekday by the six public taxicab systems in the Region, representing an increase of almost 30 percent from the 2001 average weekday level of about 7,700 vehicle miles of service and 2,400 percent from the 1991 average weekday level of about 400 vehicle miles of service.

Public Transit Ridership

Public transit ridership levels within the Region on an average weekday in 1963, 1972, 1991, 2001, and 2011 are set forth in Table IV-13. Since 2001, ridership on fixed-route service in the Region has continued to decrease. An estimated 118,400 transit trips were made on fixed-route bus services on an average weekday in 2011, about 15 percent less than in 2001. In comparison, the vehicle-miles of transit service provided on fixed-route bus services in 2011 was about 30 percent less than in 2001. The decrease in ridership reflects the service reductions that have been implemented by the transit operators in the Region, particularly the Milwaukee County Transit System, since 2001, largely to meet constrained operating budgets.

The transit ridership levels on demand-responsive, public shared-ride taxicab service increased steadily from 2001 to 2011. No public shared-ride taxicab systems were in operation in 1972 or 1963. In 2011, about 1,450 transit trips were

made on an average weekday on the six public taxicab systems in the Region. This represented an increase of about 30 percent from the 2001 average weekday ridership of about 1,100 transit trips on public taxicab services.

In general, transit ridership in the Region and in the United States was in decline throughout the 1950s and 1960s. Ridership on public transit began a gradual growth in the mid 1970s with the initiation of public transit operations. Motor fuel price increases in the mid and late 1970s contributed to the ridership increases which peaked in 1980. Transit ridership in the Region then experienced a moderate decline through the 1980s and the early 1990s, and then increased somewhat through the year 2000. Since 2001, ridership has decreased in each year. Factors which have contributed to the general decline in transit ridership in the Region since 1980 include the location of housing and jobs outside established transit service areas; the continuing decline in population and employment density; the increase in household income and automobile ownership and use, particularly in terms of the number of households with two or more vehicles; increases in transit adult cash fares to defer service reductions; and the inability, owing to lack of funding, to significantly improve and expand transit service to the entire metropolitan area, provide faster express transit and rapid transit service, and provide reasonably attractive and convenient frequent transit service.

Interregional Public Transit

Intercity Passenger Rail

In 2012, Amtrak provided intercity passenger rail service in Southeastern Wisconsin using track owned by Canadian Pacific Railway, with stops within the Region at the Milwaukee Intermodal Station in downtown Milwaukee, General Mitchell International Airport, and Sturtevant. Under contract with the State of Wisconsin and the State of Illinois, Amtrak operated seven daily Hiawatha Service trains (six on Sundays) in each direction between Milwaukee and Chicago, with intermediate stops at General Mitchell International Airport, Sturtevant, and Glenview. As part of its national network of train service, Amtrak operated one daily Empire Builder train in each direction between Seattle/Portland, Minneapolis-St. Paul, and Chicago, with intermediate stops including La Crosse, Tomah, Wisconsin Dells, Portage, Columbus, Milwaukee, and Glenview. East-bound Empire Builder trains stop at Milwaukee Intermodal Station only to drop off passengers, and west-bound Empire Builder trains stop at Milwaukee Intermodal Station only to pick up passengers.

By comparison, in 2001, under contract with the State of Wisconsin and the State of Illinois, Amtrak operated six daily Hiawatha Service trains (five on Sundays) in each direction between Milwaukee and Chicago and one daily Empire Builder train in each direction between Seattle/Portland, Minneapolis-St. Paul, Milwaukee, and Chicago. In 1991, nearly two years after the State of Wisconsin and the State of Illinois began contracting with Amtrak to provide the Hiawatha Service, Amtrak operated five daily Hiawatha Service trains (six on Fridays and Saturdays) in each direction between Milwaukee and Chicago and one daily Empire Builder train in each direction between

Seattle/Portland, Minneapolis-St. Paul, Milwaukee, and Chicago. In 1972, Amtrak—which had assumed operation of most intercity passenger trains from the private railroad companies on May 1, 1971—operated three daily trains in each direction between Milwaukee and Chicago, two daily trains in each direction between Milwaukee, Chicago, and St. Louis, and two weekday trains in each direction between Chicago, Milwaukee, Minneapolis-St. Paul, and Seattle.

In 1963, intercity passenger trains in the United States were operated by private railroad companies and still provided extensive service in southeastern Wisconsin. At this time, passenger train service in the Region was provided by three railroads: the Chicago, Milwaukee, St. Paul and Pacific Railroad (known as the Milwaukee Road and predecessor to Canadian Pacific Railway); the Chicago and North Western Railway (predecessor to the Union Pacific Railroad); and the Soo Line Railroad (predecessor to the Canadian National Railway). Also during 1963, the Chicago, North Shore, and Milwaukee Railway (North Shore Line), one of the last electric interurban railways in the United States, ceased operations.

Amtrak Hiawatha Service Ridership

Ridership on Amtrak's Hiawatha Service between 1990 and 2012 is shown in Figure IV-11. Ridership on the Hiawatha Service increased from 312,404 in 1991 to 832,500 in 2012, a 166 percent increase. Following an increase in service from five daily trains (six on Fridays and Saturdays) in each direction to seven daily trains (six on Sundays) in October 1991, Hiawatha Service ridership increased from 312,404 in 1991 to 457,680 in 1994, a 47 percent increase. By 1996, Hiawatha Service ridership declined to 327,616, a 29 percent decrease, due in part to a significant reduction in service. In early 1995, as a result of an Amtrak system-wide restructuring and cost-cutting plan, Hiawatha Service fares were increased 50 percent and service was reduced from seven to four daily trains in each direction. By mid-1995 Hiawatha Service frequencies were increased to six daily trips per day (five on Sundays) in each direction. The Hiawatha Service maintained this level of service through 2002, and ridership increased from 327,616 in 1996 to 426,652 in 2000. Due in part to an economic recession, Hiawatha Service ridership declined slightly to 397,518 in 2002. Following a service increase to seven daily trips (six on Sundays) at the end of 2002, Hiawatha Service ridership increased from 397,518 in 2002 to 766,167 in 2008, a 93 percent increase. During this period, WisDOT added a new Hiawatha Service stop at General Mitchell International Airport in 2005, the Village of Sturtevant constructed a new station to replace its former station in 2006, and WisDOT opened the renovated Milwaukee Intermodal Station in downtown Milwaukee in 2007. Due in part to an economic recession, Hiawatha Service ridership declined to 741,780 in 2009. In 2010, Hiawatha Service ridership continued to increase, reaching 832,500 in 2012.

Commuter Rail

The only commuter rail service operated in the Region in 2012 was Metra's Union Pacific North Line between Kenosha and Chicago, with intermediate stops in the north shore suburbs of northeastern Illinois. Metra is the

commuter rail service division of the Regional Transportation Authority, which serves the six-county northeastern Illinois region. Service on this route was provided by the Union Pacific Railroad under contract with Metra and at no cost to Wisconsin residents. On weekdays in 2011, as in 2001 and 1993, this service consisted of nine commuter trains in each direction on weekdays between Kenosha and Chicago. In 1972, weekday commuter rail service in southeastern Wisconsin consisted of nine trains in each direction between the City of Kenosha and Chicago; two trains in each direction between the City of Lake Geneva and Chicago; one train in each direction between the Village of Walworth and Chicago; and one train in each direction between Watertown and Milwaukee making intermediate stops throughout Waukesha and Milwaukee Counties. The Watertown-Milwaukee train—known as the Cannonball—was discontinued during 1972. In 1963, weekday commuter rail service consisted of the same trains operating in 1972 except that the Lake Geneva trains continued west to the Village of Williams Bay until their discontinuance in 1965.

Intercity Bus Services

In 2012, scheduled intercity bus services were provided by six carriers: Badger Coaches, Inc.; Greyhound Lines, Inc.; Indian Trails, Inc.; Jefferson Lines, Inc.; Lamers Bus Lines, Inc.; Megabus; and Wisconsin Coach Lines. Service provided on weekdays by Badger Coaches included seven daily round-trips between Madison, downtown Milwaukee, and General Mitchell International Airport, one daily round-trip between Milwaukee and Eau Claire, and two daily round-trips between Milwaukee and Minneapolis-St. Paul. Service provided by Greyhound in Southeastern Wisconsin was centered in Milwaukee, which the carrier used as a regional hub at which passengers had the opportunity to transfer between buses. In 2012, Greyhound operated a total of 13 daily round-trips to and from Milwaukee. Most of these trips were Chicago-based, going to and from Madison, Minneapolis-St. Paul, and Green Bay. Daily service by Indian Trails included one bus trip in each direction between Milwaukee and Hancock, Michigan, with stops in Sheboygan, Manitowoc, Green Bay, Oconto, Peshtigo, Marinette, and many communities in Michigan's Upper Peninsula, including Escanaba, Marquette, L'Anse, Baraga, and Houghton. Daily service by Jefferson Lines included one bus trip in each direction between Milwaukee and Menomonie, including service to Green Bay, Wausau, and Eau Claire. Daily service by Lamers Bus Lines included one bus trip in each direction between Milwaukee and Wausau with intermediate stops in Stevens Point, Waupaca, New London, Appleton, Oshkosh, and Fond du Lac. In 2012, Megabus operated two round trips daily from Milwaukee to Chicago and two round trips daily from Milwaukee to Minneapolis. In 2012, Wisconsin Coach Lines operated 15 round-trips daily from Milwaukee to Chicago's O'Hare International Airport.

In 2001, scheduled intercity bus services were provided by four carriers: Badger Coaches, Inc.; Greyhound Lines, Inc.; Lamers Bus Lines, Inc.; and United Limo, Inc. Service provided on weekdays by Badger Coaches included seven daily round-trips between Madison, downtown Milwaukee, and General Mitchell International Airport. Service provided by Greyhound in Southeastern Wisconsin was centered in Milwaukee, which the carrier used as a regional

hub at which passengers had the opportunity to transfer between buses. In 2001, Greyhound operated a total of 21 daily one-way bus trips to and from Milwaukee. Most of these trips were Chicago-based, going to and from Madison, Minneapolis-St. Paul, Green Bay, Stevens Point, Wausau, Minocqua, Marquette, and Calumet. Some of these bus trips made only limited stops and some made local stops. Daily service provided by Lamers Bus Lines included one bus trip in each direction between Milwaukee and Wausau with a stop in Appleton. Weekday service provided by United Limo, Inc., included 11 round-trips between downtown Milwaukee and Chicago O'Hare International Airport with a stop at General Mitchell International Airport. Together, the four intercity motor coach carriers operated a combined total of 58 weekday one-way bus trips.

In 1993, there were four intercity carriers providing service through the operation of 71 weekday one-way bus trips in the Region. Of these 71 weekday one-way bus trips, 39 trips were operated by Greyhound to Chicago, to various locations in Wisconsin and Upper Michigan, and to cities as far away as Minneapolis-St. Paul; 12 trips were operated by Badger Coaches between Milwaukee and Madison; 18 trips were operated by United Limo between Milwaukee and Chicago's O'Hare International Airport with stops at General Mitchell International Airport and at the interchanges of IH 94 and STH 20 in Racine County and IH 94 and STH 50 in Kenosha County; and two trips were operated by Lamers Bus Lines between Milwaukee and Wausau with a stop in Appleton.

In 1972, there were six intercity carriers providing service through the operation of 142 weekday one-way bus trips in the Region. Of these 142 weekday one-way bus trips, 96 trips were operated by Greyhound to Chicago, to and from various locations in Wisconsin and Upper Michigan, and to cities as far away as Seattle; 12 trips were operated by Tri-State Coach Lines, Inc., between Milwaukee and Chicago's O'Hare International Airport; eight trips were operated by Wisconsin-Michigan Coach Lines, Inc., between Milwaukee and Green Bay, Sister Bay, and Marshfield; four trips were operated by Peoria-Rockford Bus Company between Milwaukee, Rockford, and Dixon, Illinois; 14 trips were operated by Badger Coaches between Milwaukee and Madison; and a total of eight intercity trips were operated by Wisconsin Coach Lines, with four trips operated between Milwaukee and Fond du Lac, and four trips between Milwaukee and Rockford, Illinois.

In 1963, there were four private intercity motor coach carriers providing interregional bus service to and from southeastern Wisconsin. These included Greyhound Lines, Badger Coaches, Peoria-Rockford Bus Company, and Wisconsin Coach Lines. Greyhound provided by far the greatest amount of service with Milwaukee serving as a regional network hub for routes radiating from Milwaukee to Chicago using two routes, along IH 94/USH 41 and through Racine; to Madison using three routes, along IH 94, through Oconomowoc and Watertown, and through Waukesha and Fort Atkinson; to Minneapolis-St. Paul and Seattle using two routes, through Columbus and Portage and through Madison; to Dubuque through Madison; to Stevens Point using two routes, through Hartford and Beaver

Dam, and through Fond du Lac and Appleton; to Duluth-Superior via Fond du Lac and Stevens Point, and to Green Bay using three routes, through Fond du Lac, through Plymouth, and through Sheboygan. Many of the Green Bay buses continued north to various northern Wisconsin and Upper Michigan communities. Greyhound also operated a route between Chicago and Madison via Lake Geneva and Whitewater. Weekday scheduled bus frequencies varied from a low of one or two bus trips in each direction on some routes to a high of 23 bus trips in each direction between Milwaukee and Chicago. Badger Coaches operated between Milwaukee and Madison along IH 94 providing seven scheduled weekday bus trips in each direction. Peoria-Rockford operated between Milwaukee and Rockford via Whitewater and Janesville providing two scheduled weekday bus trips in each direction. Wisconsin Coach Lines operated three intercity bus routes radiating out of Milwaukee: Milwaukee to Fond du Lac via West Bend with two weekday trips in each direction; Milwaukee to Rockford, Illinois via Lake Geneva with four weekday trips in each direction; and Milwaukee to Watertown via Oconomowoc with three weekday trips in each direction.

Passenger and Automobile Ferry Service

In 2012, a passenger and car cross-lake ferry was operated by Lake Express between Milwaukee and Muskegon, Michigan, with two daily scheduled round trips from May to October with an extra third round trip in July and August. This service was initiated in 2004.

There was no cross-lake ferry service to the Region in 2001 and 1991. In 1972, cross-lake car ferry service on Lake Michigan was operated by the Chesapeake & Ohio Railway Company between Milwaukee and Ludington, Michigan. This service, which carried passengers, automobiles, and railway freight cars had two scheduled weekday departures from each port during the summer season and was discontinued in 1984. In 1963, cross-lake ferry service serving southeastern Wisconsin was operated across Lake Michigan by three carriers. Service between Milwaukee and Ludington, Michigan was operated by the Chesapeake & Ohio Railway Company and carried passengers, automobiles, and railroad freight cars on three scheduled round trips per day. Service between Milwaukee and Muskegon, Michigan was provided by two carriers. The Wisconsin and Michigan Steamship Company, which operated the *Milwaukee Clipper*, carried passengers and automobiles on one scheduled daily round trip; and the Grand Trunk Western Railway carried railroad freight cars and passengers on one to two regular daily round trips, depending on railroad traffic.

Scheduled Air Carrier Service

Scheduled air carrier service to and from Milwaukee County's General Mitchell International Airport was provided by eight airline companies in 2012. These airline companies included: Air Canada, AirTran Airways, American Airlines, Delta, Frontier, Southwest Airlines, United Airlines, and US Airways. In 2012, these carriers provided over 800 scheduled nonstop weekday flights between Mitchell International and 36 other cities or metropolitan areas. Cities

with 10 or more nonstop weekday flights to or from Milwaukee included: Atlanta; Charlotte; Chicago; Dallas-Fort Worth; Minneapolis-St. Paul; Philadelphia; New York; and Washington, DC. In comparison, six airline companies provided flights from Milwaukee in 1971, increasing to 16 in 1989 and 19 in 2001. These airlines provided nonstop service to 32 cities in 1971, 33 cities in 1989, and 50 cities in 2001.

Table IV-14 displays an estimate of existing and historic interregional person trips on an average weekday, including travel on interregional public transit modes of intercity rail and bus, commercial air carrier, and car ferry, and also travel by personal vehicle. Interregional travel by personal vehicle has consistently accounted for about 95 percent of total interregional travel within southeastern Wisconsin over the past 50 years.

PARK-RIDE FACILITIES

Park-ride facilities enable more efficient travel within southeastern Wisconsin through transfer of mode between private vehicle and public transit, and between single occupant or solo driver private vehicles and carpools, and also from bicycle to transit and carpools. In 2012, there were 52 park-ride lots serving intra-regional travel within the Region, with 39 served by rapid or express transit bus service. In comparison, in 2004, there were 48 park-ride lots serving intra-regional travel within the Region, with 35 served by rapid or express transit bus service. In 1991, there were 37 park-ride lots within southeastern Wisconsin including 19 served by public transit, and eight park-ride lots all served by public transit in 1972.

Park-Ride Lots Served by Transit

In 2012, rapid or express transit bus service was provided to 39 park-ride lots within the Region, as shown on Map IV-17 and in Table IV-15. These intermodal parking facilities provided 6,875 parking spaces. The utilization of parking spaces at all park-ride lots served by transit in 2012 ranged from a high of 134 percent at the IH 43 and CTH C park-ride lot in the Town of Grafton to a low of 18 percent at the West Loomis Road park-ride lot in the City of Greenfield. In addition to the IH 43 and CTH C site, other park-ride lots served by transit with utilization rates greater than 60 percent include: State Fair Park in the City of Milwaukee; the Mitchell Airport Amtrak station; IH 94 and STH 20 in the Town of Yorkville; USH 45 and Paradise Drive in the City of West Bend; USH 45 and Lannon Road in the Village of Germantown; and IH 94 at CTH Y (Goerke's Corners) in the Town of Brookfield. On an average weekday during 2012, 40 percent of the 6,875 parking spaces at park-ride lots served by transit were in use.

Park-Ride Lots Not Served by Transit

In 2012, there were 13 park-ride lots not served by transit located within the Region containing 690 parking spaces as shown on Map IV-17 and in Table IV-15. The utilization of parking spaces on an average weekday at the individual

park-ride lots not served by transit varied from a high of 137 percent at the USH 41 and STH 33 park-ride lot in Allenton in the Town of Addison to a low of 14 percent at the Timmerman Field park-ride lot in the City of Milwaukee. In addition to the US 41 and STH 33 site, other park-ride lots not served by transit with average weekday utilization rates greater than 60 percent included IH 94 and STH 11 in the Village of Mount Pleasant and IH 94 and CTH C in the City of Delafield. On an average weekday during 2012, 36 percent of the 690 parking spaces at park-ride lots not served by transit were in use.

BICYCLE AND PEDESTRIAN FACILITIES

This section of the chapter documents the existing bicycle and pedestrian facilities in the Region associated with the arterial street and highway system and public transit system, including the accommodation of bicycles on the Region's arterial street and highway system and the provision of a system of off-street bicycle paths connecting the Region's urban centers and communities.

Accommodation of Bicycles on the Arterial Street and Highway System

On arterial streets and highways with a rural cross-section, bicycles may be accommodated with a four foot paved shoulder and six foot gravel shoulder on a two traffic-lane facility, and with an eight foot paved shoulder on a four-traffic lane facility. On arterial streets with an urban cross-section, bicycles may be accommodated with bicycle lanes five to six feet in width, or with a widened outside lane of 14 feet. Accommodations may also be provided on urban and rural arterials with parallel, physically separate paths of eight to 12 feet in width (five to six feet for one-way paths) and ten feet of separation from the travel lanes. Map IV-18 identifies those 824 miles of arterial streets and highways which provided accommodation through paved shoulders, bicycle lanes, or separate paths in 2012. Data is not available to identify those urban arterials with outside lanes of 14 feet in width which also accommodate bicycles.

Off-Street Bicycle Paths

Map IV-19 displays the existing 250 miles of regional off-street bicycle paths largely developed within former railway rights-of-way and parkway corridors in 2012. These paths are envisioned, upon completion, to connect the Region's major urban centers—Milwaukee, Racine, Kenosha, and Waukesha—and the Region's urban communities. These paths—intended for seasonal use—provide particularly safe and aesthetically attractive routes with separation from motor vehicle traffic.

TRANSPORTATION MANAGEMENT AND OPERATIONS SYSTEMS

Regional transportation system management and operations systems currently exist on the regional freeway system, selected elements of the standard arterial street and highway system, and the public transit system. The goals of these systems include improving operations, reducing travel time, improving safety, and reducing operating costs.

Freeway Traffic Management and Operation System

The existing freeway traffic management system in southeastern Wisconsin consists of many elements which are often referred to as intelligent transportation systems. The elements of the southeastern Wisconsin freeway traffic management system include: traffic detectors, ramp metering, high-occupancy vehicle bypass ramps, ramp gates, variable message signs, highway advisory radio, closed-circuit television, service patrols, crash investigation sites, and enhanced reference markers.

Traffic detectors measure the speed, volume, and density of freeway traffic. This data is monitored at the Wisconsin Department of Transportation's State Traffic Operation Center in Milwaukee for disruptions in traffic flow and for use in determining the operation of the ramp meter system in southeastern Wisconsin. Congestion information derived from the speed, volume, and density data collected via the detectors is mapped, and may be viewed by the traveling public through the Department's website. In 2013, the traffic detectors were located throughout the Milwaukee area freeway system, including the freeways in Milwaukee County, IH 94 and portions of IH 43 and STH 16 in Waukesha County, and portions of IH 43 in Ozaukee County, and on the freeways in Racine and Kenosha Counties. The spacing of these traffic detectors is about one-half mile on most of the freeways in Milwaukee County and on portions of IH 94 in eastern Waukesha County, and about one to two miles on the remaining freeway segments.

In 2013, 121 freeway on-ramps were equipped with ramp meters and attendant traffic detectors in southeastern Wisconsin. The metered on-ramps are located adjacent to and upstream of freeway segments that experience traffic congestion during the morning and evening peak-traffic periods. In 2013, preferential access was provided at 51 freeway on-ramps to high-occupancy vehicles[2]. Map IV-20 and Table IV-16 indicate the location and ramp meter type provided on the freeway system in southeastern Wisconsin.

[2] *In southeastern Wisconsin the definition of high-occupancy vehicle is defined as a transit vehicle or passenger vehicle with a minimum of at least two occupants.*

Variable message signs provide real-time information to travelers about downstream freeway traffic conditions. The Wisconsin Department of Transportation uses the variable message signs to display current travel times to selected areas and to display information about lane and ramp closures as well as where travel delays begin and end. In the event of child abduction, the variable message signs are also used to display an AMBER alert. In 2013, there were 31 variable message signs at fixed locations on the freeway system in southeastern Wisconsin as shown on Map IV-21 and in Table IV-17, as well as 13 portable variable message signs used primarily for special events and incident management.

Highway advisory radio is a system of low-power radio transmitters licensed for state use. The Wisconsin Department of Transportation uses highway advisory radio to transmit pre-recorded messages in areas with ongoing highway construction projects as well as information regarding special events to the motoring public. In the event of child abduction, the highway advisory radio system is also used to broadcast the AMBER alert. Roadside signing with flashing beacons is used to advise motorists of the specific locations of individual transmitters and the frequency to which they need to tune to receive the transmission.

In 2013, 159 closed-circuit television cameras (see Map IV-21 and Table IV-17) provided live video of traffic conditions. The video provided by these cameras allows for the identification and confirmation of congested areas and incident locations. Video is monitored at the Wisconsin Department of Transportation State Traffic Operation Center in Milwaukee. Video is supplied to some emergency response agencies so that their dispatchers can provide personnel with incident locations and information. The Wisconsin Department of Transportation also provides some of its camera images to the media and to its website for viewing by the general public.

Freeway service patrols assist disabled motorists with specially equipped vehicles. When freeway service patrols encounter severe incidents, they have the appropriate communication equipment to ensure that the appropriate personnel and equipment may be dispatched to the scene, prior to arrival by a first responder. In 2013, there were freeway service patrols in Milwaukee County (see Map IV-22 and Table IV-18). The patrol service is operated by the Milwaukee County Sheriff's Department and consists of a special fleet of two vehicles dedicated to handling and clearing incidents on weekdays from 6:00 a.m. to 10:00 p.m. In previous years, patrols were also used in Kenosha, Racine, and Walworth Counties, but those services were eliminated in 2013 due to budgetary reasons. Temporary service patrols were also operated in addition to the Milwaukee County patrol services along segments of freeway that were under construction during 2013, such as the Hoan bridge, portions of IH 94 in Kenosha County, and segments of IH 94 and USH 45 as part of the Zoo Interchange project.

Crash investigation sites are designated safe zones for distressed motorists to relocate to if they are involved in a crash or an incident on the freeway. In 2013, there were 32 crash investigation sites (see Map IV-22 and Table IV-18) on the freeway system in southeastern Wisconsin. These sites are intended for use by motorists involved in an incident to exchange insurance information or to make emergency repairs to their vehicle following a minor collision or breakdown. These sites are also used by the freeway service patrols to relocate the distressed motorists they assist.

Enhanced reference markers are designed to save time in identifying locations of disabled motorists to improve emergency response times to highway incidents. Enhanced reference markers can improve emergency response times, improve traffic incident clearance times, reduce crash related delays, and reduce the number of secondary crashes. In southeastern Wisconsin enhanced reference markers have been installed in Milwaukee County in the freeway median at each one-tenth or two-tenths of a mile on IH-94 from the west Waukesha County line to the Illinois-Wisconsin State line, on USH 45 from the Zoo Interchange to the Waukesha-Washington County line, and on IH 43 from the Milwaukee-Waukesha County line to STH 83 and from the Marquette Interchange to North Avenue as of 2013.

In 2013, ramp closure devices were deployed at interchanges on IH 94 in Kenosha, Milwaukee, Racine, and Waukesha Counties, on IH 43 in Milwaukee, Waukesha, and Walworth Counties, and on IH 794 and on IH 894 in Milwaukee County. The ramp closure devices were typically swing arm gates. These ramp closure devices allow for the closure of freeway on-ramps during planned and unplanned major incidents, such as special events and severe inclement weather.

The day to day operation and management of the southeastern Wisconsin regional freeway system is conducted at the Wisconsin Department of Transportation State Traffic Operations Center in Milwaukee. The traffic operation center staff coordinates the freeway lane and ramp closures in southeastern Wisconsin, including construction projects and county maintenance work. Additionally, the Wisconsin Department of Transportation works closely with local law enforcement, media, emergency responders, tow operators, transit operators, municipal governments, and others through the Traffic Incident Management Enhancement (TIME) program. The TIME program's goals are to improve and enhance freeway incident management, improve freeway safety, and enhance the quality and efficiency of freeway travel.

Standard Arterial Street and Highway Traffic Management and Operation Systems

In 2011, the standard arterial street and highway traffic management systems in southeastern Wisconsin consisted mainly of coordinated traffic signal systems, emergency vehicle preemption, closed-circuit television cameras, and variable message signs.

Coordinated traffic signal systems provide for the efficient progression of traffic along arterial streets and highways allowing motorists to travel through multiple signalized intersections along an arterial route at the speed limit minimizing or eliminating the number of stops at signalized intersections. In 2013, coordinated traffic signal systems in southeastern Wisconsin generally ranged from systems comprised of two traffic signals to systems comprised of about 100 traffic signals. Approximately 1,200 of the 1,700 traffic signals in southeastern Wisconsin in 2013, or about 71 percent, were part of a coordinated signal system.

Emergency vehicle preemption allows emergency vehicles to intervene in the normal operation of surface arterial intersection traffic signal systems using wireless communications installed on the traffic signal and the emergency vehicles. Light, radio waves, or sound emitted by the emergency vehicle allow the emergency vehicle to interrupt the regular signal cycle and either change the traffic signal cycle to initiate and hold green indication for the approach from which the emergency vehicle is oriented, or to extend the green indication for the which the emergency vehicle is oriented until the emergency vehicle has cleared the intersection. Emergency vehicle preemption reduces the amount of time for response and increases the safety for the law enforcement and emergency responder communities. In 2013, emergency preemption was deployed on selected signal systems operated by the following communities or entities: Cities of Kenosha, Milwaukee, Waukesha, and Wauwatosa; Milwaukee and Waukesha Counties; and the Wisconsin Department of Transportation. In total, traffic signals at nearly 750 intersections, or about 44 percent of signalized intersections, were equipped with emergency vehicle preemption capability.

In 2013, 22 closed-circuit television cameras (see Map IV-23 and Table IV-19) provided live video of traffic conditions on the surface arterial street and highway system. The video provided by these cameras allows for the identification and confirmation of congested areas and incident locations. Video is monitored at the Wisconsin Department of Transportation State Traffic Operation Center in Milwaukee. Video is supplied to some emergency response agencies so that their dispatchers can provide personnel with incident locations and information.

Variable message signs provide real-time information to travelers about upcoming traffic conditions. The Wisconsin Department of Transportation uses the variable message signs to display current travel times to selected areas and to display information about lane closures as well as where travel delays begin and end. In the event of child abduction, the variable message signs are also used to display an amber alert. In 2013, there were 19 variable message signs on the surface arterial street and highway system in southeastern Wisconsin, all located near freeway access points, as shown on Map IV-23 and in Table IV-19.

Public Transit Operation and Management Systems

In 2012, public transit operation and management systems were utilized by the following transit systems in southeastern Wisconsin: Milwaukee County Transit System (MCTS), the City of Waukesha Metro Transit System, Waukesha County Transit, the Kenosha-Racine-Milwaukee rapid bus, the Racine Belle Urban System, the Ozaukee County Express, the Ozaukee County shared-ride taxi service, and the Washington County shared-ride taxi service. MCTS utilizes a computer-aided dispatch and automatic vehicle location (CAD/AVL) system. The CAD/AVL system enhances communication between bus operators and dispatchers and allows MCTS to use global positioning technology to provide updated location information of transit vehicles to dispatchers, and can be used to check the on-time performance of the system. The City of Waukesha Metro Transit CAD/AVL system was operational beginning in June 2004. The MCTS and the City of Waukesha Metro Transit also utilize designated shoulder lanes on USH 18 (Bluemound Road) in Waukesha County between Barker Road and the Milwaukee-Waukesha County line. These shoulder lanes are designated as through lanes for transit vehicles only, and may only be accessed by passenger vehicles for right-turning movements or during distress. The Racine Belle Urban System began using a CAD/AVL system in 2004. Waukesha County Transit's express bus service and the Kenosha-Racine-Milwaukee rapid bus service are operated by Wisconsin Coach Lines and have been using a GPS-based AVL system since 2009. The Ozaukee County Express is operated by MCTS as Route 143 and utilizes the MCTS CAD/AVL system. The Ozaukee County shared-ride taxi system began using a CAD/AVL system in 2008.

An area which public transit operation and management systems in southeastern Wisconsin are beginning to explore is transit priority signal systems. Transit priority signal systems allow transit operators to extend the green phase of signal cycles using wireless communications between the transit vehicle and the traffic signal.

PAVEMENT AND BRIDGE CONDITION

The assessment of existing pavement condition in Southeastern Wisconsin is typically accomplished through one of two pavement evaluation techniques. The Pavement Surface Evaluation and Rating (PASER) technique is used for county and municipal roads. The PASER system is a rating system which employs visual inspection techniques to assess pavement condition. Pavement ratings range from 1 (which is a failed roadway that needs total reconstruction) to 10 (which is a pavement in excellent condition and typically reflects new construction). In general, the rating system is such that those pavements rated 8 through 10 require little to no maintenance; a rating of 7 indicates a pavement that requires routine maintenance such as crack filling; ratings of 5 or 6 indicate a pavement where preservative treatments such as sealcoating or overlays are considered; ratings of 3 or 4 indicate a pavement where structural improvement such as recycling or overlay is required; and ratings of 1 or 2 indicate a pavement which is severely deteriorated and requires reconstruction. In Southeastern Wisconsin the PASER system is used by County

and local governments to evaluate the condition of the roads under their jurisdiction every two years as required under State Statute. Map IV-24 documents the pavement condition of the county and local arterial streets and highways in the Region under the PASER system for the year 2011. Pavement condition of the county and local arterial street system in the Region remained about the same between 2005 and 2011, as shown in Table IV-20.

The Wisconsin Department of Transportation (WisDOT) uses the International Roughness Index (IRI) to assess pavement condition and the quality of riding comfort of state highways, including Interstate Highways, United States Highways, and State Highways. WisDOT uses special equipment which physically measures the profile of a roadway along the traveled way. The IRI is measured on a scale of 0 to 12, with pavements with a 0 to 2.5 rating having no ride problems, a 2.5 to 2.75 rating having minor ride problems, a 2.75 to 3.0 having moderate ride problems, and greater than 3.0 having severe ride problems. Map IV-25 documents the IRI rating of the arterial streets and highways in the Region under State jurisdiction for the year 2012. Pavement condition of state highways in the Region remained about the same between 2006 and 2012, as shown in Table IV-22.

WisDOT also maintains an assessment of the sufficiency of the bridge structures within Southeastern Wisconsin. Bridge sufficiency ratings are calculated using four separate factors to obtain a numeric value which, when combined, provide the overall sufficiency rating. The four factors are (1) structural adequacy and safety; (2) serviceability and functional obsolescence (including consideration of number of lanes, average daily traffic, approach roadway width, and bridge roadway width); (3) essentiality for public use; and (4) special reductions. Bridge structure sufficiency ratings range from 0 to 100, with 0 being a failing structure and 100 being a structure in perfect condition. Generally, the structure sufficiency ratings relate to need, and prioritization of funding, for rehabilitation and replacement. WisDOT considers a bridge structure with a sufficiency rating between 80 and 100 as not in need of rehabilitation. A bridge structure is considered in need of rehabilitation if its sufficiency rating is between 50 and 79, and replacement if its sufficiency rating is less than 50. Table IV-22 displays the number of bridge structures in Southeastern Wisconsin within each of the above mentioned ranges of sufficiency rating for the years 2006 and 2012. Map IV-26 displays the 2012 sufficiency ratings for bridge structures in Southeastern Wisconsin. Some improvement in bridge sufficiency is apparent over the last few years.

ARTERIAL HIGHWAY AND TRANSIT TRAVEL TIMES

Map IV-27 compares the year 2001 and 2011 estimated peak hour travel speeds for selected freeway and surface arterial street segments. Map IV-28 compares estimated peak hour arterial street and highway travel time contours for years 2001 and 2011 for two locations: the Milwaukee central business district and the Milwaukee regional medical center. Year 2001 and 2011 arterial street and highway travel times are very similar, displaying little change.

Map IV-29 presents the ratio of total overall transit travel time to and automobile travel time between selected locations during the weekday morning peak period and midday off-peak period in 2011. Transit travel time is longer than automobile travel time, because it includes not only the time spent in the transit vehicle, but also includes the time spent walking to a bus stop, waiting for a bus, transferring between routes including waiting for another bus, and walking to a destination. Much of the transit out-of-vehicle time is related to waiting time for each bus used. Automobile travel time includes the time spent in vehicle parking and walking between parking location and trip origin and destination.

The travel time ratios developed for travel between the selected locations indicate that the lowest ratios—and most competitive transit travel times—are for short transit trips made between areas within and adjacent to downtown Milwaukee, and the highest ratios—and least competitive transit travel times—are generally for transit trips to and from outlying portions of Milwaukee County, including locations in the northwest, southeast, and southwest portions of the Milwaukee County area. Some reduction in transit service has occurred since 2001; however, the travel time ratios from 2001 likely have not changed significantly.

TRANSPORTATION AIR POLLUTANT AND AIR TOXIC EMISSIONS

Table IV-23 presents the estimated transportation system air pollutant and air toxic emissions and motor fuel consumption within Southeastern Wisconsin for the years 2001 and 2010. Estimated air pollutant and air toxic emissions declined between 2001 and 2010. In particular, volatile organic compounds and nitrogen oxides have been in decline due to cleaner, more efficient vehicles and lower sulfur fuels. The exception to the historic trend in emissions reductions has been carbon dioxide emissions, which are estimated to have increased from 2001 to 2010 as fuel consumption has increased over these years.

SUMMARY

This chapter has described the characteristics of the existing regional transportation system, including arterial streets and highways, public transit, park-ride lots, bicycle and pedestrian facilities, and transportation management and operations systems. The chapter has also documented to the extent data is available the changes that have occurred in the system since 2001, 1991, 1972, and 1963, the base years of the fourth, third, second, and first generation regional transportation system plans. Inventory findings include:

1. As of 2011, there were approximately 12,487 miles of streets and highways—land-access, collector, and arterial—within the Region. Only 26.6 percent, or 3,323 miles, of the street and highway system were arterials with the principal function of moving traffic. The miles of arterials within the Region have increased from 3,188 in 1963 to 3,323 miles in 2011, an increase of 135 miles or 4.2 percent. The freeway system in 2011 of 268 miles accounted for 8 percent of the total arterial street and highway system and 2 percent of the total street and highway system.

2. In 2011, approximately 40.9 million vehicle-miles of travel were estimated to occur on the arterial street and highway system on an average weekday within the Region. The arterial street and highway system accounted for about 26.6 percent of the total miles of streets and highway within the Region, and 90 percent of the total average weekday traffic within the Region. Freeways within the Region constituted about 268 miles and 8 percent of the total arterial system, but carried 38 percent of total arterial system vehicle-miles of travel on an average weekday in 2011. Between 1963 and 2011, average weekday vehicle-miles of travel on the arterial street and highway system increased by over 200 percent, while centerline miles of arterial streets and highways increased by only about 4 percent and arterial lane-miles increased by only about 15 percent. The growth in vehicle-miles of travel which has slowed in the rate of growth each decade is a result of growth in average weekday trips made by Region residents due to increases in households and jobs; increases in the proportion of drive-alone trips due to increases in vehicle ownership and changes in population lifestyles, including declines in household size; and increases in trip length.

3. The miles of arterials carrying traffic volumes exceeding design capacity and experiencing traffic congestion declined from 217 miles in 1963 to 160 miles in 1972, even though traffic grew during that period by over 50 percent. The decline in traffic congestion may be attributed to the completion of the freeway system during that period. Between 1972 and 1991, the miles of arterials carrying traffic volumes exceeding their design capacity and experiencing traffic congestion is estimated to have increased from 160 miles to 273 miles, as traffic grew during that period by nearly 65 percent, as Regional employment and households increased by about 30 percent, and vehicle occupancy and carpooling significantly declined. The decline in vehicle occupancy from an average of 1.39 persons per vehicle to 1.22 persons per vehicle alone is estimated to have resulted in nearly a 15 percent increase in vehicle traffic. As well, limited transportation system improvement and expansion was completed between 1972 and 1991 in Southeastern Wisconsin. The miles of arterials carrying traffic volumes exceeding their design capacity and experiencing traffic congestion is estimated to have increased modestly from 273 miles in 1991 to 290 miles in 2001. During that period, traffic is estimated to have increased by about 21 percent. The modest increase in traffic congestion from 1991 to 2001 may be attributed to the implementation of an extensive number of significant arterial street and highway widening

and new construction projects between 1991 and 2001. The estimated modest increase in congestion between 1991 and 2011 is not uniform systemwide, as for example, the extent and severity of congestion on the Milwaukee area freeway system is estimated to have substantially increased between 1991 and 2011.

4. Review of a five-year history—2008 through 2012—of traffic crashes on the Regional freeway and state trunk highway surface arterial system determined that the average crash rate was 69.2 crashes per 100 million vehicle-miles of travel on freeways and 236.5 crashes per 100 million vehicle-miles on state trunk highway surface arterials. Countywide freeway system crash rates ranged from a low of 33.8 to a high of 165.0 crashes per 100 million vehicle-miles of travel for the seven counties in southeastern Wisconsin. During that period, only Milwaukee County's freeway crash rate exceeded the Regional average crash rate. Countywide state trunk highway surface arterial crash rates ranged from a low of 115.0 to a high of 414.5 crashes per 100 million vehicle-miles of travel for the seven counties in southeastern Wisconsin. During that period, only Milwaukee County's state trunk highway surface arterial crash rates exceeded the Regional average crash rate.

5. The extent of fixed route public transit service in southeastern Wisconsin significantly decreased 2001 to 2011, from 79,600 vehicle-miles of service on an average weekday to 61,100 vehicle-miles of service, a decrease of almost 30 percent. The extent of fixed route service provided in 2011 was also 3 percent less than that provided in 1991, 4 percent less than that provided in 1972, and 28 percent less than that provided in 1963. The continued decrease in fixed route public transit service since 2001 is due to reduced Federal funds and State and local budget problems. Demand-responsive transit service in the Region increased from 2001 to 2011, from 7,700 vehicle-miles of service on an average weekday to 10,300 vehicle-miles of service.

6. Public transit ridership measured in terms of transit passenger trips made from origin to destination on an average weekday has declined from 320,500 trips, representing 8 percent of regional internal personal travel, to 184,200 trips and 4 percent of travel in 1972, to 172,200 trips and 3 percent in 1991, to 142,200 trips and 2 percent in 2001, and to 129,100 trips and 2 percent in 2011.

7. Ridership on Amtrak's Hiawatha Service, operating between Milwaukee and Chicago, increased from 312,404 in 1991 to 832,500 in 2012. Improvements to the Hiawatha Service during this period included additional train frequencies, construction of new stations at General Mitchell International Airport and in the Village of Sturtevant, and renovation of Milwaukee Intermodal Station.

8. Between 1963 and 2011, the amount of commercial air passenger service and passengers traveling to and from southeastern Wisconsin has significantly increased, while significant declines in service and in passengers have occurred on other intercity modes of passenger travel, including rail, bus, and ferry. Commercial air carrier passengers represented only 27 percent of intercity transit passenger travel in southeastern Wisconsin in 1963, and represented about 80 percent of intercity passenger travel to, from, and through, southeastern Wisconsin in 2001. During this period from 1963 to 2011, passenger travel measured in average weekday passenger trips on intercity transit modes to and from southeastern Wisconsin increased by about 140 percent. Over that same period, intercity personal vehicle travel to, from, and through southeastern Wisconsin also experienced about a 110 percent increase. Of total intercity or interregional travel over the past 50 years to and from southeastern Wisconsin, personal vehicle travel has consistently accounted for about 95 percent of total travel, and intercity transit modes for about 5 percent of total travel.

9. The number of park-ride lots enabling the transfer of mode between private vehicles and public transit and from solo driver private vehicles to carpools has increased from eight in 1972, to 37 in 1991, to 48 in 2004, and to 52 in 2012. Of the 52 park-ride lots in 2011, 39 were provided with transit service. On an average weekday in 2012, about 40 percent of the approximately 7,565 spaces at the 52 park-ride lots were estimated to be in use.

10. Of the Region's 3,300 miles of surface arterial streets and highways, it is estimated that 824 miles accommodate bicycles through paved shoulders, exclusive bicycle lanes, and physically separate parallel off-street paths. Also, 250 miles of regional off-street bicycle paths exist on former railway rights-of-way and in parkways. These off-street paths provide particularly safe and aesthetically attractive routes separate from motor vehicle traffic which connect—though with gaps—the Region's urban centers and communities.

11. Transportation management and operations systems on the transportation system of southeastern Wisconsin include an extensive freeway traffic management system, including monitoring, metering, advisory information, and incident management elements; coordinated standard arterial traffic signal systems; and public transit computer aided dispatch and automated vehicle location systems.

12. Pavement conditions of state trunk highways are assessed every three years, and counties and municipalities are required by State law to rate the pavement condition of their arterial street and highway system every two years. In 2012, slightly over 80 percent of the state trunk highway system in the Region was determined to have few or no ride problems, a proportion that changed little over the six-year period 2006-2012. Over the six-year period 2005-2011, the collective number of miles of county and local arterials with PASER ratings

one or two—those classifications that indicate severe deterioration and a need for reconstruction—significantly decreased from about 6 percent of all county and local arterials in 2005 to about 4 percent in 2011.

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Table IV-1

DISTRIBUTION OF TOTAL STREET AND HIGHWAY MILEAGE WITHIN THE REGION BY COUNTY: 1963, 1972, 1991, 2001, AND 2011[a]

County	1963 Arterial	1963 Collector and Land-Access	1963 Total[b]	1963 Arterial Mileage as a Percent of Total Mileage
Kenosha	281.5	547.1	828.6	34.0
Milwaukee	791.5	1,642.6	2,434.1	32.5
Ozaukee	264.9	366.9	631.8	41.9
Racine	351.3	632.4	983.7	35.7
Walworth	399.7	824.2	1,223.9	32.7
Washington	402.3	688.0	1,090.3	36.9
Waukesha	697.0	1,054.0	1,751.0	39.8
Total	3,188.2	5,755.2	8,943.4	35.6

County	1972 Arterial	1972 Collector and Land-Access	1972 Total[b]	1972 Arterial Mileage as a Percent of Total Mileage
Kenosha	287.1	593.4	880.5	32.6
Milwaukee	795.7	1,851.7	2,647.4	30.1
Ozaukee	253.5	466.7	720.2	35.2
Racine	355.4	728.0	1,083.4	32.8
Walworth	412.0	846.9	1,308.9	31.5
Washington	344.8	821.1	1,165.9	29.6
Waukesha	670.2	1,342.5	2,012.7	33.3
Total	3,118.7	6,700.3	9,819.0	31.8

County	1991 Arterial	1991 Collector and Land-Access	1991 Total[b]	1991 Arterial Mileage as a Percent of Total Mileage
Kenosha	317.1	660.7	978.3	32.5
Milwaukee	775.4	2,131.6	2,907.0	26.7
Ozaukee	250.7	610.3	861.0	29.1
Racine	349.9	814.4	1,164.3	30.1
Walworth	429.2	996.4	1,425.6	30.1
Washington	400.2	922.8	1,323.6	30.3
Waukesha	735.5	1,805.4	2,540.9	28.9
Total	3,259.1	7,941.6	11,200.7	29.1

County	2001 Arterial	2001 Collector and Land-Access	2001 Total[b]	2001 Arterial Mileage as a Percent of Total Mileage
Kenosha	317.6	715.3	1,032.9	30.7
Milwaukee	781.8	2,187.3	2,969.1	26.3
Ozaukee	250.7	643.7	894.4	28.0
Racine	352.6	909.7	1,262.3	27.9
Walworth	436.6	1,048.5	1,485.1	29.4
Washington	406.5	1,029.3	1,435.8	28.3
Waukesha	746.0	2,111.6	2,857.6	26.1
Total	3,291.8	8,645.4	11,937.2	27.6

County	2011 Arterial	2011 Collector and Land-Access	2011 Total[b]	2011 Arterial Mileage as a Percent of Total Mileage
Kenosha	320.0	770.3	1,090.3	29.3
Milwaukee	788.4	2,226.4	3,014.8	26.2
Ozaukee	250.8	689.8	940.6	26.7
Racine	358.3	971.3	1,329.6	27.0
Walworth	445.6	1,080.5	1,526.1	29.2
Washington	406.5	1,129.4	1,535.9	26.5
Waukesha	753.3	2,296.7	3,050.0	24.7
Total	3,322.9	9,164.4	12,487.3	26.6

[a] *The estimated lane-miles of arterials was 7,827 lane-miles in 1963, 7,627 lane-miles in 1972, 8,383 lane-miles in 1991, 8,790 lane-miles in 2001, and 9,004 lane-miles in 2011.*

[b] *Total street and highway mileage does not include private streets and roads or roadways in public parks and on institutional lands.*

Source: SEWRPC.

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Table IV-2

DISTRIBUTION OF EXISTING ARTERIAL STREET AND HIGHWAY MILEAGE WITHIN THE REGION BY COUNTY AND JURISDICTIONAL CLASSIFICATION: 2011

County	State		County		Local		Total	
	Miles	Percent of Total	Miles	Percent of Total	Miles	Percent of Total	Miles	Percent of Total
Kenosha	115.4	36.1	143.0	44.7	61.5	19.2	320.0	100.0
Milwaukee	251.4	31.9	85.9	10.9	451.2	57.2	788.4	100.0
Ozaukee	77.8	31.0	108.0	43.0	65.1	25.9	250.8	100.0
Racine	163.1	45.5	116.6	32.5	78.6	22.0	358.3	100.0
Walworth	218.9	49.1	178.6	40.1	48.1	10.8	445.6	100.0
Washington	186.3	45.8	145.4	35.8	74.9	18.4	406.5	100.0
Waukesha	234.1	31.1	356.8	47.4	162.4	21.6	753.3	100.0
Region	1,246.8	37.5	1,134.2	34.1	941.9	28.3	3,322.9	100.0

Source: Wisconsin Department of Transportation and SEWRPC.

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Table IV-3

ARTERIAL VEHICLE-MILES OF TRAVEL WITHIN THE REGION ON AN AVERAGE WEEKDAY BY COUNTY: 1963, 1972, 1991, 2001, 2005, AND 2011

Year	County	Freeway		Standard Arterial		Total Vehicle Miles of Travel (thousands)
		Vehicle-Miles of Travel (thousands)	Percent of Total	Vehicle-Miles of Travel (thousands)	Percent of Total	
1963	Kenosha	204	21.7	734	78.3	938
	Milwaukee	531	7.2	6,817	92.8	7,348
	Ozaukee	20	4.1	464	95.9	484
	Racine	203	18.0	922	82.0	1,125
	Walworth	- -	- -	685	100.0	685
	Washington	345	49.6	351	50.4	696
	Waukesha	159	8.9	1,637	91.1	1,796
	Region	1,462	11.2	11,610	88.8	13,072
1972	Kenosha	382	26.8	1,046	73.2	1,428
	Milwaukee	3,977	37.2	6,718	62.8	10,695
	Ozaukee	223	26.2	627	73.8	850
	Racine	415	22.9	1,398	77.1	1,813
	Walworth	56	6.4	817	93.6	873
	Washington	190	16.5	961	83.5	1,151
	Waukesha	970	29.3	2,344	70.7	3,314
	Region	6,213	30.9	13,911	69.1	20,124
1991	Kenosha	675	27.0	1,825	73.0	2,500
	Milwaukee	5,945	41.3	8,446	58.7	14,391
	Ozaukee	762	39.2	1,180	60.8	1,942
	Racine	708	23.9	2,258	76.1	2,966
	Walworth	540	28.2	1,373	71.8	1,913
	Washington	546	23.0	1,833	77.0	2,379
	Waukesha	2,421	34.7	4,560	65.3	6,981
	Region	11,597	35.1	21,475	64.9	33,072
2001	Kenosha	805	25.8	2,321	74.2	3,126
	Milwaukee	6,878	42.0	9,499	58.0	16,377
	Ozaukee	951	42.1	1,308	57.9	2,259
	Racine	864	25.5	2,519	74.5	3,383
	Walworth	766	32.8	1,569	67.2	2,335
	Washington	1,370	44.3	1,725	55.7	3,095
	Waukesha	3,239	35.6	5,868	64.4	9,107
	Region	14,873	37.5	24,809	62.5	39,682
2005	Kenosha	913	26.6	2,523	73.4	3,436
	Milwaukee	7,162	41.4	10,131	58.6	17,293
	Ozaukee	1,008	42.9	1,344	57.1	2,352
	Racine	948	25.7	2,744	74.3	3,692
	Walworth	882	34.7	1,657	65.3	2,539
	Washington	1,550	44.3	1,949	55.7	3,499
	Waukesha	3,585	37.2	6,047	62.8	9,632
	Region	16,048	37.8	26,395	62.2	42,443
2011	Kenosha	906	25.9	2,590	74.1	3,497
	Milwaukee	6,770	41.8	9,440	58.2	16,210
	Ozaukee	974	40.9	1,405	59.1	2,378
	Racine	930	26.8	2,537	73.2	3,468
	Walworth	877	35.8	1,576	64.2	2,452
	Washington	1,541	44.8	1,901	55.2	3,442
	Waukesha	3,362	35.7	6,053	64.3	9,415
	Region	15,361	37.6	25,502	62.4	40,862

Source: SEWRPC.

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Table IV-4

AVERAGE ANNUAL GROWTH RATE OF AVERAGE WEEKDAY VEHICLE-MILES OF TRAVEL WITHIN SOUTHEASTERN WISCONSIN BY COUNTY

	Average Annual Growth Rate of Average Weekday Vehicle-Miles of Travel						
	1960's	1970's	1980's	1990's	2001 to 2005	2005 to 2011	2001 to 2011
Kenosha	4.8	3.4	2.7	2.2	2.5	0.3	1.2
Milwaukee	4.3	1.5	1.6	1.3	1.4	-1.0	-0.1
Ozaukee	6.5	4.1	4.6	1.5	1.0	0.2	0.5
Racine	5.4	2.7	2.5	1.3	2.3	-1.0	0.3
Walworth	2.7	5.3	3.3	2.0	2.2	-0.6	0.5
Washington	5.7	3.6	4.0	2.7	3.3	-0.3	1.1
Waukesha	7.0	4.2	3.7	2.7	1.4	-0.4	0.3
Region	4.9	2.7	2.6	1.9	1.7	-0.6	0.3

Source: SEWRPC.

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Table IV-5 (Revised)

ESTIMATED FREEWAY AND SURFACE ARTERIAL FACILITY DESIGN CAPACITY AND ATTENDANT LEVEL OF CONGESTION[a]

Facility Type	Average Weekday Traffic Volumes (vehicles per 24 hours)			
	Design Capacity and Upper Limit of Level of Service C	Upper Limit of Moderate Congestion and Level of Service D	Upper Limit of Severe Congestion and Level of Service E	Extreme Congestion and Level of Service F
Freeway				
Four-lane	60,000	80,000	90,000	> 90,000
Six-lane	90,000	121,000	135,000	> 135,000
Eight-lane	120,000	161,000	180,000	> 180,000
Standard Arterial				
Two-lane	14,000	18,000	19,000	> 19,000
Four-lane Undivided	18,000	23,000	24,000	> 24,000
Four-lane with Two-way Left Turn Lane	21,000	29,000	31,000	> 31,000
Four-lane Divided	27,000	31,000	32,000	> 32,000
Six-lane Divided	38,000	45,000	48,000	> 48,000
Eight-lane Divided	50,000	60,000	63,000	> 63,000

The level of congestion on arterial streets and highways may be summarized by the following operating conditions:

Freeway			
Level of Traffic Congestion	Level of Service	Average Speed	Operating Conditions
None	A and B	Freeway operates at free-flow speed	No restrictions on ability to maneuver and change lanes.
None	C	Freeway operates at free-flow speed	Ability to maneuver and change lanes noticeably restricted.
Moderate	D	Freeway operates at 1 to 2 mph below free-flow speed	Ability to maneuver and change lanes more noticeably limited; reduced driver physical and psychological comfort levels.
Severe	E	Freeway operates at up to 10 mph below free-flow speed	Virtually no ability to maneuver and change lanes. Operation at maximum capacity. No usable gaps in the traffic stream to accommodate lane changing.
Extreme	F	Freeway average speeds are 20 to 30 mph or less	Breakdown in vehicular flow with stop-and-go, bumper-to-bumper traffic.

Surface Arterial			
Level of Traffic Congestion	Level of Service	Average Speed	Operating Conditions
None	A and B	70 to 100 percent of free-flow speed	Ability to maneuver within traffic stream is unimpeded. Control delay at signalized intersections is minimal.
None	C	50 to 100 percent of free-flow speed	Restricted ability to maneuver and change lanes at mid-block locations.
Moderate	D	40 to 50 percent of free-flow speed	Restricted ability to maneuver and change lanes. Small increases in flow lead to substantial increases in delay and decreases in travel speed.
Severe	E	33 to 40 percent of free-flow speed	Significant restrictions on lane changes. Traffic flow approaches instability.
Extreme	F	25 to 33 percent of free-flow speed	Flow at extremely low speeds. Intersection congestion with high delays, high volumes, and extensive queuing.

[a]*Design capacity is the maximum level of traffic volume a facility can carry before beginning to experience morning and afternoon peak traffic hour traffic congestion, and is expressed in terms of number of vehicles per average weekday.*

Source: SEWRPC

ESJ/DJM/djm
#215263 v2
02/21/2014

Table IV-6

TRAFFIC CONGESTION ON THE ARTERIAL STREET AND HIGHWAY SYSTEM IN THE REGION BY COUNTY: 2011

County	Under or At Design Capacity		Over Design Capacity						Total Mileage
			Moderate Congestion		Severe Congestion		Extreme Congestion		
	Mileage	Percent of Total	Mileage	Percent of Total	Mileage	Percent of Total	Mileage	Percent of Total	
Kenosha	303.2	94.8	11.3	3.5	4.9	1.5	0.6	0.2	320.0
Milwaukee	647.5	82.1	64.6	8.2	49.5	6.3	26.8	3.4	788.4
Ozaukee	236.2	94.2	9.6	3.8	4.7	1.9	0.3	0.1	250.8
Racine	345.0	96.3	9.5	2.7	2.5	0.7	1.3	0.4	358.3
Walworth	442.6	99.3	2.4	0.5	0.4	0.1	0.2	0.0	445.6
Washington	397.8	97.9	6.1	1.5	2.3	0.6	0.3	0.1	406.5
Waukesha	676.5	89.8	43.4	5.8	27.9	3.7	5.5	0.7	753.3
Region	3,048.8	91.8	146.9	4.4	92.2	2.8	35.0	1.1	3,322.9

Source: SEWRPC

ESJ/DJM/djm/lbm
#215264 v3
02/21/2014

Table IV-7

ESTIMATED SOUTHEASTERN WISCONSIN FREEWAY SYSTEM
TRAFFIC CONGESTION ON AN AVERAGE WEEKDAY: 1972, 1991, 2001, 2005, and 2011

Year	Highest Level of Hourly Congestion Experienced	Miles of Congested Freeways		Average Hours of Congestion on an Average Weekday			
		Number	Percent of Freeway System	Extreme	Severe	Moderate	Total
2011	Extreme	18	6.8	1.3	2.9	3.9	8.1
	Severe	34	12.9	- -	1.4	2.3	3.7
	Moderate	21	7.7	- -	- -	1.8	1.8
	Total	73	27.4	- -	- -	- -	- -
2005	Extreme	29	10.7	1.2	2.7	3.7	7.6
	Severe	23	8.5	- -	1.2	2.3	3.5
	Moderate	16	6.0	- -	- -	2.2	2.2
	Total	68	25.2	- -	- -	- -	- -
2001	Extreme	24	8.9	1.4	3.3	4.4	9.1
	Severe	18	6.7	- -	1.5	2.5	4.0
	Moderate	22	8.1	- -	- -	2.1	2.1
	Total	64	23.7	- -	- -	- -	- -
1991	Extreme	11	4.4	1.0	2.1	3.1	6.2
	Severe	12	4.8	- -	1.1	2.9	4.0
	Moderate	23	9.1	- -	- -	2.3	2.3
	Total	46	18.3	- -	- -	- -	- -
1972	Extreme	- -	- -	- -	- -	- -	- -
	Severe	2	1.2	- -	1.0	3.0	4.0
	Moderate	7	4.3	- -	- -	2.8	2.8
	Total	9	5.5	- -	- -	- -	- -

Source: SEWRPC

ESJ/DJM/djm/lbm
#215265 v3
02/21/2014

Table IV-8

TRAFFIC CONGESTION ON THE ARTERIAL STREET AND HIGHWAY SYSTEM IN THE REGION: 1963, 1972, 1991, 2001, 2005, AND 2011

Traffic Congestion	Arterial Street and Highway Mileage					
	1963	1972	1991	2001	2005	2011
Under or At Design Capacity	2,971	2,959	2,986	3,002	2,993	3,049
Over Design Capacity and Experiencing Traffic Congestion	217	160	273	290	310	274
Total	3,188	3,119	3,259	3,292	3,303	3,323

Source: SEWRPC

Table IV-9

TRAFFIC CONGESTION ON DESIGNATED TRUCK ROUTES AND THE NATIONAL HIGHWAY SYSTEM IN THE REGION: 2001 AND 2011

Year	Under or At Design Capacity	Over Design Capacity			Total Mileage
		Moderate Congestion	Severe Congestion	Extreme Congestion	
2001	1,114	119	32	51	1,316
2011	1,126	98	76	31	1,331

Source: Wisconsin Department of Transportation and SEWRPC.

ESJ/DJM/djm/jwd
#215312 v2
01/15/2015

Table IV-10 (Revised)

AVERAGE VEHICULAR CRASH RATE ON STATE TRUNK HIGHWAYS BY ARTERIAL TYPE BY COUNTY IN SOUTHEASTERN WISCONSIN: 2008-2012

County	Crash Rate per 100 Million Vehicle Miles	
	Freeways	Standard Arterials
Kenosha	45.7	255.6
Milwaukee	120.2	372.8
Ozaukee	41.0	119.0
Racine	33.7	234.9
Walworth	38.3	139.2
Washington	43.3	215.0
Waukesha	53.7	222.4
Region	72.5	265.0
State	58.6	149.8

Note: Only crashes that have occurred in years since a roadway segment was last reconfigured are included in the crash rates above.

ESJ
#216862 v1
03/05/14

Table IV-11

COMPARISON OF TRANSIT CRASHES AND PASSENGER INJURIES: 2006 - 2011

Characteristic	2006	2007	2008	2009	2010	2011
Crashes[a]	73	69	68	40	64	46
Crashes[a] per 100,000,000 Revenue Miles	261	247	224	145	236	179
Passenger Injuries[b]	158	199	109	100	80	36
Passenger Injuries[b] per 100,000,000 Revenue Miles	564	711	395	363	295	140

[a]Includes only crashes that resulted in more than $5,000 in property damage.
[b]Includes only passenger injuries that required medical attention.

Source: National Transit Database and SEWRPC.

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Table IV-12

PUBLIC TRANSIT VEHICLE MILES PROVIDED IN THE REGION BY SERVICE TYPE: 1963, 1972, 1991, 2001, AND 2011

Service Type	Average Weekday Revenue Vehicle Miles[a]					Change in Average Weekday Revenue Vehicle Miles							
						1963-2011		1972-2011		1991-2011		2001-2011	
	1963	1972	1991	2001	2011	Number	Pct	Number	Pct	Number	Pct	Number	Pct
Fixed-Route (Bus)	84,900	64,000	63,300	79,600	61,100	-23,600	-27.8	-2,700	-4.2	-2,000	-3.2	-18,500	-29.9
Demand Responsive (Shared-Ride Taxi)	- -	- -	400	7,700	10,300	- -	- -	- -	- -	9,400	2,475	2,600	33.8

[a]*Figures presented in this table are for publicly sponsored transit services for the general public. The data exclude special paratransit services directed at the elderly and disabled population including federally required complementary paratransit services for disabled individuals operated by fixed-route bus systems. On an average weekday during 2011, approximately 10,600 revenue vehicle miles of service were operated in the Region as federally required complementary paratransit services for people with disabilities. This compares with approximately 19,500 vehicle miles of service operated in 2001 by ADA paratransit programs. Comparable data for 1991 are not available as paratransit service data was not reported by most transit systems in the Region. Complementary paratransit services were not required or provided in 1963 or 1972.*

Source: SEWRPC.

DJM/djm
#215267
12/9/2013

Table IV-13

AVERAGE WEEKDAY PUBLIC TRANSIT TRIPS IN THE REGION BY SERVICE TYPE: 1963, 1972, 1991, 2001, AND 2011

Service Type	Average Weekday Transit Trips[a]					Change in Average Weekday Transit Trips							
						1963-2011		1972-2011		1991-2011		2001-2011	
	1963	1972	1991	2001	2011	Number	Pct	Number	Pct	Number	Pct	Number	Pct
Fixed-Route (Bus).....	320,500	184,200	172,200	142,200	118,400	-198,800	-62.0	-62,500	-33.9	-50,500	-29.3	-20,500	-14.4
Demand Responsive (Shared-Ride Taxi)....	- -	- -	200	1,100	1,300	- -	- -	- -	- -	1,100	550	200	18.2

[a]*Average weekday transit trips shown in this table approximate the number of one-way trips made by transit between specific origins and destinations. Passengers are counted only once and transfers between routes are not counted as the transfer is a continuation of a single trip. Ridership figures are for publicly sponsored transit services for the general public. The data exclude special paratransit services directed at the elderly and disabled population including federally required complementary paratransit services for people with disabilities operated by fixed-route bus systems. During 2011, approximately 972,400 annual passengers were carried on federally required complementary paratransit services for disabled individuals in the Region, or about 11 percent less than the 1,099,200 annual passengers that were carried on complementary paratransit services in 2001, and about 118 percent more than the 446,300 annual passengers carried in 1991. Complementary paratransit services were not required or provided in 1972 or 1963.*

Source: SEWRPC.

DJM/djm/lbm/jwd
#215268
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Table IV-14 (Revised)

NUMBER OF INTERREGIONAL PERSON TRIPS ON AN AVERAGE WEEKDAY ON INTERCITY MODES IN THE REGION: 1963, 1972, 1993, 2001, AND 2011

Mode	1963		1972		1993		2001		2011	
	Number	Percent of Total	Number	Percent of Total	Number	Percent of Total	Number	Percent Of Total	Number	Percent Of Total
Intercity Motor Bus	2,000	1.0	1,300	0.7	1,300	0.4	1,200	0.3	1,600	0.4
Intercity Rail	4,000	2.0	900	0.3	1,800	0.5	1,900	0.4	2,800	0.6
Cross-Lake Car Ferry	1,200	0.6	700	0.4	--	--	--	--	300	0.1
Commercial Air Carrier	2,600	1.3	6,200[a]	3.3	12,600[b]	3.8	16,400	4.0	18,800	4.4
Personal Vehicle	191,700	95.1	176,900	95.1	317,400[c]	95.3	394,900	95.3	403,800	94.5
Total	201,500	100.0	186,000	100.0	333,100	100.0	414,400	100.0	427,300	100.0

[a]*Survey taken in 1971.*

[b]*Survey taken in 1989.*

[c]*Survey taken in 1991.*

Source: SEWRPC.

DJM/djm
#215271 v2
03/05/14

Table IV-15

AVERAGE WEEKDAY USE OF PARK-RIDE LOTS AND TRANSIT STATIONS: 2012

Number On Map IV-17	Location	Served by Transit	Not served by Transit	Shared Use	Available Parking Spaces	Autos Parked on an Average Weekday: 2012	Percent of Spaces Used
	Kenosha County						
1	Metra Station (Kenosha)	X		X	145	- -[a]	- -[a]
	Ozaukee County						
2	STH 57 and CTH H (Fredonia)		X		60	10	17
3	IH 43 and STH 32-CTH H (Port Washington)	X			50	21	42
4	Wal-Mart (Saukville)	X		X	50	13	26
5	IH 43 and CTH V (Grafton)	X			85	30	35
6	IH 43 and CTH C (Grafton)	X			65	87	134
	Milwaukee County						
7	Kohl's (Brown Deer)	X		X	130	57	44
8	Brown Deer (River Hills)	X			360	98	27
9	W. Good Hope Road (Milwaukee)	X			135	36	27
10	Timmerman Field (Milwaukee)		X		140	6	4
11	North Shore (Glendale)	X			195	98	50
12	W. Watertown Plank Road (Wauwatosa)	X			240	90	38
13	State Fair Park (Milwaukee)	X			285	186	65
14	Downtown Milwaukee Intermodal Amtrak Station	X			240	- -[a]	- -[a]
15	Milwaukee County Transit System Downtown Transit Center (Milwaukee)	X		X	- -[b]	- -[a]	- -[a]
16	National Avenue and IH 43/94 (Milwaukee)	X		X	55	- -[a]	- -[a]
17	W. Holt Avenue (Milwaukee)	X			235	87	37
18	Whitnall (Hales Corners)	X			360	205	57
19	W. Loomis Road (Greenfield)	X			410	75	18
20	Southridge (Greendale)	X		X	170	57	34
21	W. College Avenue (Milwaukee)	X			650	257	40
22	Mitchell Airport Amtrak Station (Milwaukee)	X			280	178	64
23	W. Ryan Road (Oak Creek)	X			305	164	54
	Racine County						
24	Racine Metro Transit Center (Racine)	X			120	- -[a]	- -[a]
25	IH 94 and STH 20 (Ives Grove)	X			75	65	87
26	IH 94 and STH 11 (Mount Pleasant)		X		60	48	80
27	Sturtevant Amtrak Station (Sturtevant)	X			180	- -[a]	- -[a]
	Walworth County						
28	East Troy Municipal Airport (East Troy)		X		40	7	18
29	USH 12 and STH 67 (Elkhorn)		X		40	13	33
30	USH 12 and CTH P (Genoa City)		X		40	10	25
	Washington County						
31	USH 41 and STH 33 (Allenton)		X		35	48	137
32	USH 41 and CTH K (Addison)		X		50	11	22
33	USH 45 and Paradise Drive (West Bend)	X			100	123	123
34	STH 60 and CTH P (Jackson)		X		30	10	33
35	USH 41 and Pioneer Road (Richfield)	X			280	75	27
36	USH 41 and Lannon Road (Germantown)	X			155	132	85
	Waukesha County						
37	Pilgrim Road (Menomonee Falls)	X			70	36	51
38	STH 67 and Lang Road (Oconomowoc)		X		35	6	17
39	Collins Street Parking Lot (Oconomowoc)	X		X	- -[b]	- -[a]	- -[a]
40	STH 16 and CTH P (Oconomowoc)	X			45	9	20
41	STH 16 and CTH C (Nashotah)	X			60	13	22
42	STH 67 and CTH DR (Summit)	X			100	56	56
43	IH 94 and CTH C (Delafield)		X		30	25	83
44	IH 94 and STH 83 (Delafield)	X			200	70	35
45	IH 94 and CTH G/CTH SS (Pewaukee)	X			245	69	28
46	IH 94 and CTH F (Pewaukee)		X		85	35	41
47	Goerke's Corners (Brookfield)	X			315	216	69
48	Waukesha Metro Transit Downtown Transit Center (Waukesha)	X		X	- -[b]	- -[a]	- -[a]
49	IH 43 and Moorland Road (New Berlin)	X			175	33	19
50	IH 43 and CTH Y (New Berlin)		X		45	19	42
51	IH 43 and STH 164 (Big Bend)	X			145	54	37
52	IH 43 and STH 83 (Mukwonago)	X			165	66	40
- -	**Total**	- -	- -	- -	**7,565**	**3,004**	**40**

[a] *Data not available.*

[b] *Parking available within larger public lot or structure.*

Source: SEWRPC.

Table IV-16

LOCATION OF RAMP METERS ON THE EXISTING FREEWAY SYSTEM IN SOUTHEASTERN WISCONSIN: 2013

Reference Number[a]	Ramp Meter Location
IH 94 East-West Corridor	
1	Westbound at CTH G
2	Westbound at CTH T (Grandview Boulevard)
3	Eastbound at CTH T (Grandview Boulevard)
4	Eastbound at STH 164 / CTH J
5	Eastbound at STH 83
6	Westbound at CTH JJ
7	Eastbound at USH 18
8	Eastbound at Barker Road
9	Westbound at CTH O (Moorland Road)
10	CTH O (Moorland Road) Southbound to Eastbound IH 94
11	CTH O (Moorland Road) Northbound to Eastbound IH 94
12	Westbound at STH 100 (S. 108th Street)
13	Eastbound at STH 100 (S. 108th Street)
14	Westbound at STH 181 (N. 84th Street)
15	Eastbound at STH 181 (N. 84th Street)
16	Westbound at N. 70th Street
17	Eastbound at N. 68th Street
18	Westbound at Hawley Road
19	Eastbound at Hawley Road
20	Eastbound at Mitchell Boulevard
21	Westbound at Mitchell Boulevard
22	USH 41 Southbound to Westbound IH 94
23	USH 41 Southbound to Eastbound IH 94
24	STH 341 Northbound to Eastbound IH 94
25	STH 341 Northbound to Westbound IH 94
26	Westbound at N. 35th Street
27	Eastbound at N. 35th Street
28	Westbound at N. 28th Street
29	Eastbound at N. 25th Street
30	Westbound at W. Tory Hill Street and N. 11th Street
31	Westbound at N. 7th Street and W. Clybourn Avenue
32	Northbound/Southbound at N. 2nd Street and W. Clybourn Avenue
IH 94 South Corridor	
33	Northbound at S. 6th Street and Mineral Street
34	Southbound at S. 9th Street and Mineral Street
35	Southbound at Lapham Boulevard (C-D)
36	Southbound at Lapham Boulevard
37	Northbound at Lapham Boulevard
38	Southbound at Becher Street
39	Southbound at Holt Avenue
40	Northbound at Holt Avenue
41	Southbound at W. Howard Avenue
42	Northbound at W. Howard Avenue
43	Northbound at CTH Y (W. Layton Avenue)
44	Southbound at CTH Y (W. Layton Avenue)
45	STH 119 Westbound to Northbound IH 94
46	Southbound at CTH ZZ (W. College Avenue)
47	Northbound at CTH ZZ (W. College Avenue)
48	Southbound at CTH BB (W. Rawson Avenue)
49	Westbound CTH BB (W. Rawson Avenue) to Northbound IH 94
50	Eastbound CTH BB (W. Rawson Avenue) to Northbound IH 94
51	Southbound at Drexel Avenue
52	Northbound at Drexel Avenue
53	Southbound at STH 100 (W. Ryan Road)
54	NB at STH 100 (W. Ryan Road)

Table IV-16 (continued)

Reference Number[a]	Ramp Meter Location
IH 43 North Corridor	
55	Southbound at STH 57/167 (Mequon Road)
56	Southbound at Milwaukee—Ozaukee County Line Road
57	Eastbound STH 100 (W. Brown Deer Road) to Southbound IH 43
58	Westbound STH 100 (W. Brown Deer Road) to Southbound IH 43
59	Southbound at CTH PP (W. Good Hope Road)
60	Southbound at W. Silver Spring Drive
61	Southbound at W. Hampton Avenue
62	Southbound at Green Bay Avenue
63	Southbound at N. 9th Street and W. Abert Place
64	Northbound at Atkinson Avenue
65	Southbound at W. Keefe Avenue
66	Southbound at W. Locust Street
67	Northbound at W. Locust Street
68	Southbound at W. North Avenue
69	Northbound at W. North Avenue
70	Southbound at W. Fond du Lac Avenue (W. McKinley Avenue)
71	Northbound at W. Fond du Lac Avenue
72	Northbound at W. Highland Avenue and W. Kilbourn Avenue
73	Southbound at W. Wisconsin Avenue
IH 43 South Corridor	
74	Northbound at STH 100 (S. 108th Street)
75	Northbound at Moorland Road Northbound
76	Northbound at Moorland Road Southbound
IH 894 Corridor	
77	Northbound at STH 59 (W. Greenfield Avenue)
78	Southbound at STH 59 (W. Greenfield Avenue)
79	Northbound at W. Lincoln Avenue
80	Southbound at W. National Avenue
81	Northbound at W. National Avenue
82	Northbound at CTH NN (W. Oklahoma Avenue)
83	Northbound at W. Beloit Road
84	Southbound at W. Beloit Road
85	Westbound at S. 84th Street
86	Eastbound at W. Forest Home Avenue
87	Eastbound at S. 76th Street
88	Westbound at S. 60th Street
89	Eastbound at S. 60th Street
90	Westbound at STH 36 (S. Loomis Road)
91	Eastbound at STH 36 (S. Loomis Road)
92	Southbound WIS 241 (S. 27th Street) to Westbound IH 894
93	Northbound WIS 241 (S. 27th Street) to Westbound IH 894
94	Southbound at STH 241 (S. 27th Street) to Eastbound IH 894
USH 45 Corridor	
95	Southbound at Lannon Road
96	Southbound at CTH Q (Washington—Waukesha County Line Road)
97	Southbound at Pilgrim Road
98	Southbound at STH 74 (Main Street)
99	Northbound at STH 74 (Main Street)
100	Northbound at N. 124th Street (Waukesha—Milwaukee County Line)
101	Southbound at N. 124th Street (Waukesha—Milwaukee County Line)
102	Northbound STH 145 to Northbound USH 45
103	Westbound CTH PP (W. Good Hope Road) to Southbound USH 45
104	Northbound at CTH PP (W. Good Hope Road)
105	Eastbound CTH PP (W. Good Hope Road) to Southbound USH 45
106	Northbound at USH 41 (W. Appleton Avenue)
107	Southbound at STH 175 (W. Appleton Avenue)
108	Southbound at CTH E (W. Silver Spring Drive)
109	Northbound at CTH E (W. Silver Spring Drive)
110	Southbound at CTH EE (W. Hampton Avenue)
111	Northbound at CTH EE (W. Hampton Avenue)

Table IV-16 (continued)

Reference Number[a]	Ramp Meter Location
USH 45 Corridor--continued	
112	Southbound at STH 190 (W. Capitol Drive)
113	Northbound at STH 190 (W. Capitol Drive)
114	Southbound at W. Burleigh Street
115	Northbound at W. Burleigh Street
116	Southbound at W. North Avenue
117	Northbound at W. North Avenue
118	Southbound at Watertown Plank Road
119	Northbound at Watertown Plank Road
120	Southbound at N. 97th Street and W. Wisconsin Avenue
121	Northbound at W. Wisconsin Avenue

[a]*See Map IV-20.*

Source: Wisconsin Department of Transportation and SEWRPC.

LBM/lbm
#215279
12/20/13

Table IV-17

LOCATIONS OF VARIABLE MESSAGE SIGNS AND CLOSED-CIRCUIT TELEVISION CAMERAS ON THE EXISTING FREEWAY SYSTEM IN SOUTHEASTERN WISCONSIN: 2013

Reference Number[a]	Variable Message Sign Locations
1	IH 94 eastbound at STH 16 (Silvernail Road)
2	IH 94 eastbound at Brookfield Road
3	IH 94 westbound at Calhoun Road
4	IH 94 eastbound at Elm Grove Road
5	IH 94 eastbound at S. 89th Street
6	IH 94 eastbound at N. 76th street
7	IH 94 eastbound at N. 30th Street
8	IH 94 westbound at N. 27th Street
9	IH 94 westbound at N. 22nd Street
10	IH 43 and IH 94 northbound at Kinnickinnic River
11	IH 43 and IH 94 southbound at Oklahoma Avenue
12	STH 119 westbound at Mitchell Airport
13	IH 94 southbound at CTH ZZ (W. College Avenue)
14	IH 94 northbound at CTH ZZ (W. College Avenue)
15	IH 94 northbound at W. Drexel Avenue
16	IH 94 northbound at CTH G
17	IH 94 southbound at STH 20
18	IH 94 southbound at STH 158 (52nd Street)
19	IH 94 northbound at CTH C
20	IH 43 and IH 894 eastbound at S. 35th Street
21	IH 43 and IH 894 westbound at STH 36 (W. Loomis Road)
22	IH 894 eastbound at S. 72nd Street
23	IH 43 northbound at CTH T (W. Beloit Road)
24	IH 894 northbound at Cleveland Avenue
25	IH 894 and USH 45 southbound at STH 59 (W. Greenfield Avenue)
26	USH 45 southbound at W. Burleigh Street
27	USH 41 and USH 45 southbound at STH 145
28	STH 41 southbound at W. Cherry Street
29	IH 43 northbound at W. Walnut Street
30	IH 43 southbound at W. Locust Avenue
31	IH 43 southbound at Ozaukee - Milwaukee County Line Road

Reference Number[a]	Closed-Circuit Television Camera Locations
1	IH 94 at CTH F
2	IH 94 at STH 67 (Summit Avenue)
3	IH 94 at CTH P (N. Sawyer Road)
4	IH 94 at STH 83
5	IH 94 at CTH SS
6	IH 94 at CTH T
7	I-94 at STH 164 (Pewaukee Road)
8	IH 94 at Springdale Road
9	IH 94 at USH 18 (Blue Mound Road)
10	IH 94 at Moorland Road
11	IH 94 west of N. Brookfield Road
12	IH 94 at Calhoun Road
13	IH 94 at Sunnyslope Road
14	IH 94 at Elm Grove Road
15	IH 94 at S. 121st Street

Table IV-17 (continued)

Reference Number[a]	Closed-Circuit Television Camera Locations
16	IH 94 at STH 100 (N. 108th Street)
17	IH 94 at IH 894 and USH 45 (Zoo Interchange) Upper
18	IH 94 at IH 894 and USH 45 (Zoo Interchange) Lower
19	IH 94 at S. 92nd Street
20	IH 94 at STH 181 (N. 84th Street)
21	IH 94 at S. 76th Street
22	IH 94 at N. 68th Street
23	IH 94 at Hawley Road
24	IH 94 at Mitchell Boulevard
25	IH 94 at USH 41
26	USH 41 at USH 18 (W. Bluemound Road)
27	USH 41 at W. Wells Street
28	STH 341 (Miller Park Way) at Stadium Pedestrian Bridge
29	IH 94 at N. 39th Street
30	IH 94 at N. 30th Street
31	IH 94 at N. 25th Street
32	IH 94 at N. 20th Street
33	IH 94 at N. 13th Street
34	IH 43 Northwest Ramp Northwest
35	IH 43 Northwest Ramp North
36	IH 43 at W. Wisconsin Avenue
37	IH 43 Southbound at W. Wells Street
38	IH 43 at Northbound at W. Wells Street
39	IH 43 at W. Kilbourn Avenue tunnel Exit
40	IH 43 at W. Kilbourn Avenue tunnel Entrance
41	IH 43 at STH 18 (W. State Street)
42	IH 43 at W. Highland Avenue
43	IH 43 at W. Juneau Avenue
44	IH 43 at STH 145 SW (W. Fond Du Lac Avenue)
45	IH 43 at STH 145 E (W. Fond Du Lac Avenue)
46	IH 43 at STH 145 NE (W. Fond Du Lac Avenue)
47	IH 43 at STH 145 W (W. Fond Du Lac Avenue)
48	USH 145 at McKinley Avenue
49	IH 43 at W. Walnut Street
50	IH 43 at W. Brown Street
51	IH 43 at W. Wright Street
52	IH 43 at W. Keefe Avenue
53	IH 43 at STH 190 (W. Capitol Drive)
54	IH 43 at W. Hampton Avenue
55	IH 43 at W. Silver Spring Drive
56	IH 43 at W. Daphne Road
57	IH 43 at CTH PP (W. Good Hope Road)
58	IH 43 at STH 100 (W. Brown Deer Road)
59	IH 43 at County Line Road
60	IH 43 at STH 167 and STH 57 (Mequon Road)
61	IH 794 at N. 7th Street (James Lovell Street) Upper
62	IH 794 at N. 7th Street (James Lovell Street) Lower
63	IH 794 at N. 2nd Street/Plankinton Avenue
64	IH 794 at Lincoln Memorial Drive (Lake Interchange)
65	IH 794 at north end of Daniel W. Hoan Bridge

Table IV-17 (continued)

Reference Number[a]	Closed-Circuit Television Camera Locations
66	IH 794 at south end of Daniel W. Hoan Bridge (Upper)
67	IH 794 at south end of Daniel W. Hoan Bridge (Lower)
68	IH 794 at Lake Pier
69	IH 794 at S. Carferry Drive (Upper)
70	IH 794 at S. Carferry Drive (Lower)
71	IH 794 at E. Bay Street
72	STH 794 at E. Oklahoma Avenue
73	IH 94 and IH 43 at W. Mitchell Street
74	IH 94 and IH 43 at STH 38 (Chase Avenue)
75	IH 94 and IH 43 at W. Oklahoma Avenue
76	IH 94 and IH 43 at W. Holt Avenue
77	IH 94 and IH 43 at W. Howard Avenue
78	IH 94 and IH 43 at W. Plainfield Avenue
79	IH 894 and IH 43 at 19th Street
80	IH 94 West-North Ramp #1
81	IH 94 West-North Ramp #2
82	IH 94 North-West Ramp #1
83	IH 94 North-West Ramp #2
84	I-43 East Entrance Tunnel
85	I-43 East Exit Tunnel
86	I-43 West Entrance Tunnel
87	I-43 West Exit Tunnel
88	IH 94 and IH 894 South-West Exit Tunnel
89	IH 94 and IH 894 South-West Entrance Tunnel
90	IH 94 at CTH Y (W. Layton Avenue)
91	IH 94 at CTH Y (W. Layton Avenue) Tunnel Signs
92	IH 94 at Grange Avenue
93	IH 94 at STH 119 (Airport Interchange)
94	IH 94 at CTH ZZ (W. College Avenue)
95	IH 94 at CTH BB (W. Rawson Avenue)
96	IH 94 at W. Drexel Avenue
97	IH 94 at S. STH 100 (W. Ryan Road)
98	IH 94 at W. Oakwood Road
99	IH 94 at Seven Mile Road
100	IH 94 at CTH G
101	IH 94 at CTH K
102	IH 94 at CTH E (W. 27th Street)
103	IH 94 at STH 20 (Washington Avenue)
104	IH 94 at STH 11 (W. Durand Avenue)
105	IH 94 at CTH A (W. 7th Street)
106	IH 94 at CTH KR (County Line Road)
107	IH 94 at CTH E (W. 12th Street)
108	IH 94 at STH 142 (Burlington Road)
109	IH 94 at STH 158 (W. 52nd Street)
110	IH 94 at STH 50 (W. 75th Street)
111	IH 94 at CTH C (Spring Street)
112	IH 94 at STH 165 (W. 104th Street)
113	IH 94 at CTH ML (Springbrook Road)
114	IH 894 and IH 43 at S. 20th Street
115	IH 894 and IH 43 at S. 22nd Street Tunnel Signs
116	IH 894 and IH 43 at USH 41 (S. 27th Street)

Table IV-17 (continued)

Reference Number[a]	Closed-Circuit Television Camera Locations
117	IH 894 and IH 43 at S. 35th Street
118	IH 894 and IH 43 at STH 36 (W. Loomis Road)
119	IH 894 and IH 43 at S. 60th Street
120	IH 894 and IH 43 at CTH U (S. 76th Street)
121	IH 894 and IH 43 at S. 84th Street
122	IH 894 and IH 43 at CTH N (S. 92nd Street)
123	IH 43 and IH 94 at Mitchell Interchange (NE)
124	IH 43 at Mitchell Interchange (SW)
125	IH 43 at STH 100 (S. 108th Street)
126	IH 43 at S. 116th Street
127	IH 43 at S. 124th Street
128	IH 43 at S. Sunnyslope Road
129	IH 43 at S. Moorland Road
130	IH 43 at CTH Y (S. Racine Avenue)
131	IH 43 at Crowbar Road
132	IH 43 at STH 164 (Big Bend Road)
133	IH 894 and USH 45 at Cold Spring Road
134	IH 894 and USH 45 at CTH T (W. Beloit Road)
135	IH 894 and USH 45 at CTH NN (W. Oklahoma Avenue)
136	IH 894 and USH 45 at W. Cleveland Avenue
137	IH 894 and USH 45 at W. Lincoln Avenue
138	IH 894 and USH 45 at STH 59 (W. National Avenue)
139	IH 894 and USH 45 at STH 59 (W. Greenfield Avenue)
140	USH 45 at USH 18 (W. Bluemound Road)
141	USH 45 at W. Watertown Plank Road
142	USH 45 at Swan Boulevard
143	USH 45 at STH 100 (N. Mayfair Road)
144	USH 45 at W. North Avenue
145	USH 45 at W. Center Street
146	USH 45 at W. Burleigh Road
147	USH 45 at STH 190 (W. Capitol Drive)
148	USH 45 at W. Hampton Avenue
149	USH 45 at CTH E (W. Silver Spring Drive)
150	USH 45 and STH 100 at USH 41 (W. Appleton Avenue)
151	USH 41 and USH 45 at CTH PP (W. Good Hope Road)
152	USH 41 and USH 45 at W. Park Place
153	USH 41 and USH 45 at Waukesha—Milwaukee County Line (W. 124th Street)
154	USH 41 and USH 45 at Leon Road
155	USH 41 and USH 45 at Pilgrim Road
156	USH 41 and USH 45 at CTH Q (Washington—Waukesha County Line Road)
157	USH 41 and USH 45 at STH 167 (Lannon Road)
158	USH 41 and USH 45 at CTH F (Freistadt Road)
159	USH 41 and USH 45 at STH 167 (Holy Hill Road)

[a]*See Map IV-21*

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12/9/2013

Table IV-18

LOCATION OF CRASH INVESTIGATION SITES ALONG THE EXISTING FREEWAY SYSTEM IN SOUTHEASTERN WISCONSIN: 2013

Reference Number[a]	Crash Investigation Site
IH 94 Corridor	
1	Westbound exit ramp to CTH O (Moorland Road) Southbound
2	Eastbound exit ramp to CTH O (Moorland Road) Southbound
3	State Fair Park park-ride lot (S. 76th Street)
4	Northbound exit ramp to E. Becher Street/Mitchell Street
5	Southbound exit ramp to E. Becher Street/Lincoln Avenue
6	Holt Avenue park-ride lot
7	Southwest W. College Avenue park-ride lot
8	Northeast W. College Avenue park-ride lot
9	W.Ryan Road park-ride lot
10	State Patrol truck weigh station (CTH G)
11	Racine County Sheriff's substation (STH 20)
12	STH 11 (Durand Avenue) park-ride lot
13	Wisconsin Tourism Information Center (STH 165)
IH 794 Corridor	
14	Eastbound exit ramp to St. Paul Avenue
IH 43 Corridor	
15	STH 100 (W. Brown Deer Road) park-ride lot
16	Southbound exit ramp to Atkinson Avenue
17	Northbound exit ramp to Locust Street
18	Southbound exit ramp to W. North Avenue
19	Northbound exit ramp to westbound W. Fond du Lac Avenue
20	Southbound exit ramp to W. Highland Avenue
21	CTH O (Moorland Road) park-ride lot
IH 894 Corridor	
22	Northbound exit ramp to STH 59 (W. Greenfield Avenue)
23	Southbound exit ramp to W. Lincoln Avenue
USH 45 Corridor	
24	Lannon Road park-ride lot
25	Northwest of the Pilgrim Road/USH 45 interchange on Stopler Drive
26	Northbound exit ramp to STH 145 (N. 124th Street)
27	Southbound exit ramp to CTH PP (W. Good Hope Road)
28	Northbound exit ramp to USH 41 (W. Appleton Avenue)
29	Southbound exit ramp to USH 41 (W. Appleton Avenue)
30	Northbound exit ramp to CTH EE (W. Hampton Avenue)
31	Southbound exit ramp to CTH EE (W. Hampton Avenue)
32	Milwaukee County Sheriff's substation (Watertown Plank Road)

[a] *See Map IV-22.*

Source: Wisconsin Department of Transportation and SEWRPC.

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#215291
12/22/2013

Table IV-19

LOCATIONS OF VARIABLE MESSAGE SIGNS AND CLOSED-CIRCUIT TELEVISION CAMERAS ON THE EXISTING STANDARD ARTERIAL STREET AND HIGHWAY SYSTEM IN SOUTHEASTERN WISCONSIN: 2013

Reference Number[a]	Variable Message Sign Locations
1	USH 18 (E. Moreland Road) eastbound at IH 94 (Goerke's Corners)
2	STH 100 (N. 108th Street) southbound at USH 18 (W. Bluemound Road)
3	USH 18 (W. Bluemound Road) eastbound at 114th Street
4	STH 100 (N. 108th Street) northbound at Watertown Plank Road
5	STH 100 (N. 108th Street) southbound at W. Walnut Street
6	STH 190 (W. Capitol Drive) eastbound at N. 124th Street
7	STH 175 (Appleton Avenue) eastbound at STH 100 (N. 108th Street)
8	CTH PP (W. Good Hope Road) westbound at USH 41/45
9	STH 145 (N. 124th Street) southbound at W. Bradley Road
10	STH 59 (W. Greenfield Avenue) eastbound at 111th Street
11	STH 100 (N. 108th Street) northbound at W. Lapham Street
12	STH 100 (N. 108th Street) northbound at Edgerton Road
13	Mitchell International Airport at Airport Parking Ramp Exit
14	Mitchell International Airport at Airport Drop-off Exit
15	W. Canal Street westbound at 25th Street
16	Miller Park Way northbound at STH 59 (W. National Avenue)
17	STH 59 (W. National Avenue) westbound at Miller Park Way
18	STH 59 (W. National Avenue) eastbound at Miller Park Way
19	84th Street southbound at North IH 94

Reference Number[a]	Closed-Circuit Television Camera Locations
1	USH 18 (W. Bluemound Road) at CTH Y (Barker Road)
2	USH 18 (W. Bluemound Road) at Calhoun Road
3	USH 18 (W. Bluemound Road) at CTH O (Moorland Road)
4	STH 100 (N. 108th Street) at USH 18 (W. Bluemound Road)
5	STH 100 (N. 108th Street) at Research Drive
6	STH 100 (N. 108th Street) at Watertown Plank Road
7	STH 100 (N. 108th Street) at W. North Avenue
8	STH 100 (N. 108th Street) at W. Burleigh Avenue
9	STH 100 (N. 108th Street) at STH 190 (W. Capitol Drive)
10	STH 100 (N. 108th Street) at CTH EE (W. Hampton Avenue)
11	STH 100 (N. 108th Street) at CTH E (W. Silver Spring Drive)
12	USH 18 (E. Bluemound Road) at 80th Street
13	STH 181 (S. 84th Street) at STH 59 (W. Greenfield Avenue)
14	STH 100 (N. 108th Street) at STH 59 (W. Greenfield Avenue)
15	STH 100 (N. 108th Street) at W. Lincoln Avenue
16	USH 794 (Lake Parkway) at E. Layton Avenue
17	USH 38 (S. Howell Avenue) at north Airport Tunnel
18	USH 38 (S. Howell Avenue) at south Airport Tunnel
19	USH 119 at USH 38 (S. Howell Avenue)
20	USH 341 (Miller Parkway) at STH 59 (W. National Avenue)
21	Kilbourn Avenue at Tunnel Entrance
22	Kilbourn Avenue at Tunnel Exit

[a] *See Map IV-23.*

Source: Wisconsin Department of Transportation and SEWRPC.

Table IV-20

COUNTY AND LOCAL ARTERIAL STREET AND HIGHWAY PAVEMENT CONDITION IN THE REGION: 2005 AND 2011

PASER Pavement Rating	2005		2011	
	Local and County Arterial (Miles)	Percent of Total	Local and County Arterial (Miles)	Percent of Total
1 and 2	132	5.7	92	3.9
3 and 4	233	10.2	227	9.6
5 and 6	431	18.8	556	23.4
7	376	16.4	431	18.1
8, 9, and 10	907	39.5	884	37.2
No Rating	215	9.4	185	7.8
Total	2,294	100.0	2,375	100.0

Source: Wisconsin Department of Transportation and SEWRPC.

Table IV-21

STATE TRUNK HIGHWAY PAVEMENT CONDITION IN THE REGION: 2006 AND 2012

International Roughness Index	2006		2012	
	State Trunk Highway (Miles)	Percent of Total	State Trunk Highway (Miles)	Percent of Total
0.00 to 2.50	916	74.2	927	74.8
2.50 to 2.75	76	6.2	78	6.3
2.75 to 3.00	61	4.9	59	4.8
3.00 to 12.00	161	13.0	166	13.4
No Rating	20	1.6	9	0.7
Total	1,234	100.0	1,239	100.0

Source: Wisconsin Department of Transportation and SEWRPC.

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Table IV-22 (REVISED)

SUFFICIENCY RATINGS FOR BRIDGE STRUCTURES IN THE REGION: 2006 AND 2012

Sufficiency Rating[a]	Number of Bridges		Percent Change 2006-2012
	2006	2012	
Less than 50.0	98	86	-12.2
50.0 to 79.9	520	469	-9.8
80.0 to 100.0	1,244	1,363	9.6
Total	1,862	1,918	3.0

[a]*Sufficiency ratings for bridges ranges from 0 to 100 and are used to prioritize funding for improvement of a particular bridge. WisDOT considers a bridge to be eligible for rehabilitation when its sufficiency rating is less than 80 and to be eligible for replacement funding when its sufficiency rating is less than 50.*

Source: Wisconsin Department of Transportation and SEWRPC.

Table IV-23

ESTIMATED SOUTHEASTERN WISCONSIN REGION TRANSPORTATION SYSTEM AIR POLLUTANT EMISSION AND FUEL CONSUMPTION: YEARS 2001 AND 2010

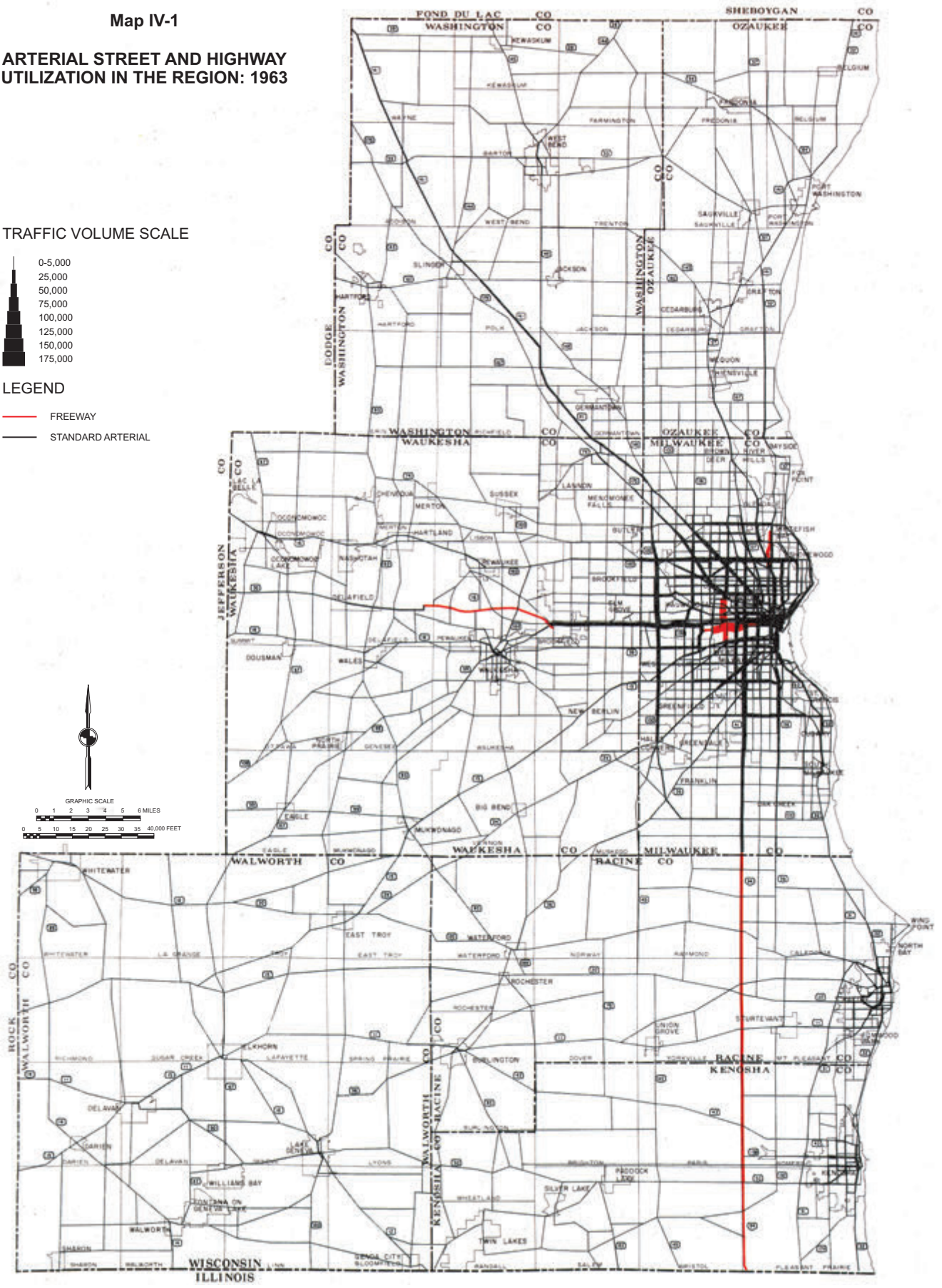
Year	Estimated Air Pollutant Emissions (Tons per Hot Summer Weekday)												Estimated Fuel Consumption (Gallons per Average Weekday)
	Volatile Organic Compounds[a]	Nitrogen Oxides[a]	Carbon Monoxide	Carbon Dioxide	Fine Particulate Matter	Sulfur Dioxide	Ammonia	Butadiene	Acetaldehyde	Acrolein	Benzene	Formaldehyde	
Year 2001	50.03	114.23	592.48	18,050	1.77	2.77	4.84	0.20	0.43	0.03	1.40	0.63	1,805,000
Year 2010	27.30	60.92	358.29	18,500	1.18	0.51	5.62	0.09	0.20	0.01	0.66	0.30	1,865,000

[a]*Estimated 1990 emissions were 154.6 tons of volatile organic compounds and 136.3 tons of nitrogen oxides. Estimated 1999 emissions were 61.3 tons of volatile organic compounds and 118.0 tons of nitrogen oxides.*

Source: SEWRPC.

Map IV-1

ARTERIAL STREET AND HIGHWAY UTILIZATION IN THE REGION: 1963

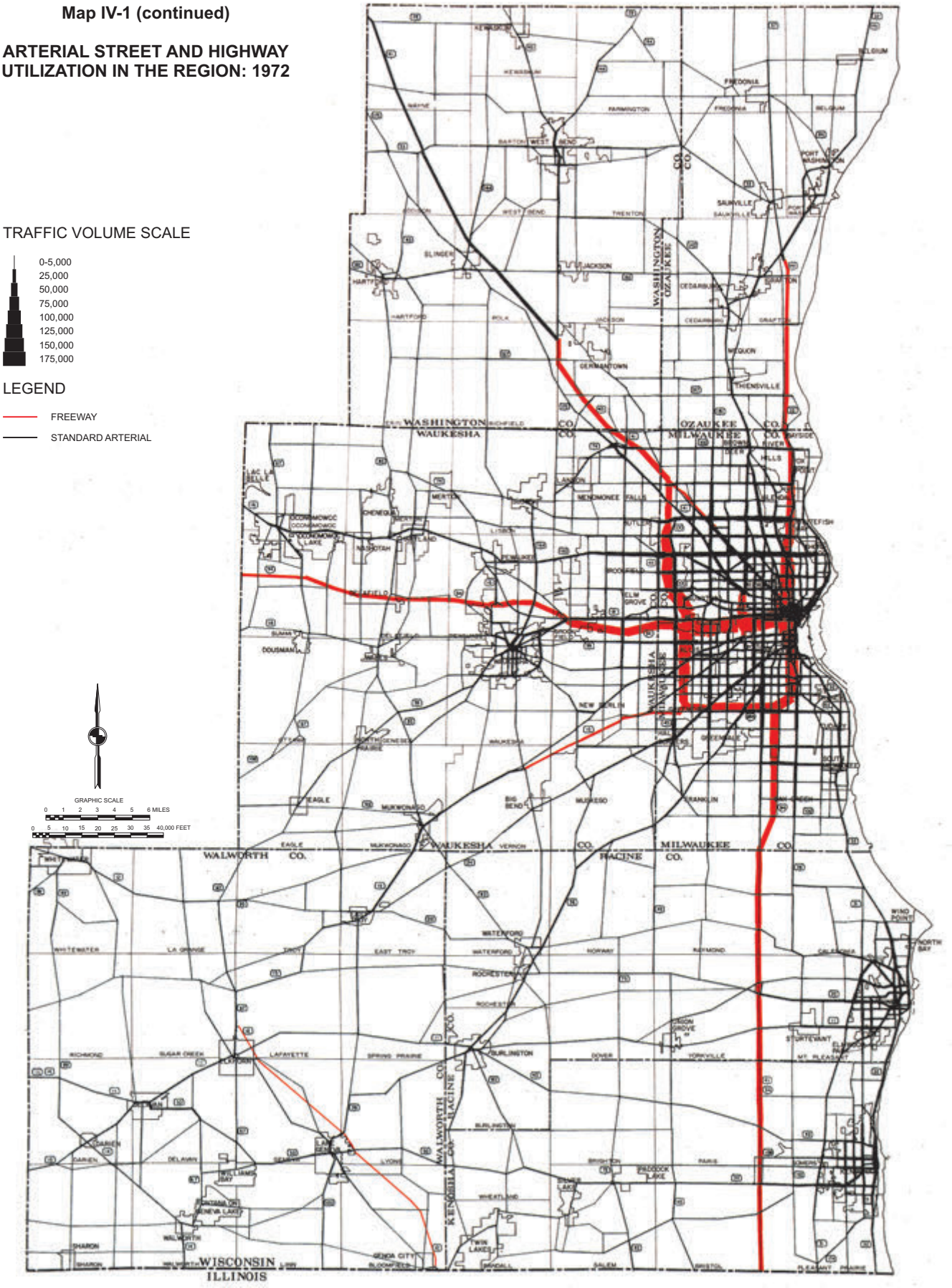


Source: SEWRPC.

I:\Tran\WORK\RTSP 2050\Inventory\Maps\Ch 4\Map IV-1a 1963 utilization.cdr

Map IV-1 (continued)

ARTERIAL STREET AND HIGHWAY UTILIZATION IN THE REGION: 1972

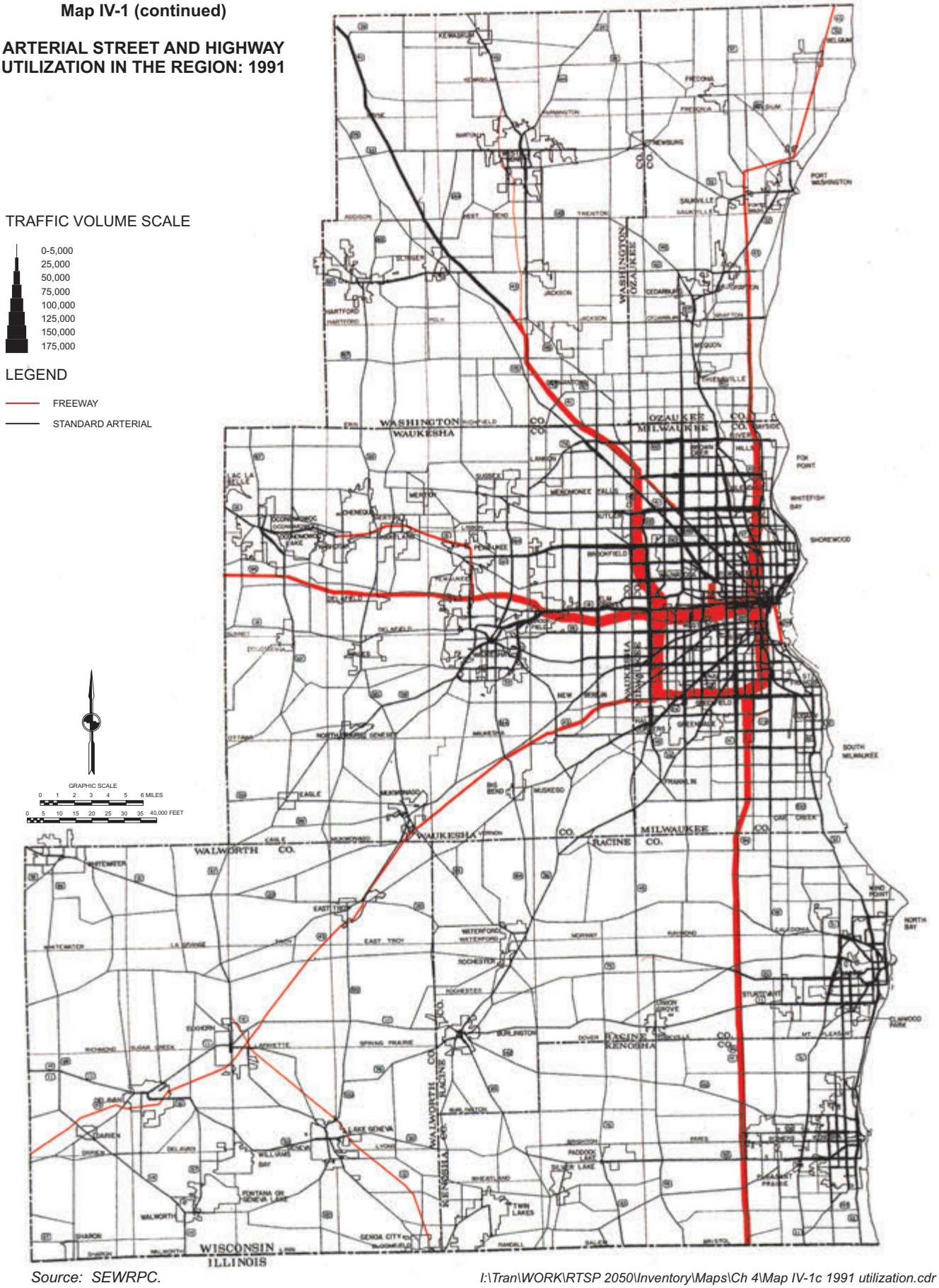


Source: SEWRPC.

I:\Tran\WORK\RTSP 2050\Inventory\Maps\Ch 4\Map IV-1b 1972 utilization.cdr

Map IV-1 (continued)

ARTERIAL STREET AND HIGHWAY UTILIZATION IN THE REGION: 1991



Source: SEWRPC.

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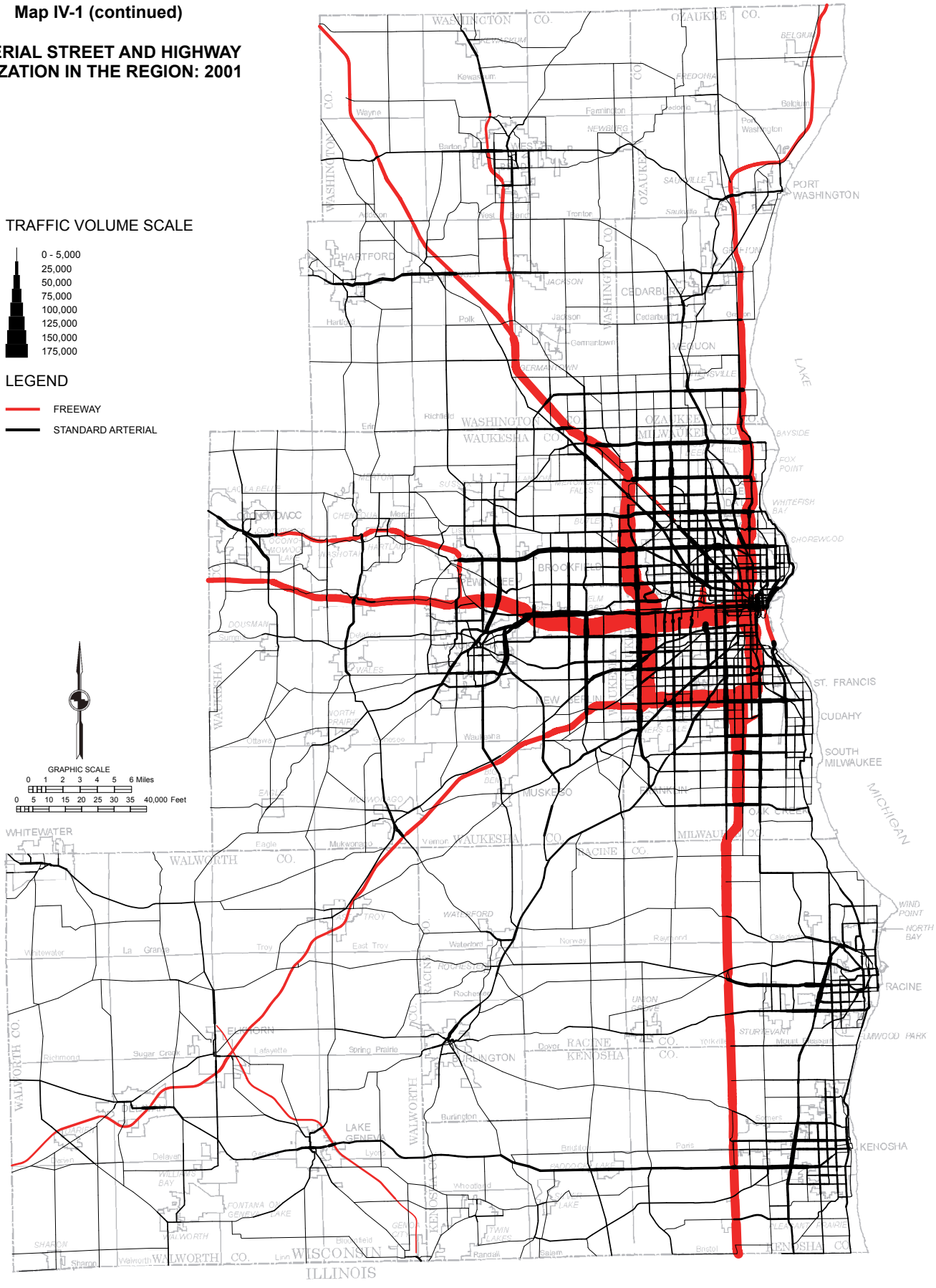
Map IV-1 (continued)

ARTERIAL STREET AND HIGHWAY UTILIZATION IN THE REGION: 2001



Source: SEWRPC.

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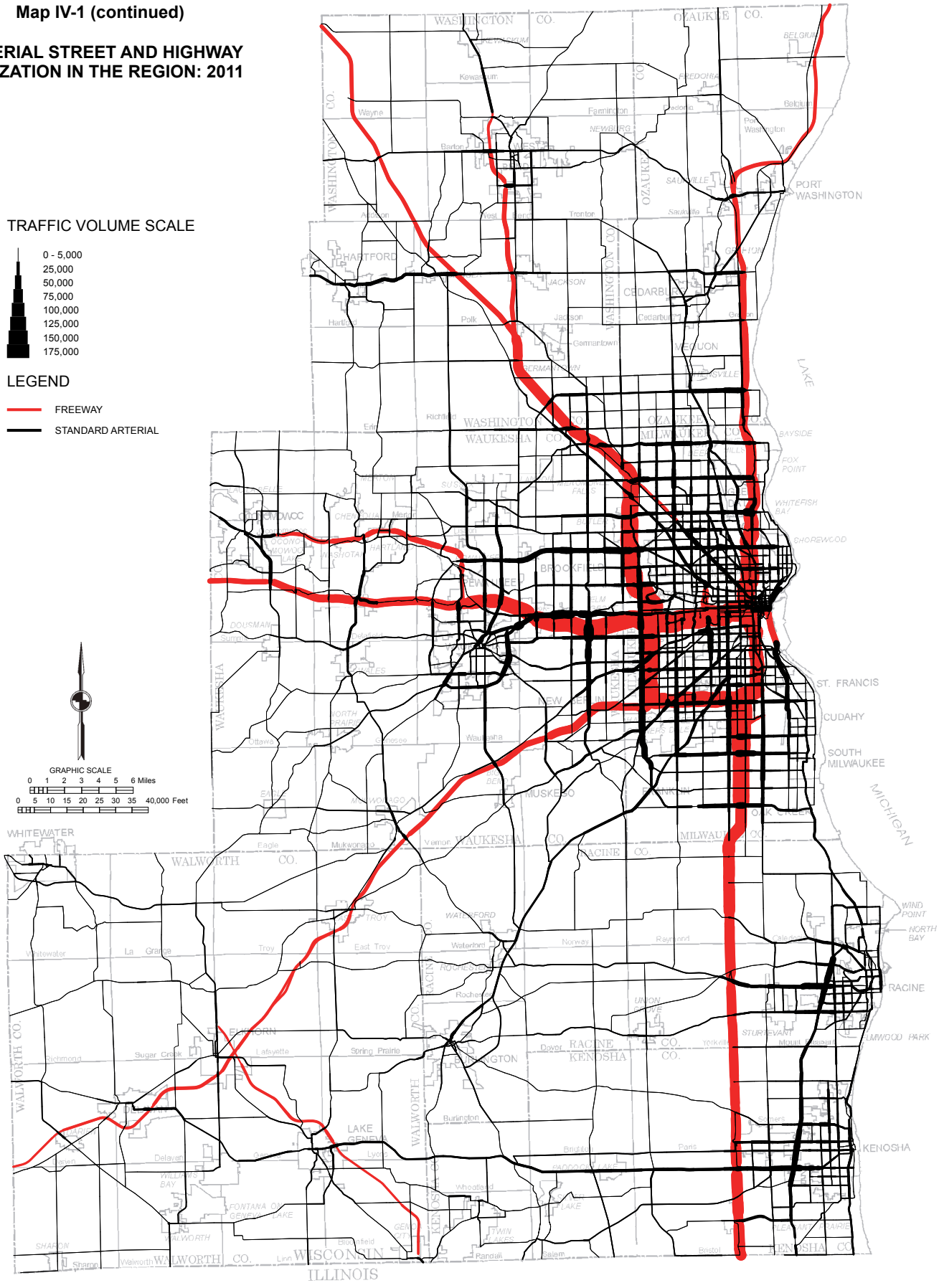
Map IV-1 (continued)

ARTERIAL STREET AND HIGHWAY UTILIZATION IN THE REGION: 2011



Source: SEWRPC.

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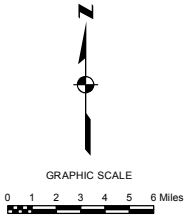
Map IV-2 (Revised)

CONGESTION ON THE ARTERIAL STREET AND HIGHWAY SYSTEM IN THE REGION: 2011

FACILITY CONGESTION STATUS

- AT OR UNDER DESIGN CAPACITY
- MODERATELY CONGESTED
- SEVERELY CONGESTED
- EXTREMELY CONGESTED

NOTE: THIS MAP DISPLAYS THE TRAFFIC CONGESTION EXPERIENCED DURING THE MORNING AND AFTERNOON PEAK TRAFFIC HOURS.



SOURCE: Wisconsin Department of Transportation and SEWRPC

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I:\Tran\WORK\RTSP 2050\Inventory\Maps\Ch 4\Map IV-2 Congestion on Arterial System 2011 REVISED.mxd

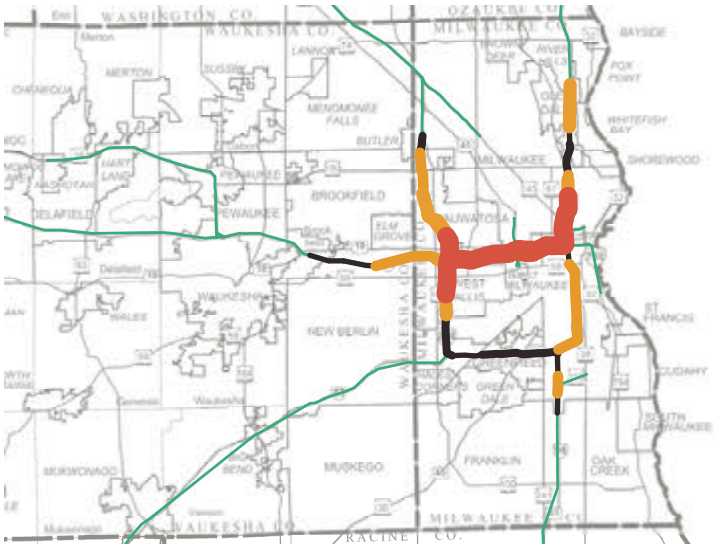
Map IV-3

HISTORIC TRAFFIC CONGESTION ON THE SOUTHEASTERN WISCONSIN FREEWAY SYSTEM

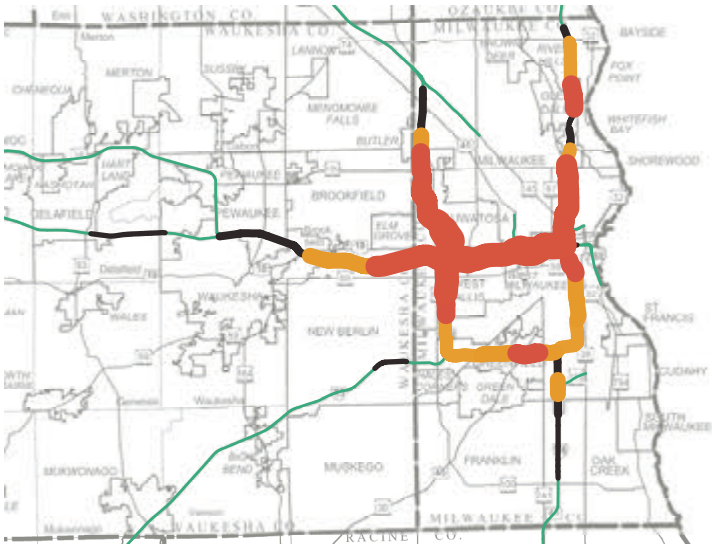
1972

1980

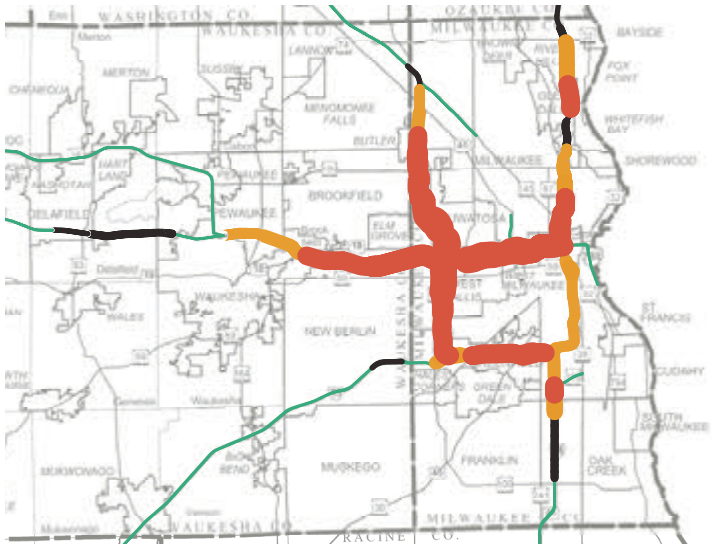
1991



2001

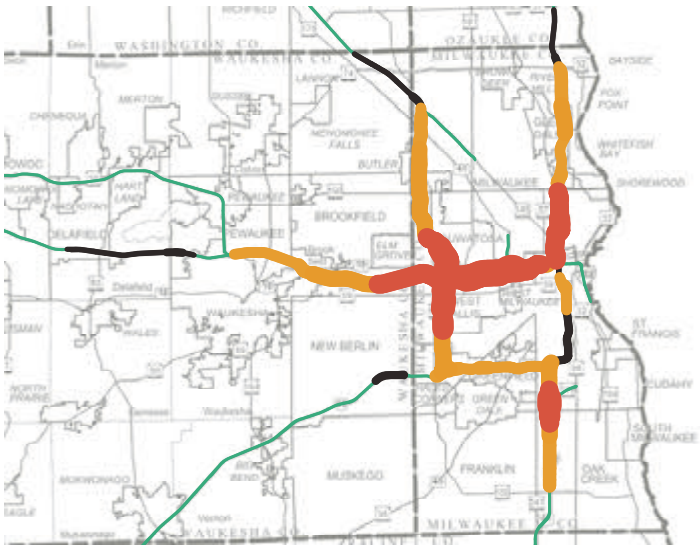


2005



MOST SEVERE LEVEL OF WEEKDAY HOURLY CONGESTION EXPERIENCED	ESTIMATED HOURS OF CONGESTION ON AN AVERAGE WEEKDAY	ESTIMATED AVERAGE WEEKDAY HOURS OF CONGESTION BY CONGESTION LEVEL		
		EXTREME	SEVERE	MODERATE
--	NO CONGESTION	--	--	--
MODERATE	1	--	--	1
MODERATE	3	--	--	3
SEVERE	3	--	1	2
SEVERE	4	--	1	3
SEVERE	4	--	2	2
EXTREME	6	1	2	3
EXTREME	8	1	3	4
EXTREME	11	2	4	5
EXTREME	13	2	5	6
EXTREME	14	2	5	7
EXTREME	15	3	5	7
EXTREME	16	4	5	7
EXTREME	17	4	6	7

2011[a]



Source: Wisconsin Department of Transportation and SEWRPC.

[a] DURING 2011, THE TRAFFIC VOLUME ON THE FREEWAY SYSTEM WAS IMPACTED BY LANE CLOSURES ATTENDANT TO THE RESURFACING OF IH 94 BETWEEN STH 16 AND THE STADIUM INTERCHANGE, AND THE RECONSTRUCTION OF THE MITCHELL INTERCHANGE.

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2/12/2014
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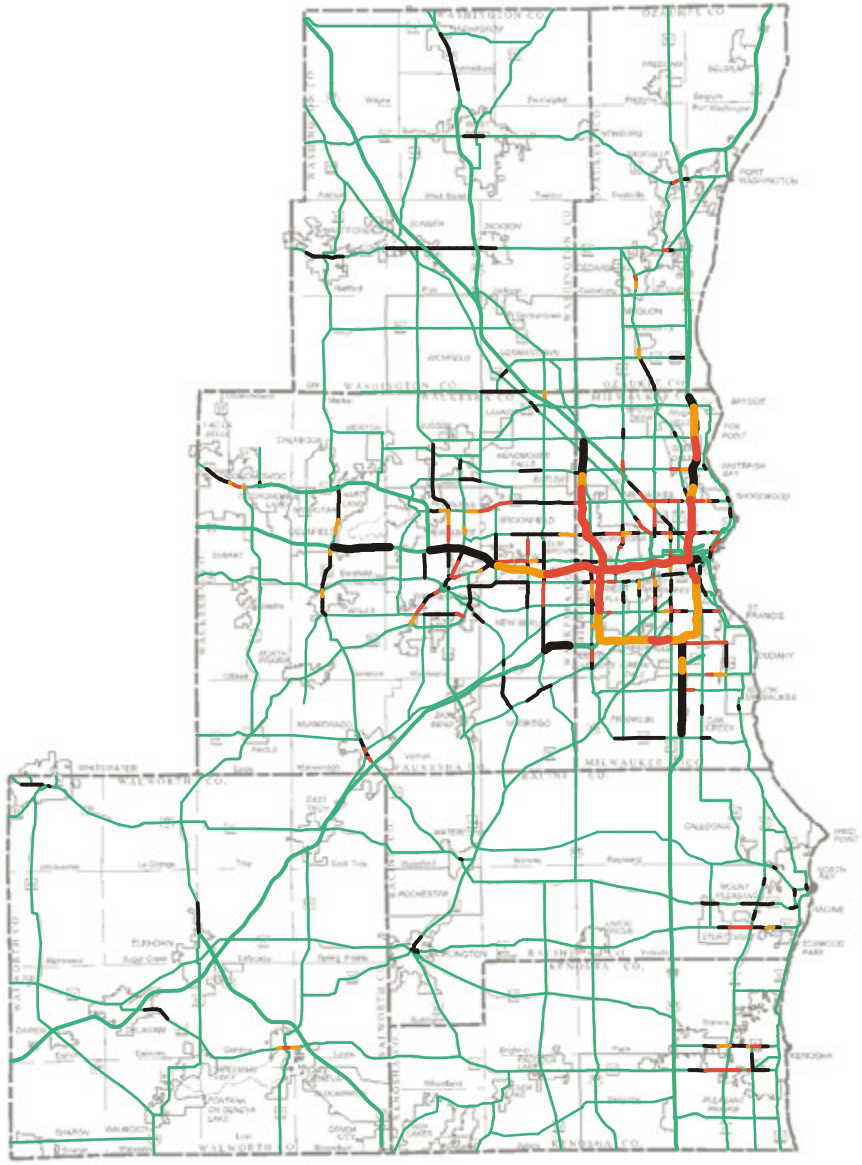
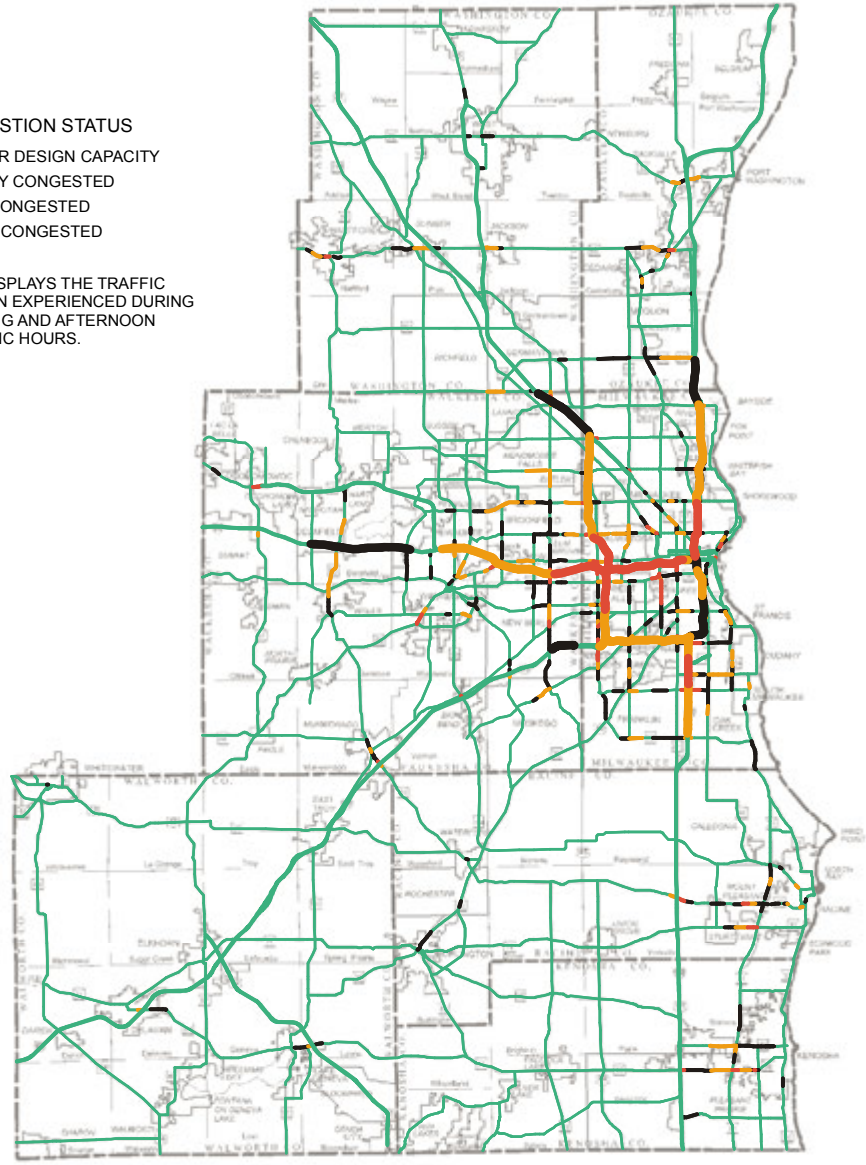
Map IV-4 (REVISED)

CONGESTION ON DESIGNATED TRUCK ROUTES AND THE NATIONAL HIGHWAY SYSTEM IN THE REGION: YEARS 2001 AND 2011

2001



2011[a]



FACILITY CONGESTION STATUS

- AT OR UNDER DESIGN CAPACITY
- MODERATELY CONGESTED
- SEVERELY CONGESTED
- EXTREMELY CONGESTED

NOTE: THIS MAP DISPLAYS THE TRAFFIC CONGESTION EXPERIENCED DURING THE MORNING AND AFTERNOON PEAK TRAFFIC HOURS.

GRAPHIC SCALE

0 1 2 3 4 5 6 Miles

Source: SEWRPC.

[a] DURING 2011, THE TRAFFIC VOLUME ON THE FREEWAY SYSTEM WAS IMPACTED BY LANE CLOSURES ATTENDANT TO THE RESURFACING OF IH 94 BETWEEN STH 16 AND THE STADIUM INTERCHANGE, AND THE RECONSTRUCTION OF THE MITCHELL INTERCHANGE.

CTH/gba/jwd
1/16/2015
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Map IV-5

AVERAGE VEHICULAR CRASH RATE OF STATE TRUNK HIGHWAYS IN SOUTHEASTERN WISCONSIN: 2008-2012

STATE TRUNK HIGHWAY

- FREEWAY
- SURFACE ARTERIAL

PERCENT OF REGIONWIDE AVERAGE CRASH RATE

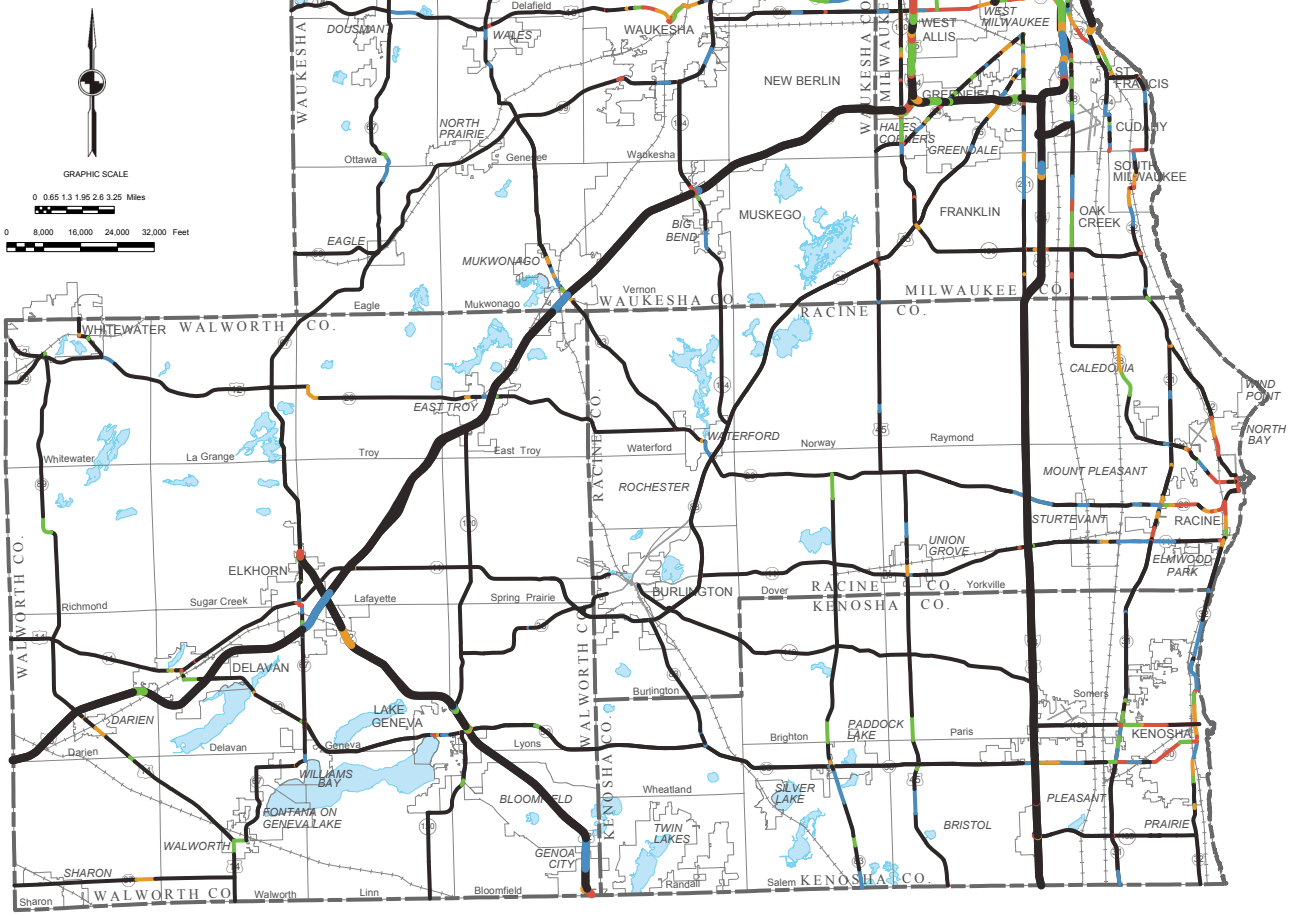
- AT OR BELOW REGIONWIDE AVERAGE
- 1 PERCENT TO 50 PERCENT ABOVE
- 51 PERCENT TO 100 PERCENT ABOVE
- 100 PERCENT TO 200 PERCENT ABOVE
- MORE THAN 200 PERCENT ABOVE

NOTES:

1. THE AVERAGE CRASH RATE ON THE STATE TRUNK HIGHWAY NETWORK IN SOUTHEASTERN WISCONSIN FROM 2008 THROUGH 2012 WAS 71.1 CRASHES PER 100 MILLION VEHICLE MILES FOR FREEWAYS AND 237.5 CRASHES PER 100 MILLION VEHICLE MILES FOR SURFACE ARTERIALS.

2. A SEPARATE CRASH RATE IS CALCULATED FOR EACH DIRECTION FOR DIVIDED HIGHWAYS. THE SIDE OF THE DIVIDED HIGHWAY HAVING THE WORST CRASH RATE IS DISPLAYED ON THE MAP.

3. ONLY CRASHES THAT OCCURED IN YEARS SINCE THE ROADWAY WAS LAST RECONFIGURED ARE INCLUDED IN THE CRASH RATES SHOWN.

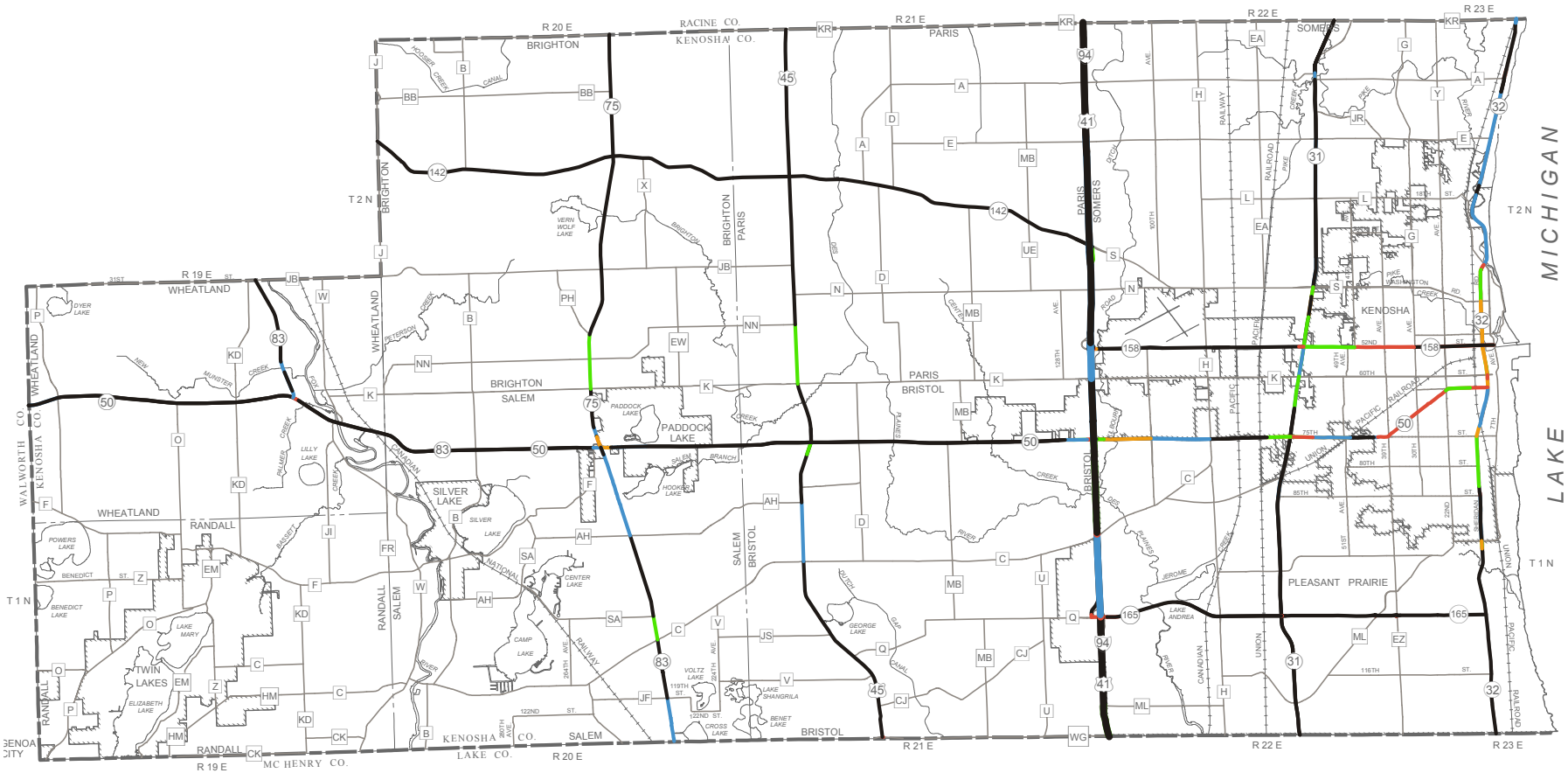


Source: The Wisconsin Department of Transportation and SEWRPC.

DJM/djm
10/9/2013
I:\Tran\WORK\RTSP2050\Inventory\Maps\Ch 4\Map IV-5 - Regionwide Crashes.mxd

Map IV-6

AVERAGE VEHICULAR CRASH RATE OF STATE TRUNK HIGHWAYS IN KENOSHA COUNTY: 2008-2012



STATE TRUNK HIGHWAY

- FREEWAY
- SURFACE ARTERIAL

PERCENT OF COUNTYWIDE AVERAGE CRASH RATE

- AT OR BELOW COUNTYWIDE AVERAGE
- 1 PERCENT TO 50 PERCENT ABOVE
- 51 PERCENT TO 100 PERCENT ABOVE
- 100 PERCENT TO 200 PERCENT ABOVE
- MORE THAN 200 PERCENT ABOVE

NOTES:

1. THE AVERAGE CRASH RATE ON THE STATE TRUNK HIGHWAY NETWORK IN KENOSHA COUNTY FROM 2008 THROUGH 2012 WAS 45.6 CRASHES PER 100 MILLION VEHICLE MILES FOR FREEWAYS AND 242.4 CRASHES PER 100 MILLION VEHICLE MILES FOR SURFACE ARTERIALS.

2. A SEPARATE CRASH RATE IS CALCULATED FOR EACH DIRECTION FOR DIVIDED HIGHWAYS. THE SIDE OF THE DIVIDED HIGHWAY HAVING THE WORST CRASH RATE IS DISPLAYED ON THE MAP.

3. ONLY CRASHES THAT OCCURED IN YEARS SINCE THE ROADWAY WAS LAST RECONFIGURED ARE INCLUDED IN THE CRASH RATES SHOWN.

N

GRAPHIC SCALE

0 1 2 3 MILES

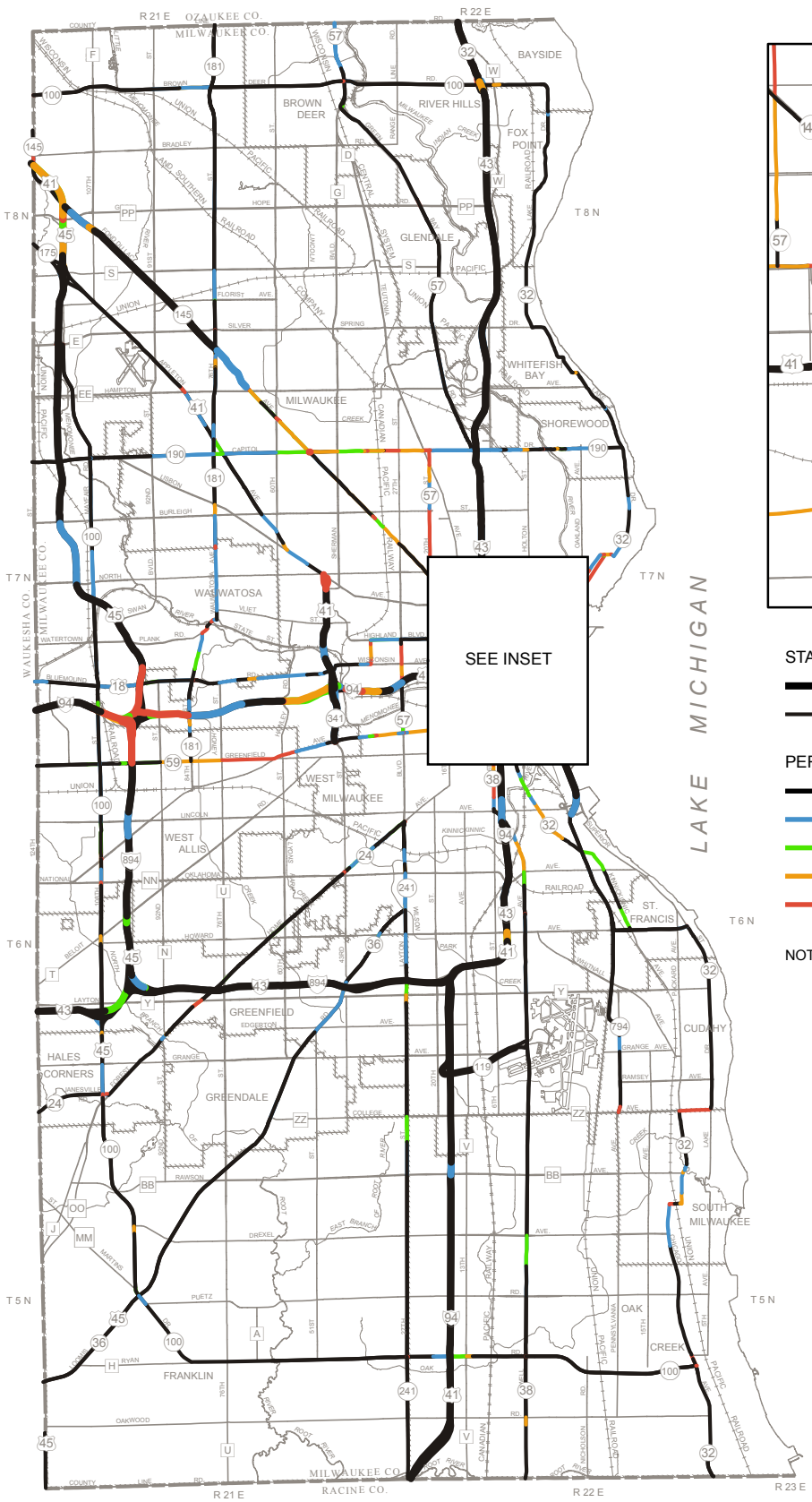
0 4,000 8,000 12,000 16,000 20,000 FEET

Source: The Wisconsin Department of Transportation and SEWRPC.

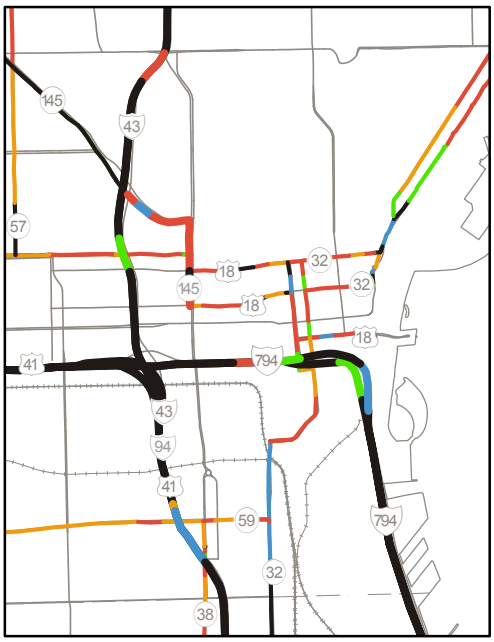
DJM/djm
10/10/2013
I:\Tran\WORK\RTSP2050\Inventory\Maps\Ch 4\Map IV-6 - Crash Rate - Kenosha County.mxd

Map IV-7

AVERAGE VEHICULAR CRASH RATE OF STATE TRUNK HIGHWAYS IN MILWAUKEE COUNTY: 2008-2012



INSET



STATE TRUNK HIGHWAY

- FREEWAY
- SURFACE ARTERIAL

PERCENT OF COUNTYWIDE AVERAGE CRASH RATE

- AT OR BELOW COUNTYWIDE AVERAGE
- 1 PERCENT TO 50 PERCENT ABOVE
- 51 PERCENT TO 100 PERCENT ABOVE
- 100 PERCENT TO 200 PERCENT ABOVE
- MORE THAN 200 PERCENT ABOVE

NOTES:

1. THE AVERAGE CRASH RATE ON THE STATE TRUNK HIGHWAY NETWORK IN MILWAUKEE COUNTY FROM 2008 THROUGH 2012 WAS 165.0 CRASHES PER 100 MILLION VEHICLE MILES FOR FREEWAYS AND 414.5 CRASHES PER 100 MILLION VEHICLE MILES FOR SURFACE ARTERIALS.

2. A SEPARATE CRASH RATE IS CALCULATED FOR EACH DIRECTION FOR DIVIDED HIGHWAYS. THE SIDE OF THE DIVIDED HIGHWAY HAVING THE WORST CRASH RATE IS DISPLAYED ON THE MAP.

3. ONLY CRASHES THAT OCCURED IN YEARS SINCE THE ROADWAY WAS LAST RECONFIGURED ARE INCLUDED IN THE CRASH RATES SHOWN.

GRAPHIC SCALE

0 1 2 3 MILES

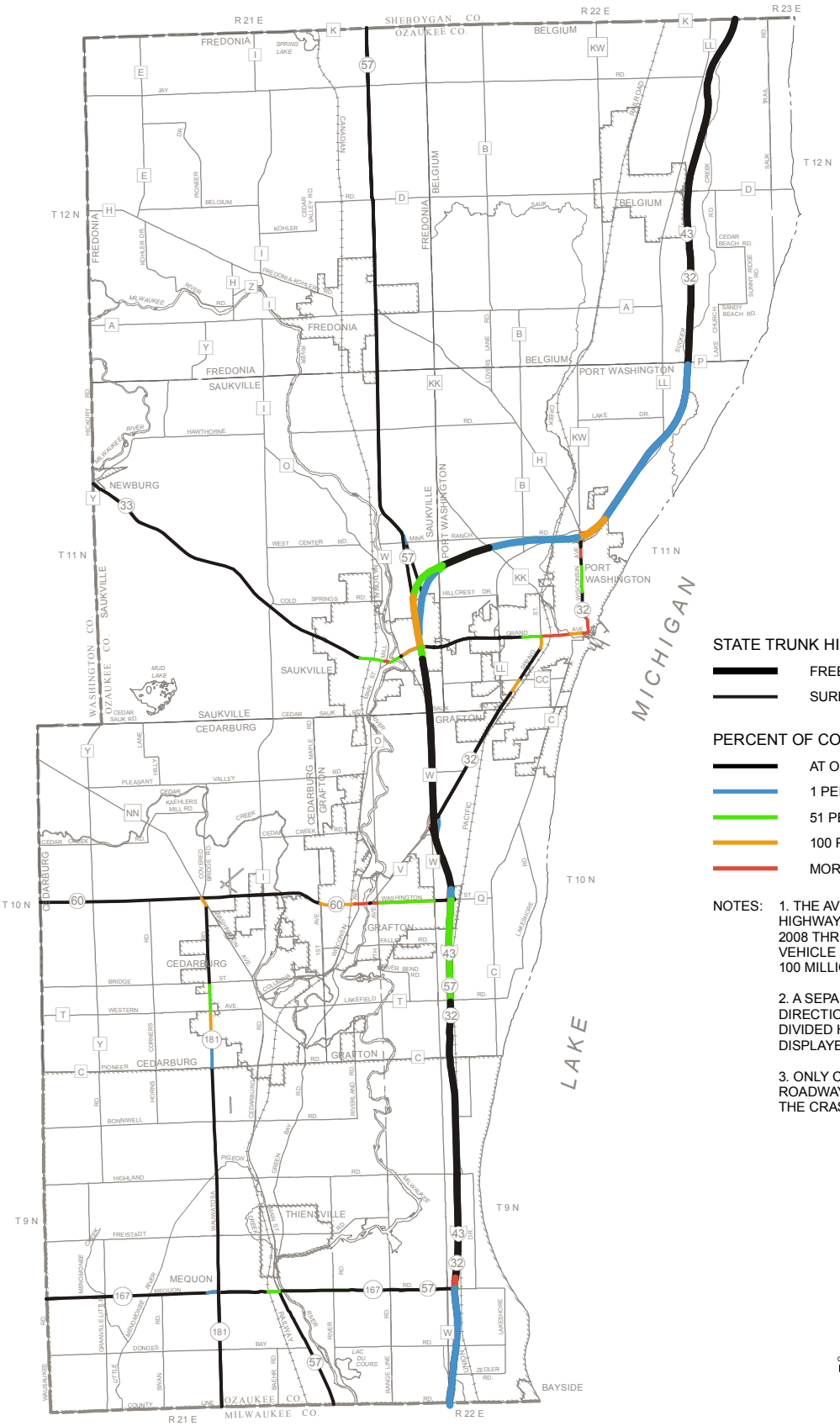
0 4,000 8,000 12,000 16,000 20,000 FEET

Source: The Wisconsin Department of Transportation and SEWRPC.

DJM/djm
10/10/2013
I:\Tran\WORK\RTSP2050\Inventory\Maps\Ch 4\Map IV-7 - Crash Rate - Milwaukee County.mxd

Map IV-8

AVERAGE VEHICULAR CRASH RATE OF STATE TRUNK HIGHWAYS IN OZAUKEE COUNTY: 2008-2012



STATE TRUNK HIGHWAY

- FREEWAY
- SURFACE ARTERIAL

PERCENT OF COUNTYWIDE AVERAGE CRASH RATE

- AT OR BELOW COUNTYWIDE AVERAGE
- 1 PERCENT TO 50 PERCENT ABOVE
- 51 PERCENT TO 100 PERCENT ABOVE
- 100 PERCENT TO 200 PERCENT ABOVE
- MORE THAN 200 PERCENT ABOVE

NOTES:

1. THE AVERAGE CRASH RATE ON THE STATE TRUNK HIGHWAY NETWORK IN OZAUKEE COUNTY FROM 2008 THROUGH 2012 WAS 41.1 CRASHES PER 100 MILLION VEHICLE MILES FOR FREEWAYS AND 115 CRASHES PER 100 MILLION VEHICLE MILES FOR SURFACE ARTERIALS.

2. A SEPARATE CRASH RATE IS CALCULATED FOR EACH DIRECTION FOR DIVIDED HIGHWAYS. THE SIDE OF THE DIVIDED HIGHWAY HAVING THE WORST CRASH RATE IS DISPLAYED ON THE MAP.

3. ONLY CRASHES THAT OCCURED IN YEARS SINCE THE ROADWAY WAS LAST RECONFIGURED ARE INCLUDED IN THE CRASH RATES SHOWN.

N

GRAPHIC SCALE

0 1 2 3 MILES

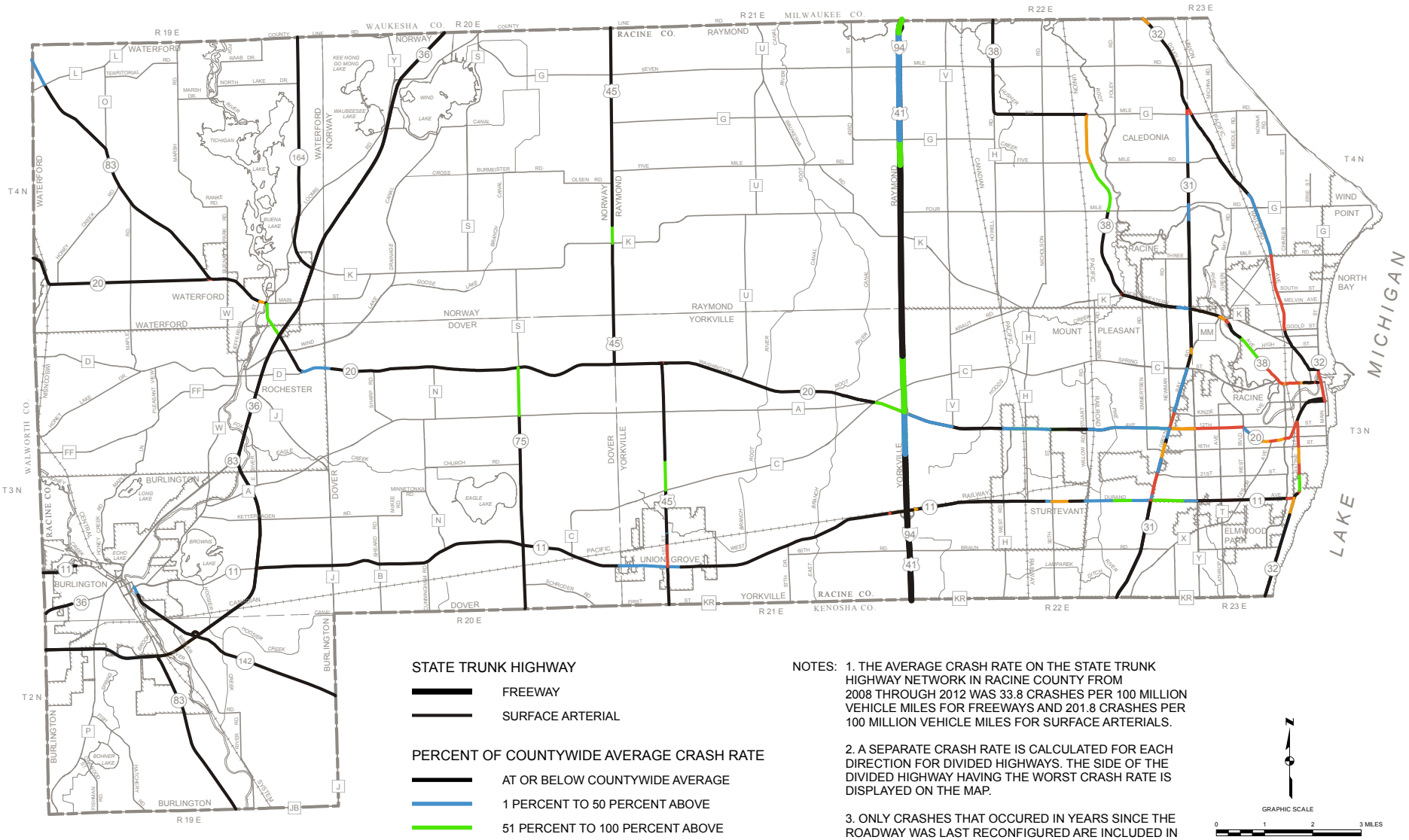
0 4,000 8,000 12,000 16,000 20,000 FEET

Source: The Wisconsin Department of Transportation and SEWRPC.

DJM/djm
10/10/2013
I:\Tran\WORK\RTSP2050\Inventory\Maps\Ch 4\Map IV-8 - Crash Rate - Ozaukee County.mxd

Map IV-9

AVERAGE VEHICULAR CRASH RATE OF STATE TRUNK HIGHWAYS IN RACINE COUNTY: 2008-2012



NOTES:

1. THE AVERAGE CRASH RATE ON THE STATE TRUNK HIGHWAY NETWORK IN RACINE COUNTY FROM 2008 THROUGH 2012 WAS 33.8 CRASHES PER 100 MILLION VEHICLE MILES FOR FREEWAYS AND 201.8 CRASHES PER 100 MILLION VEHICLE MILES FOR SURFACE ARTERIALS.

2. A SEPARATE CRASH RATE IS CALCULATED FOR EACH DIRECTION FOR DIVIDED HIGHWAYS. THE SIDE OF THE DIVIDED HIGHWAY HAVING THE WORST CRASH RATE IS DISPLAYED ON THE MAP.

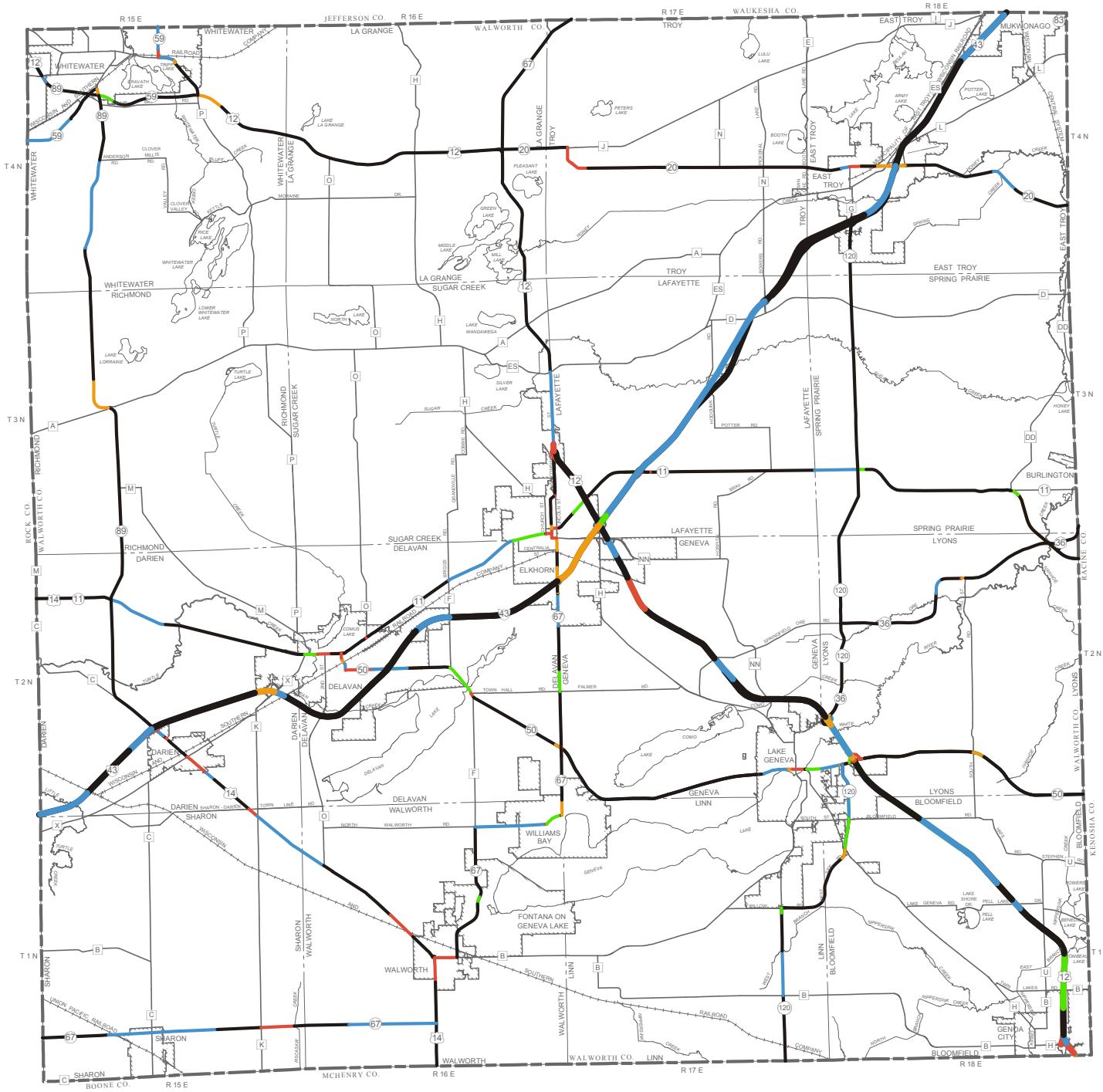
3. ONLY CRASHES THAT OCCURED IN YEARS SINCE THE ROADWAY WAS LAST RECONFIGURED ARE INCLUDED IN THE CRASH RATES SHOWN.

Source: The Wisconsin Department of Transportation and SEWRPC.

DJM/djm
10/10/2013
I:\Tran\WORK\RTSP2050\Inventory\Maps\Ch 4\Map IV-9 - Crash Rate - Racine County.mxd

Map IV-10

AVERAGE VEHICULAR CRASH RATE OF STATE TRUNK HIGHWAYS IN WALWORTH COUNTY: 2008-2012



STATE TRUNK HIGHWAY

- FREEWAY
- SURFACE ARTERIAL

PERCENT OF COUNTYWIDE AVERAGE CRASH RATE

- AT OR BELOW COUNTYWIDE AVERAGE
- 1 PERCENT TO 50 PERCENT ABOVE
- 51 PERCENT TO 100 PERCENT ABOVE
- 100 PERCENT TO 200 PERCENT ABOVE
- MORE THAN 200 PERCENT ABOVE

NOTES:

1. THE AVERAGE CRASH RATE ON THE STATE TRUNK HIGHWAY NETWORK IN WALWORTH COUNTY FROM 2008 THROUGH 2012 WAS 42.6 CRASHES PER 100 MILLION VEHICLE MILES FOR FREEWAYS AND 133 CRASHES PER 100 MILLION VEHICLE MILES FOR SURFACE ARTERIALS.

2. A SEPARATE CRASH RATE IS CALCULATED FOR EACH DIRECTION FOR DIVIDED HIGHWAYS. THE SIDE OF THE DIVIDED HIGHWAY HAVING THE WORST CRASH RATE IS DISPLAYED ON THE MAP.

3. ONLY CRASHES THAT OCCURED IN YEARS SINCE THE ROADWAY WAS LAST RECONFIGURED ARE INCLUDED IN THE CRASH RATES SHOWN.

N

GRAPHIC SCALE

0 1 2 3 MILES

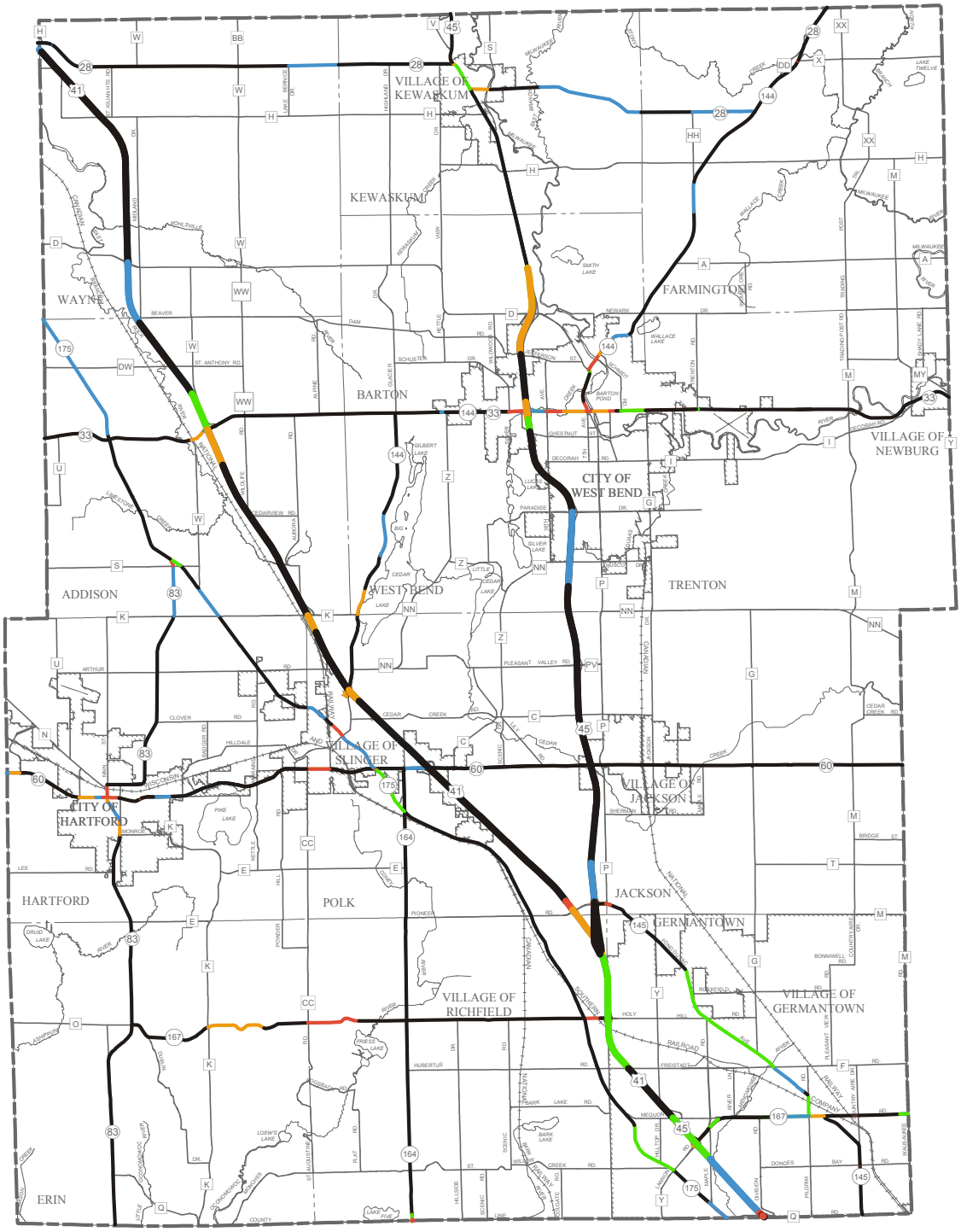
0 4,000 8,000 12,000 16,000 20,000 FEET

Source: The Wisconsin Department of Transportation and SEWRPC.

DJM/djm
10/10/2013
I:\Tran\WORK\RTSP2050\Inventory\Maps\Ch 4\Map IV-10 - Crash Rate - Walworth County.mxd

Map IV-11

AVERAGE VEHICULAR CRASH RATE OF STATE TRUNK HIGHWAYS IN WASHINGTON COUNTY: 2008-2012



STATE TRUNK HIGHWAY

- FREEWAY
- SURFACE ARTERIAL

PERCENT OF COUNTYWIDE AVERAGE CRASH RATE

- AT OR BELOW COUNTYWIDE AVERAGE
- 1 PERCENT TO 50 PERCENT ABOVE
- 51 PERCENT TO 100 PERCENT ABOVE
- 100 PERCENT TO 200 PERCENT ABOVE
- MORE THAN 200 PERCENT ABOVE

NOTES:

1. THE AVERAGE CRASH RATE ON THE STATE TRUNK HIGHWAY NETWORK IN WASHINGTON COUNTY FROM 2008 THROUGH 2012 WAS 41.5 CRASHES PER 100 MILLION VEHICLE MILES FOR FREEWAYS AND 210.8 CRASHES PER 100 MILLION VEHICLE MILES FOR SURFACE ARTERIALS.

2. A SEPARATE CRASH RATE IS CALCULATED FOR EACH DIRECTION FOR DIVIDED HIGHWAYS. THE SIDE OF THE DIVIDED HIGHWAY HAVING THE WORST CRASH RATE IS DISPLAYED ON THE MAP.

3. ONLY CRASHES THAT OCCURED IN YEARS SINCE THE ROADWAY WAS LAST RECONFIGURED ARE INCLUDED IN THE CRASH RATES SHOWN.

N

GRAPHIC SCALE

0 1 2 3 MILES

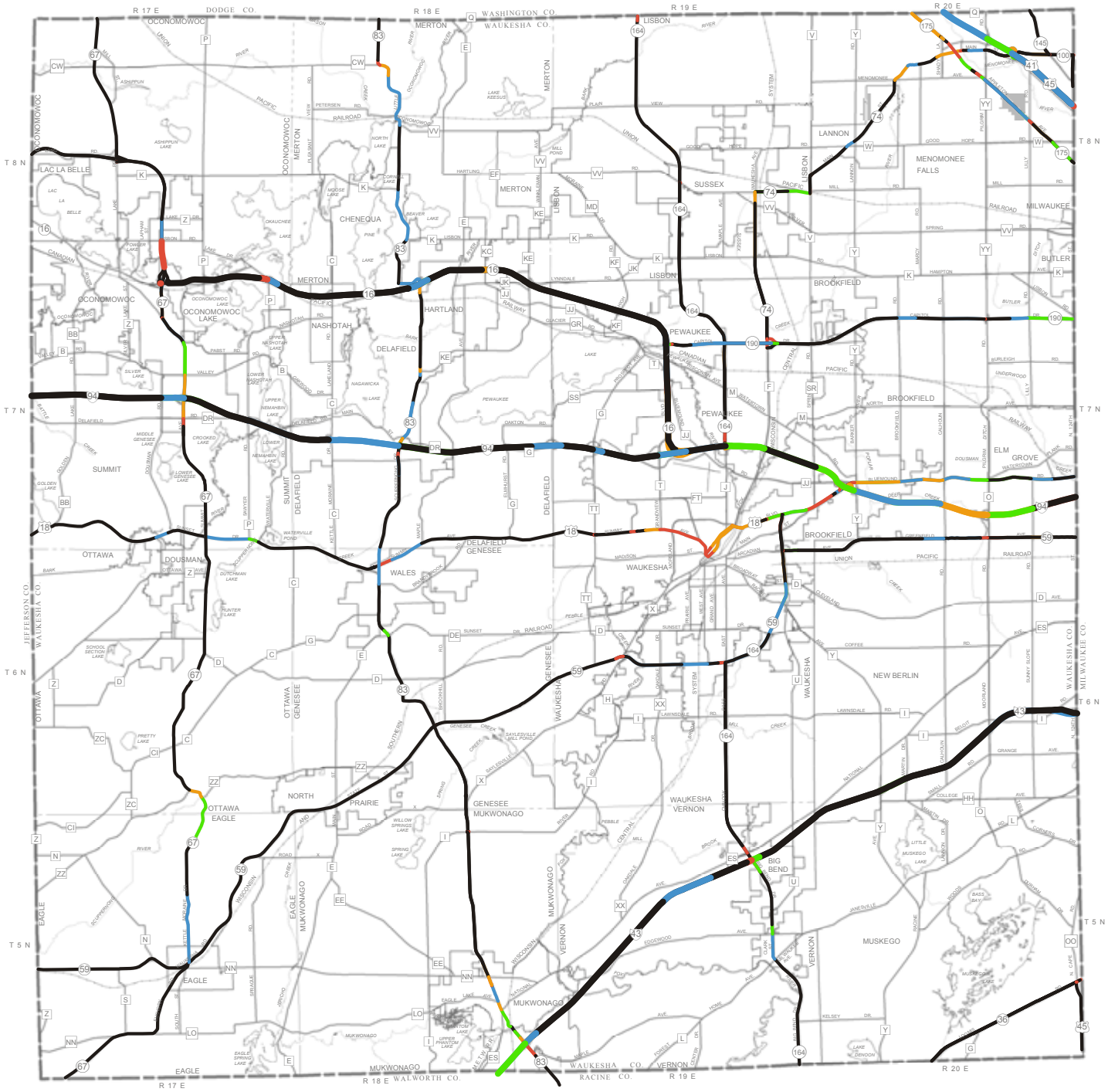
0 4,000 8,000 12,000 16,000 20,000 FEET

Source: The Wisconsin Department of Transportation and SEWRPC.

DJM\djm
10/10/2013
I:\Tran\WORK\RTSP2050\Inventory\Maps\Ch 4\Map IV-11 - Crash Rate - Washington County.mxd

Map IV-12

AVERAGE VEHICULAR CRASH RATE OF STATE TRUNK HIGHWAYS IN WAUKESHA COUNTY: 2008-2012



STATE TRUNK HIGHWAY

- FREEWAY
- SURFACE ARTERIAL

PERCENT OF COUNTYWIDE AVERAGE CRASH RATE

- AT OR BELOW COUNTYWIDE AVERAGE
- 1 PERCENT TO 50 PERCENT ABOVE
- 51 PERCENT TO 100 PERCENT ABOVE
- 100 PERCENT TO 200 PERCENT ABOVE
- MORE THAN 200 PERCENT ABOVE

NOTES:

1. THE AVERAGE CRASH RATE ON THE STATE TRUNK HIGHWAY NETWORK IN WAUKESHA COUNTY FROM 2008 THROUGH 2012 WAS 46.4 CRASHES PER 100 MILLION VEHICLE MILES FOR FREEWAYS AND 195.8 CRASHES PER 100 MILLION VEHICLE MILES FOR SURFACE ARTERIALS.

2. A SEPARATE CRASH RATE IS CALCULATED FOR EACH DIRECTION FOR DIVIDED HIGHWAYS. THE SIDE OF THE DIVIDED HIGHWAY HAVING THE WORST CRASH RATE IS DISPLAYED ON THE MAP.

3. ONLY CRASHES THAT OCCURED IN YEARS SINCE THE ROADWAY WAS LAST RECONFIGURED ARE INCLUDED IN THE CRASH RATES SHOWN.

GRAPHIC SCALE

0 1 2 3 MILES

0 4,000 8,000 12,000 16,000 20,000 FEET

Source: The Wisconsin Department of Transportation and SEWRPC.

DJM/djm
10/10/2013
I:\Tran\WORK\RTSP2050\Inventory\Maps\Ch 4\Map IV-12 - Crash Rate - Waukesha County.mxd

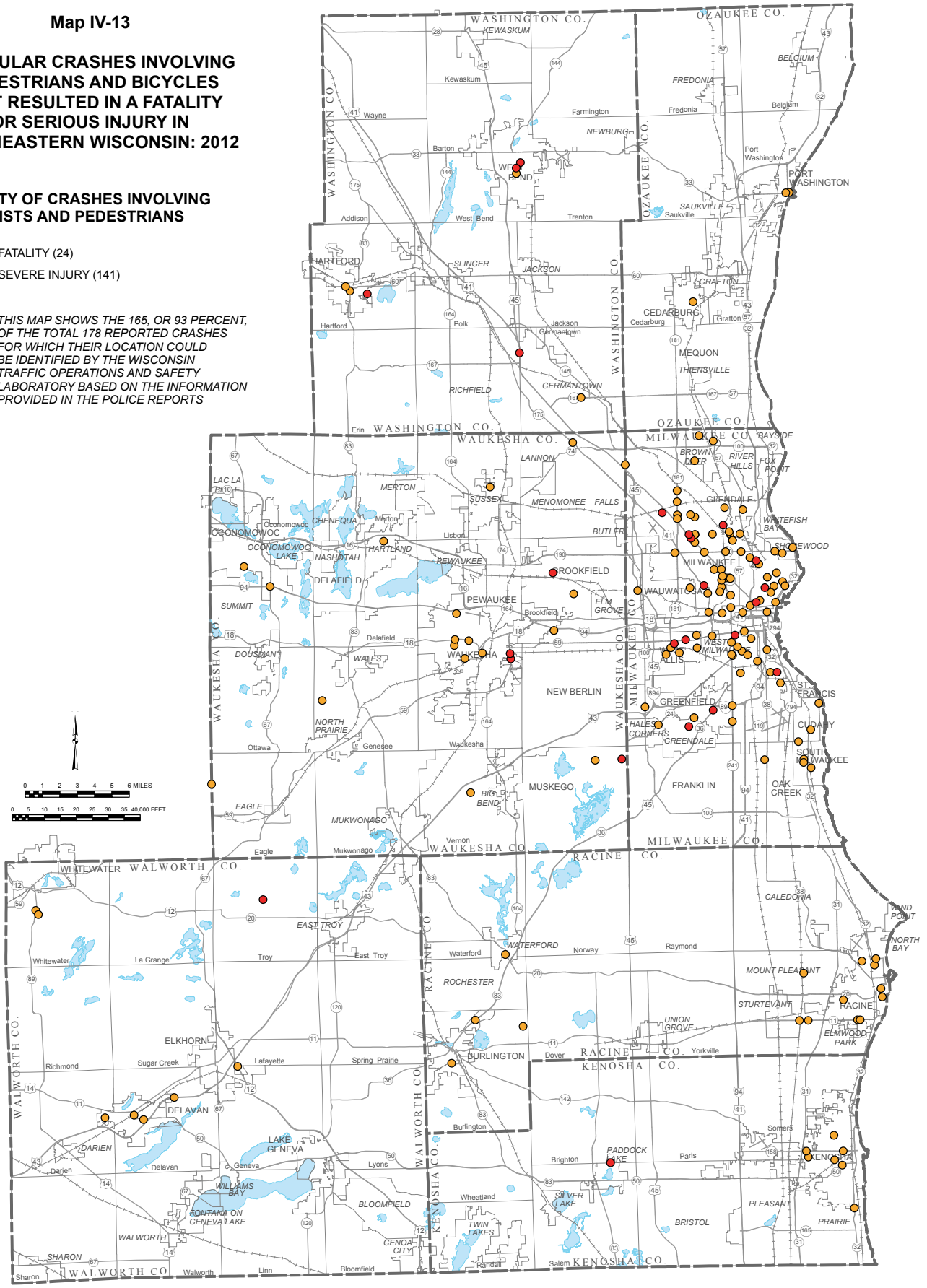
Map IV-13

VEHICULAR CRASHES INVOLVING PEDESTRIANS AND BICYCLES THAT RESULTED IN A FATALITY OR SERIOUS INJURY IN SOUTHEASTERN WISCONSIN: 2012

SEVERITY OF CRASHES INVOLVING BICYCLISTS AND PEDESTRIANS

- FATALITY (24)
- SEVERE INJURY (141)

NOTE: THIS MAP SHOWS THE 165, OR 93 PERCENT, OF THE TOTAL 178 REPORTED CRASHES FOR WHICH THEIR LOCATION COULD BE IDENTIFIED BY THE WISCONSIN TRAFFIC OPERATIONS AND SAFETY LABORATORY BASED ON THE INFORMATION PROVIDED IN THE POLICE REPORTS

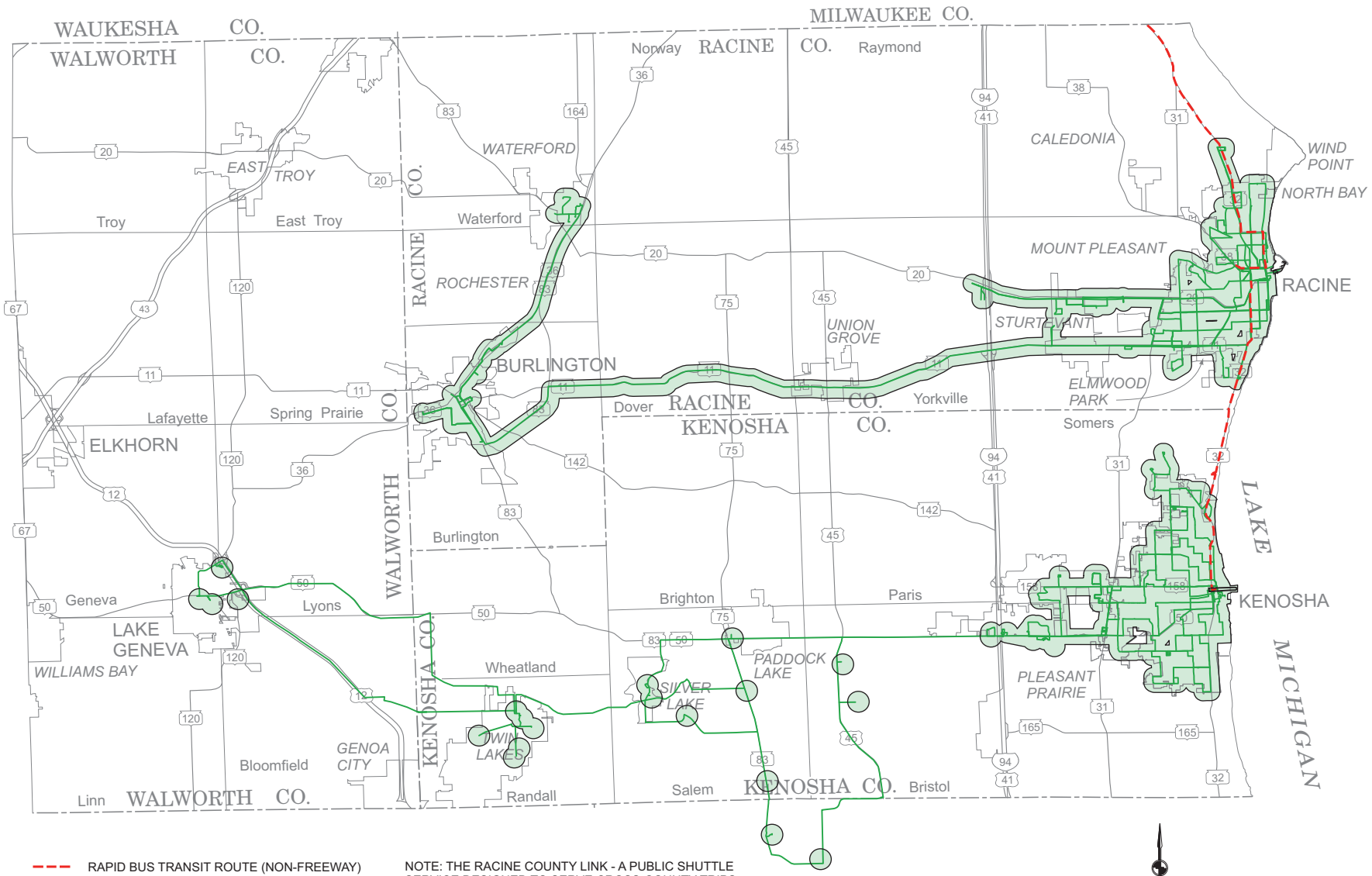


Source: Wisconsin Traffic Operations and Safety Laboratory and SEWRPC

JWD
04/03/2014
I:\Tran\WORK\RTSP2050\Inventory\Maps\Ch 4\Map IV-13 Bike and Ped Crashes 2012.mxd

Map IV-14

LOCAL FIXED-ROUTE PUBLIC TRANSIT SERVICE IN KENOSHA AND RACINE AREAS: 2012

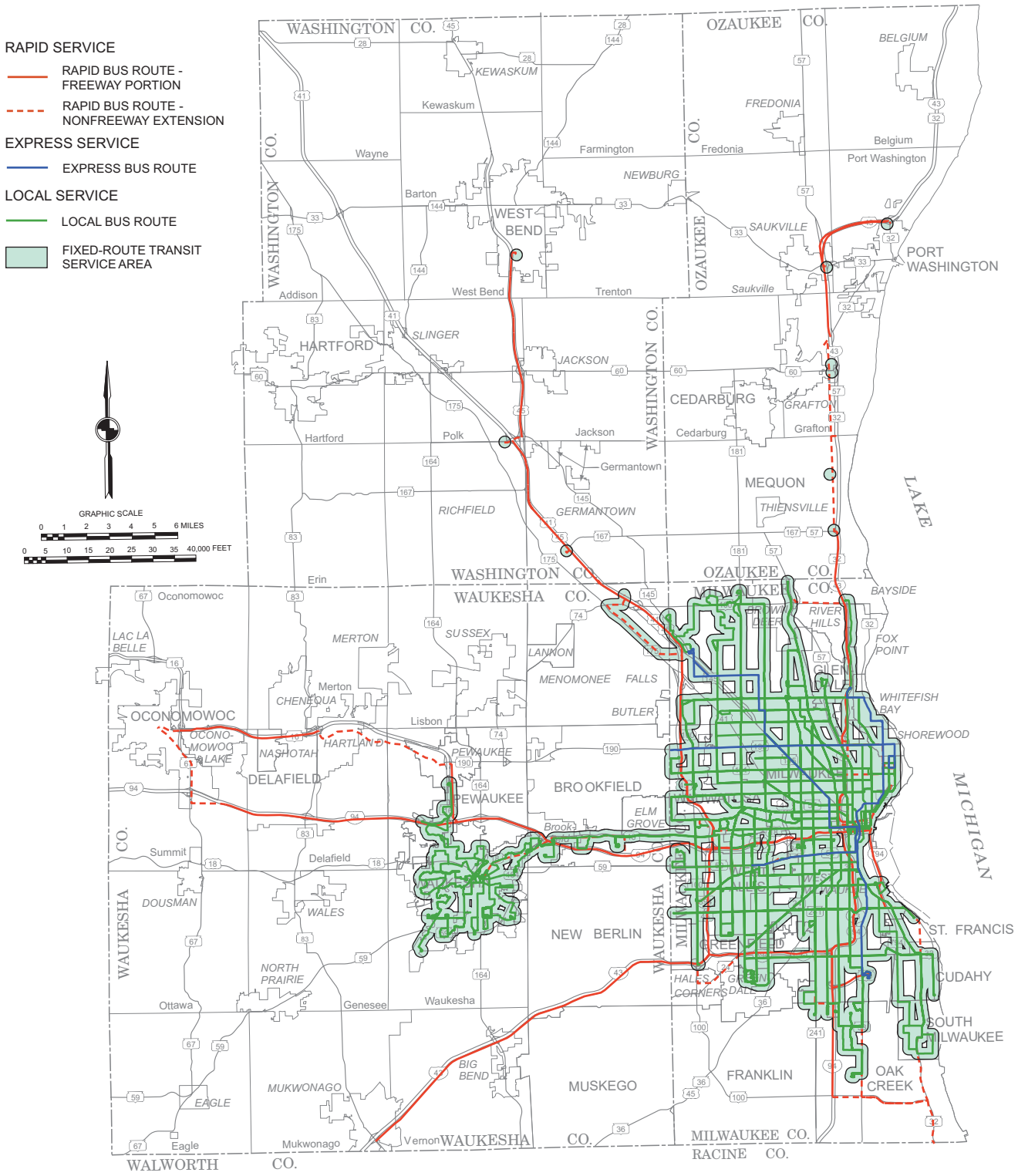


Source: SEWRPC.

I:\Tran\WORK\RTSP2050\Inventory\Maps\Ch 4\Map IV-14 Fixed Route Kenosha and Racine.cdr

Map IV-15

LOCAL FIXED-ROUTE PUBLIC TRANSIT SERVICES IN THE MILWAUKEE AREA: 2012

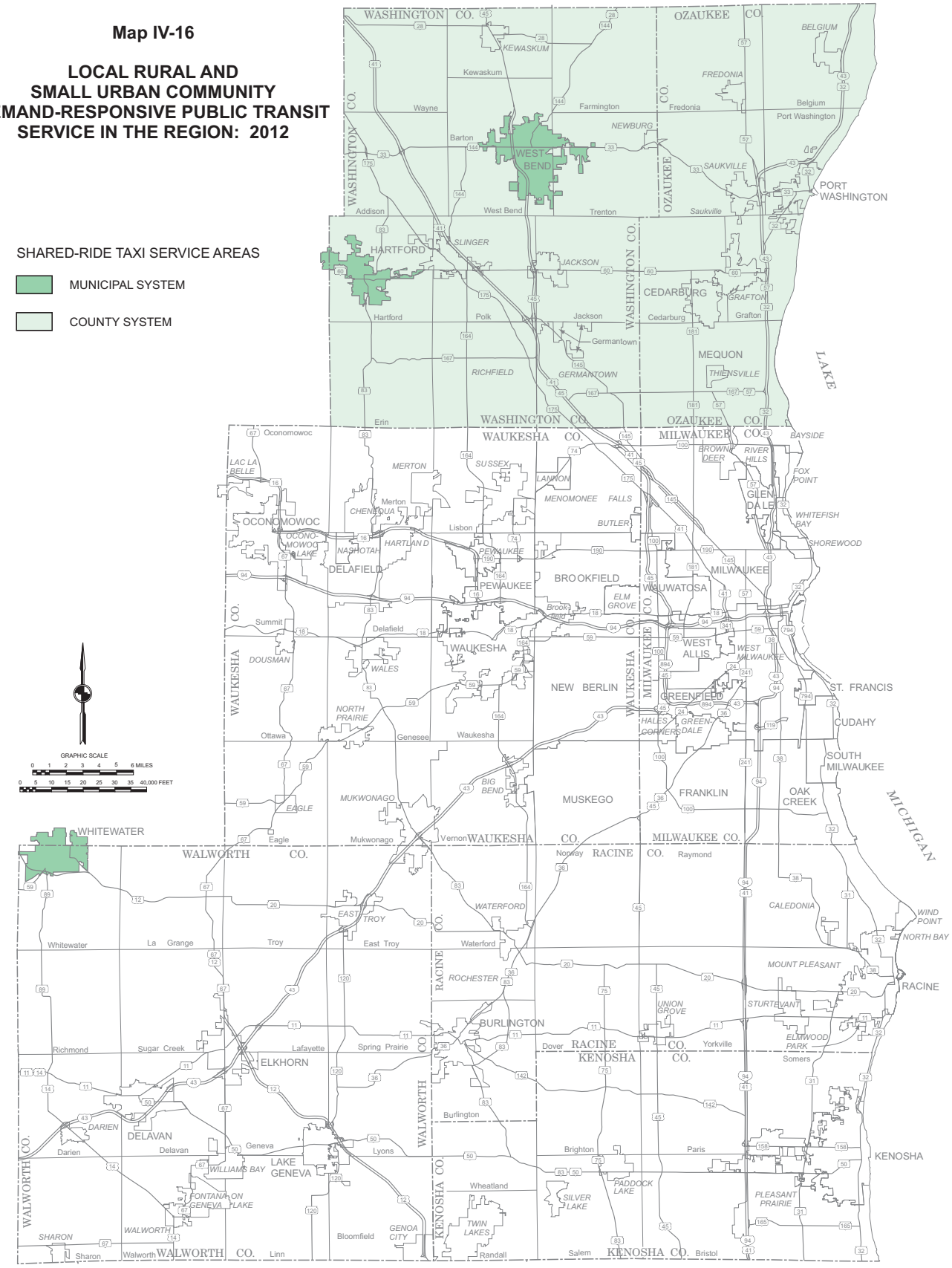


Source: SEWRPC.

I:\Tran\WORK\RTSP2050\Inventory\Maps\Ch 4\Map IV-15 Fixed Route Milwaukee.cdr

Map IV-16

LOCAL RURAL AND SMALL URBAN COMMUNITY DEMAND-RESPONSIVE PUBLIC TRANSIT SERVICE IN THE REGION: 2012

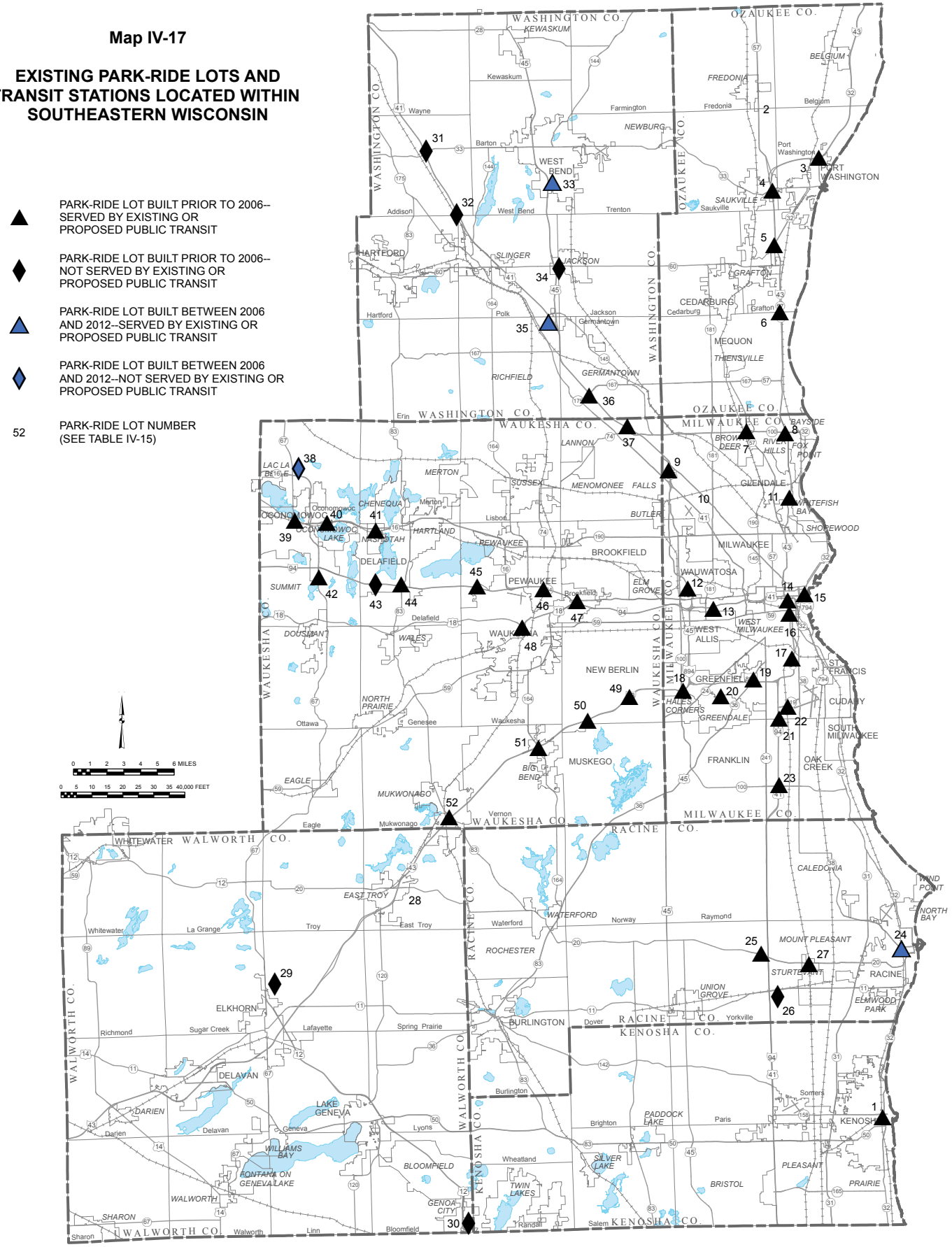


Source: SEWRPC.

I:\Tran\WORK\RTSP2050\Inventory\Maps\Ch 4\Map IV-16 Demand Responsive Transit Service.cdr

Map IV-17

EXISTING PARK-RIDE LOTS AND TRANSIT STATIONS LOCATED WITHIN SOUTHEASTERN WISCONSIN

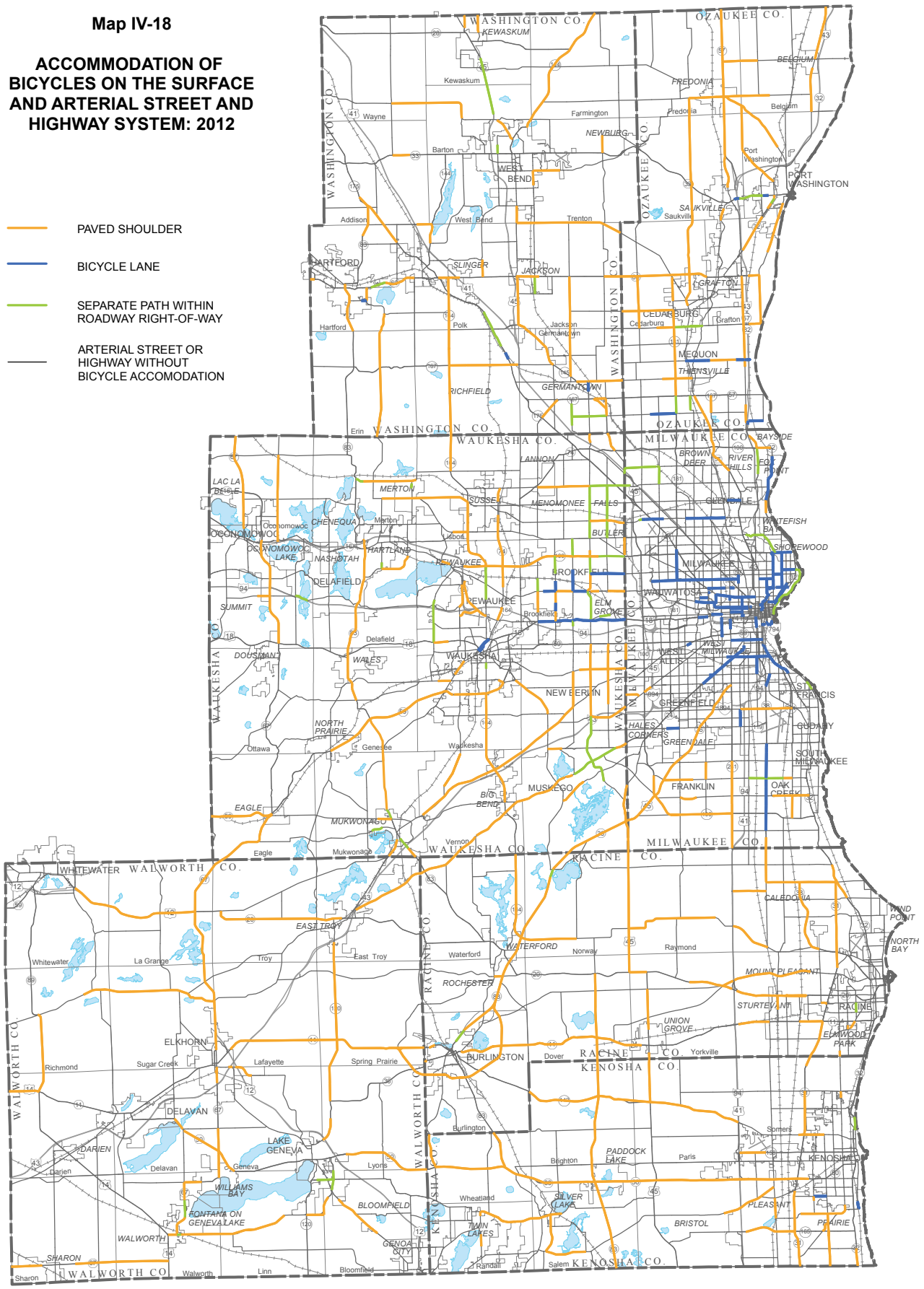


Source: SEWRPC

I:\Tran\WORK\RTSP2050\Inventory\Maps\Ch 4\Map IV-17 Park Ride.mxd

Map IV-18

ACCOMMODATION OF BICYCLES ON THE SURFACE AND ARTERIAL STREET AND HIGHWAY SYSTEM: 2012



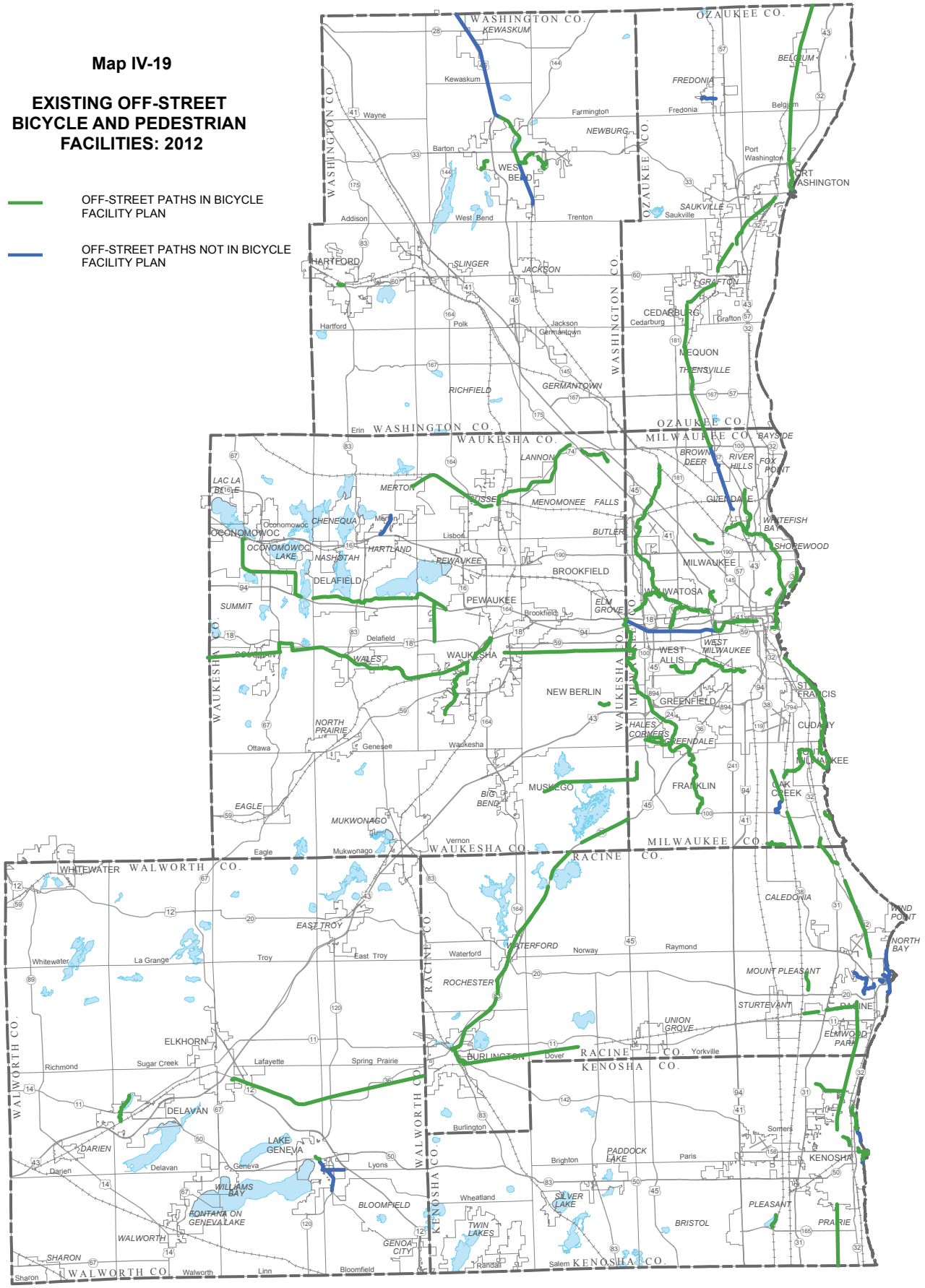
DJM/djm
12/11/2013
I:\Tran\WORK\RTSP2050\Inventory\Maps\Ch 4\Map IV-18 - Bicycle accommodation 2012 arterials.mxd

Map IV-19

EXISTING OFF-STREET BICYCLE AND PEDESTRIAN FACILITIES: 2012

OFF-STREET PATHS IN BICYCLE FACILITY PLAN

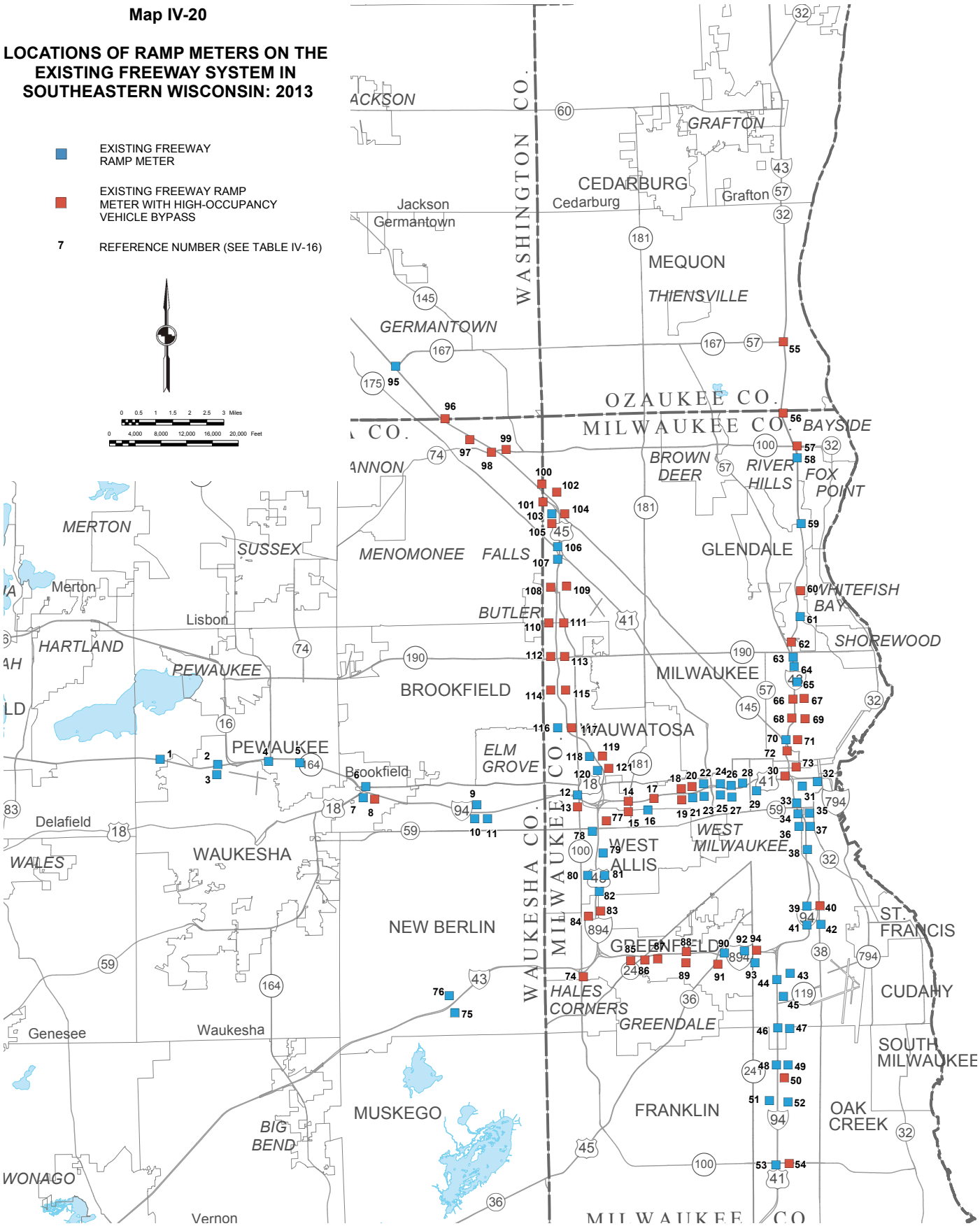
OFF-STREET PATHS NOT IN BICYCLE FACILITY PLAN



DJM/djm
12/11/2013
I:\Tran\WORK\RTSP2050\Inventory\Maps\Ch 4\Map IV-19 - Bicycle accommodation 2012 offstreet.mxd

Map IV-20

LOCATIONS OF RAMP METERS ON THE EXISTING FREEWAY SYSTEM IN SOUTHEASTERN WISCONSIN: 2013

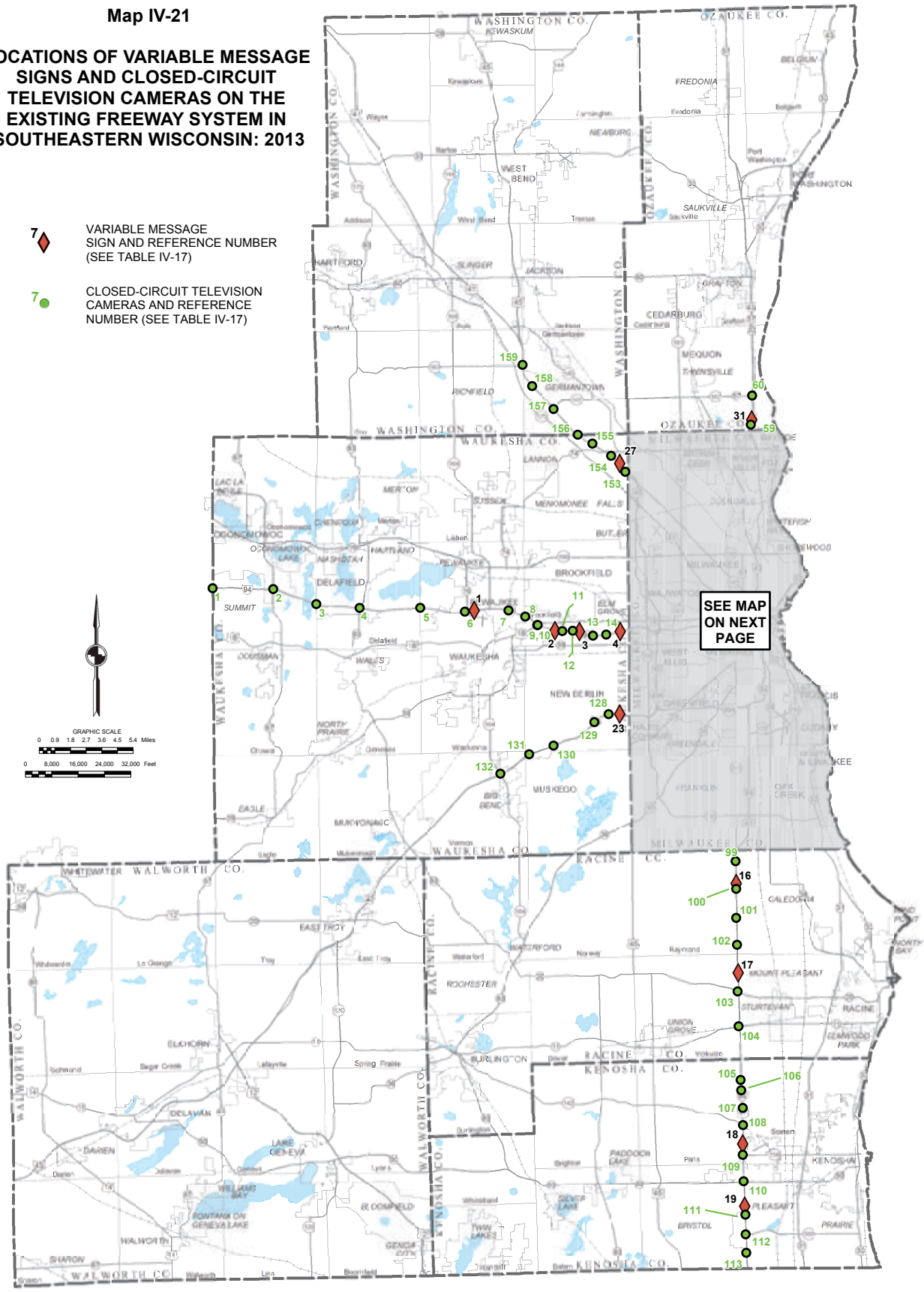


Source: Wisconsin Department of Transportation and SEWRPC.

DJM/djm/lbm
04/21/2014
I:\Tran\WORK\RTSP2050\Inventory\Maps\Ch 4\Map IV-20 - Ramp Meters.mxd

Map IV-21

LOCATIONS OF VARIABLE MESSAGE SIGNS AND CLOSED-CIRCUIT TELEVISION CAMERAS ON THE EXISTING FREEWAY SYSTEM IN SOUTHEASTERN WISCONSIN: 2013

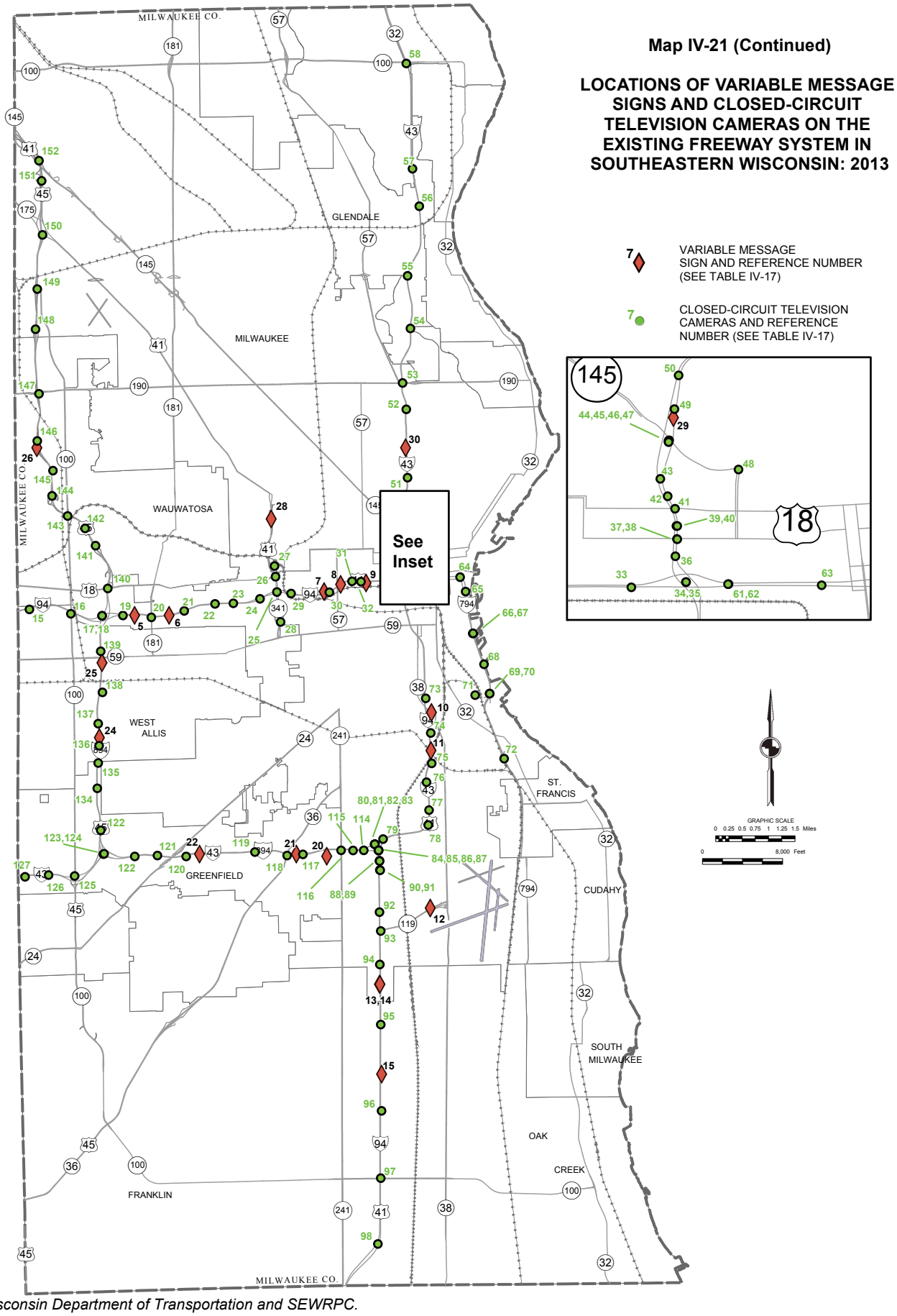


Source: Wisconsin Department of Transportation and SEWRPC.

LBM/lbm
12/11/2013
I:\Tran\WORK\RTSP2050\Inventory\Maps\Ch 4\Map IV-21 - VMS and CCTV on freeway.mxd

Map IV-21 (Continued)

LOCATIONS OF VARIABLE MESSAGE SIGNS AND CLOSED-CIRCUIT TELEVISION CAMERAS ON THE EXISTING FREEWAY SYSTEM IN SOUTHEASTERN WISCONSIN: 2013

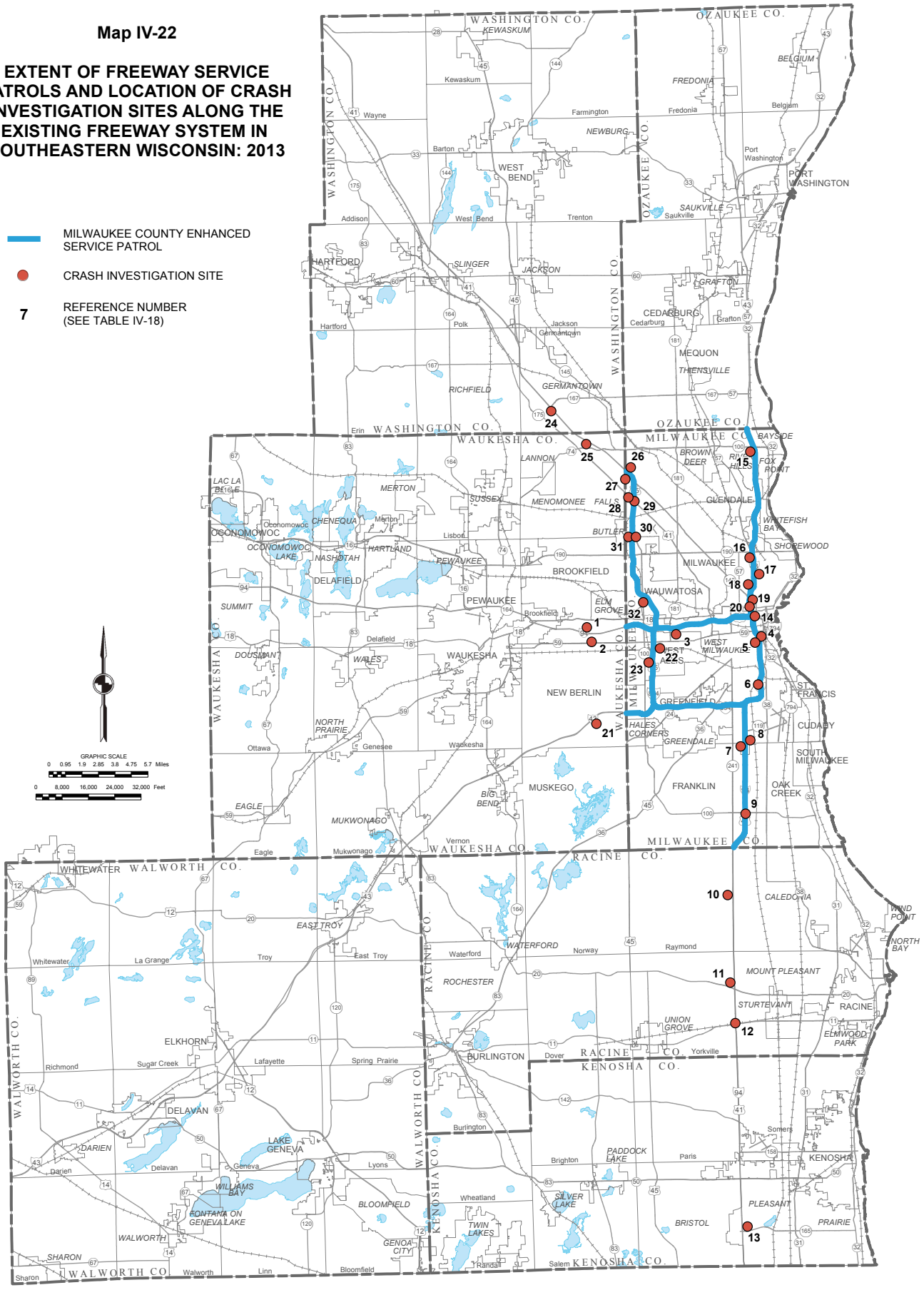


Source: Wisconsin Department of Transportation and SEWRPC.

LBM/lbm
12/11/2013
I:\Tran\WORK\RTSP2050\Inventory\Maps\Ch 4\Map IV-21 Continued - VMS and CCTV on freeway.mxd

Map IV-22

EXTENT OF FREEWAY SERVICE PATROLS AND LOCATION OF CRASH INVESTIGATION SITES ALONG THE EXISTING FREEWAY SYSTEM IN SOUTHEASTERN WISCONSIN: 2013

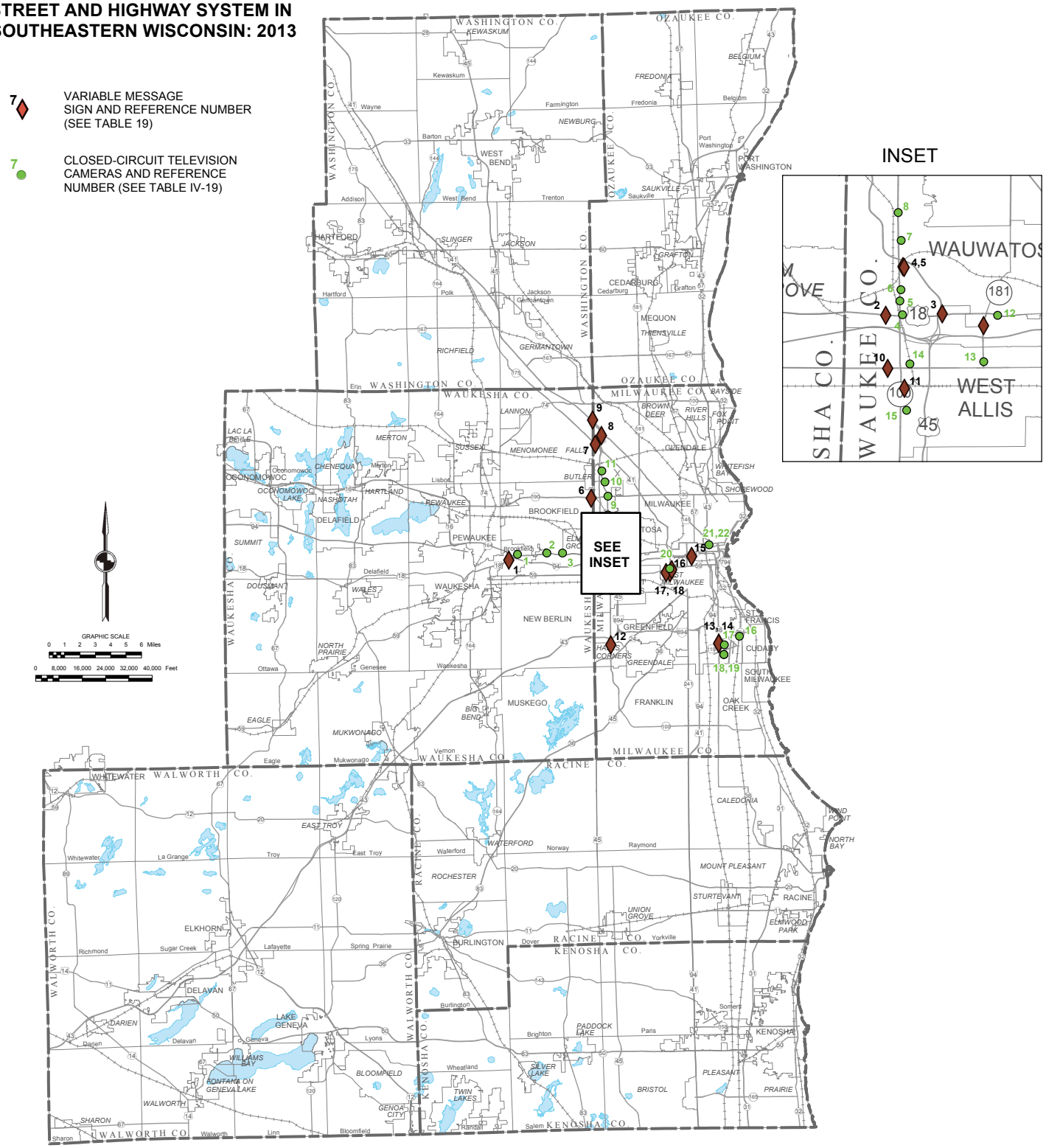


Source: Wisconsin Department of Transportation and SEWRPC.

DJM/djm/jwd
1/14/2015
I:\Tran\WORK\RTSP2050\Inventory\Maps\Ch 4\Map IV-22 - service patrols and crash sites.mxd

Map IV-23

LOCATIONS OF VARIABLE MESSAGE SIGNS AND CLOSED-CIRCUIT TELEVISION CAMERAS ON THE EXISTING STANDARD ARTERIAL STREET AND HIGHWAY SYSTEM IN SOUTHEASTERN WISCONSIN: 2013

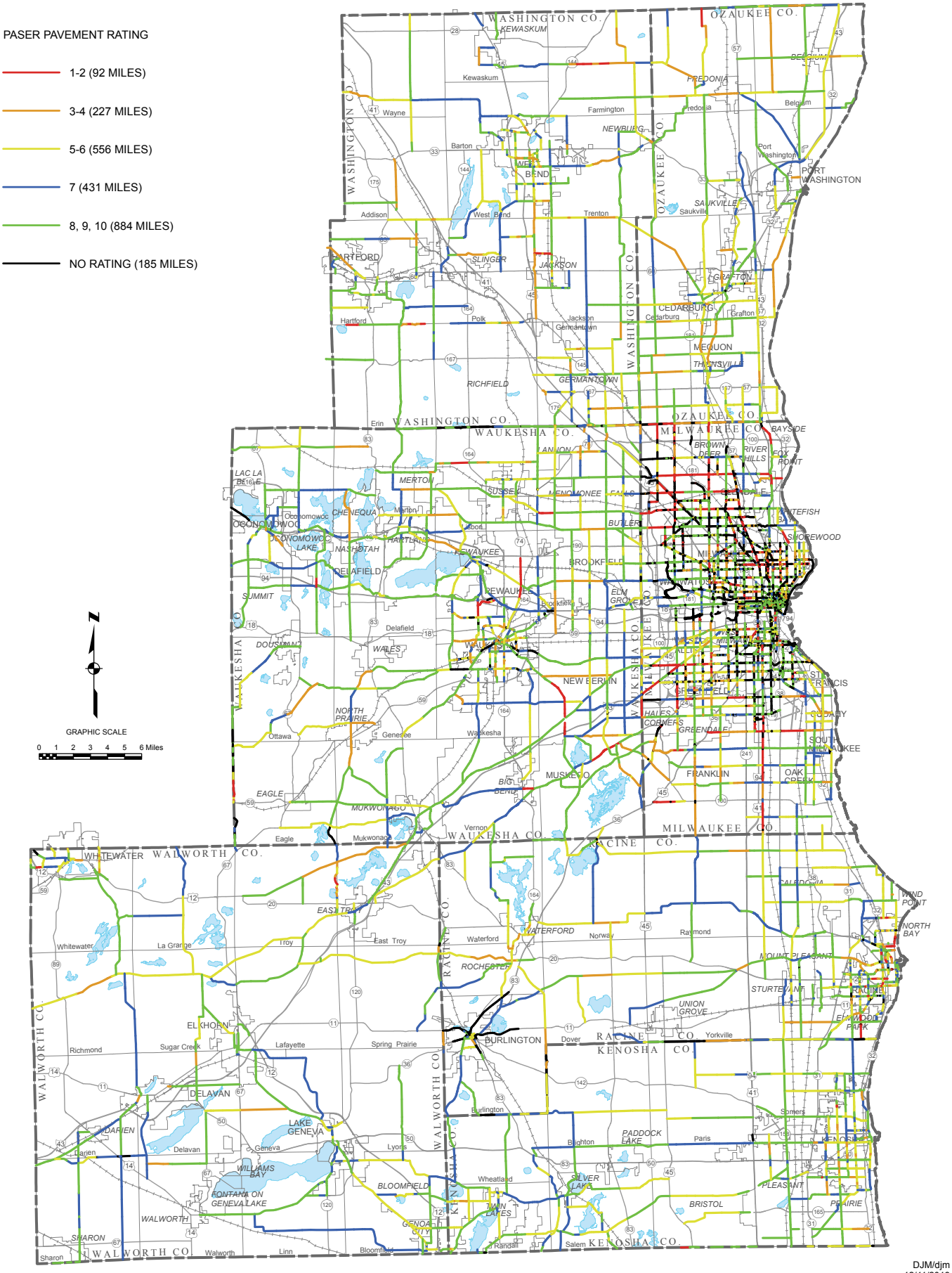


Source: Wisconsin Department of Transportation and SEWRPC.

DJM/djm
12/11/2013
I:\Tran\WORK\RTSP2050\Inventory\Maps\Ch 4\Map IV-23 - VMS and CCTV on arterials.mxd

Map IV-24

COUNTY AND LOCAL ARTERIAL PAVEMENT CONDITIONS IN THE REGION: 2011

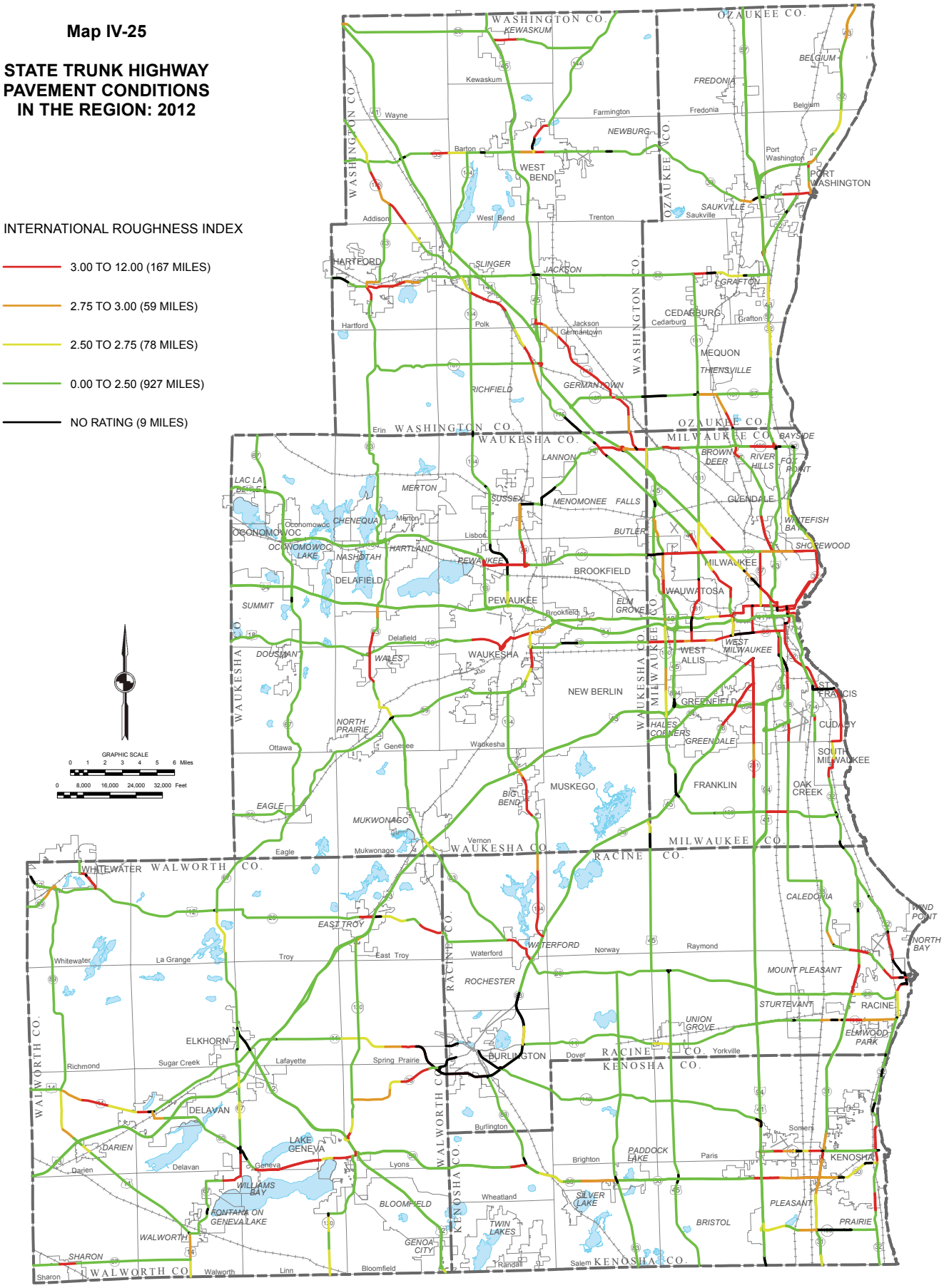


SOURCE: Wisconsin Department of Transportation and SEWRPC

DJM/djm
12/11/2013
I:\Tran\WORK\RTSP2050\Inventory\Maps\Ch 4\Map IV-24 - WISLR Pavement Rating Map.mxd

Map IV-25

STATE TRUNK HIGHWAY PAVEMENT CONDITIONS IN THE REGION: 2012

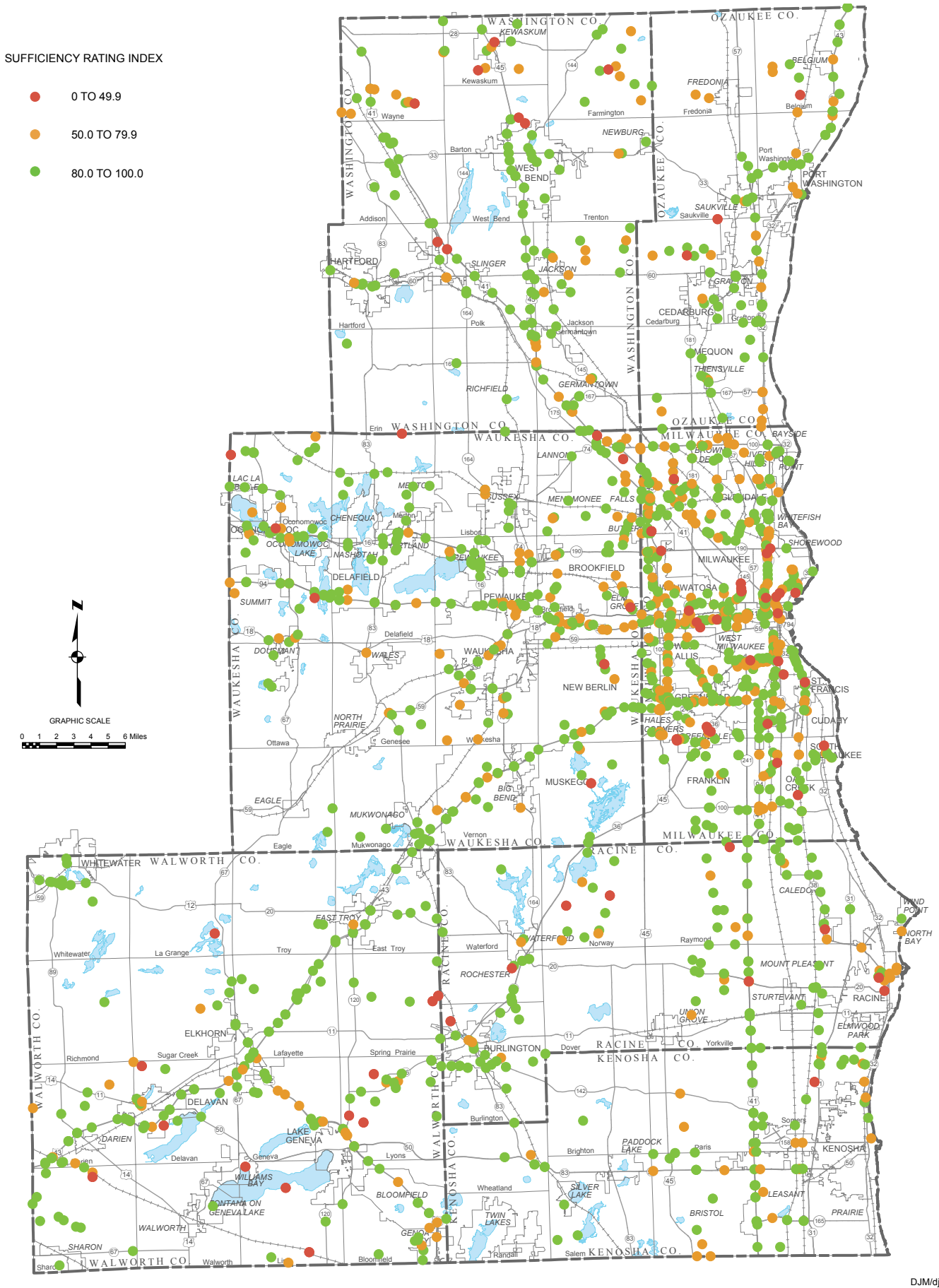


Source: Wisconsin Department of Transportation and SEWRPC.

DJM/djm
12/11/2013
I:\Tran\WORK\RTSP2050\Inventory\Maps\Ch 4\Map IV-25 - WISDOT IRI Map.mxd

Map IV-26

BRIDGE STRUCTURE CONDITIONS IN THE REGION: 2012

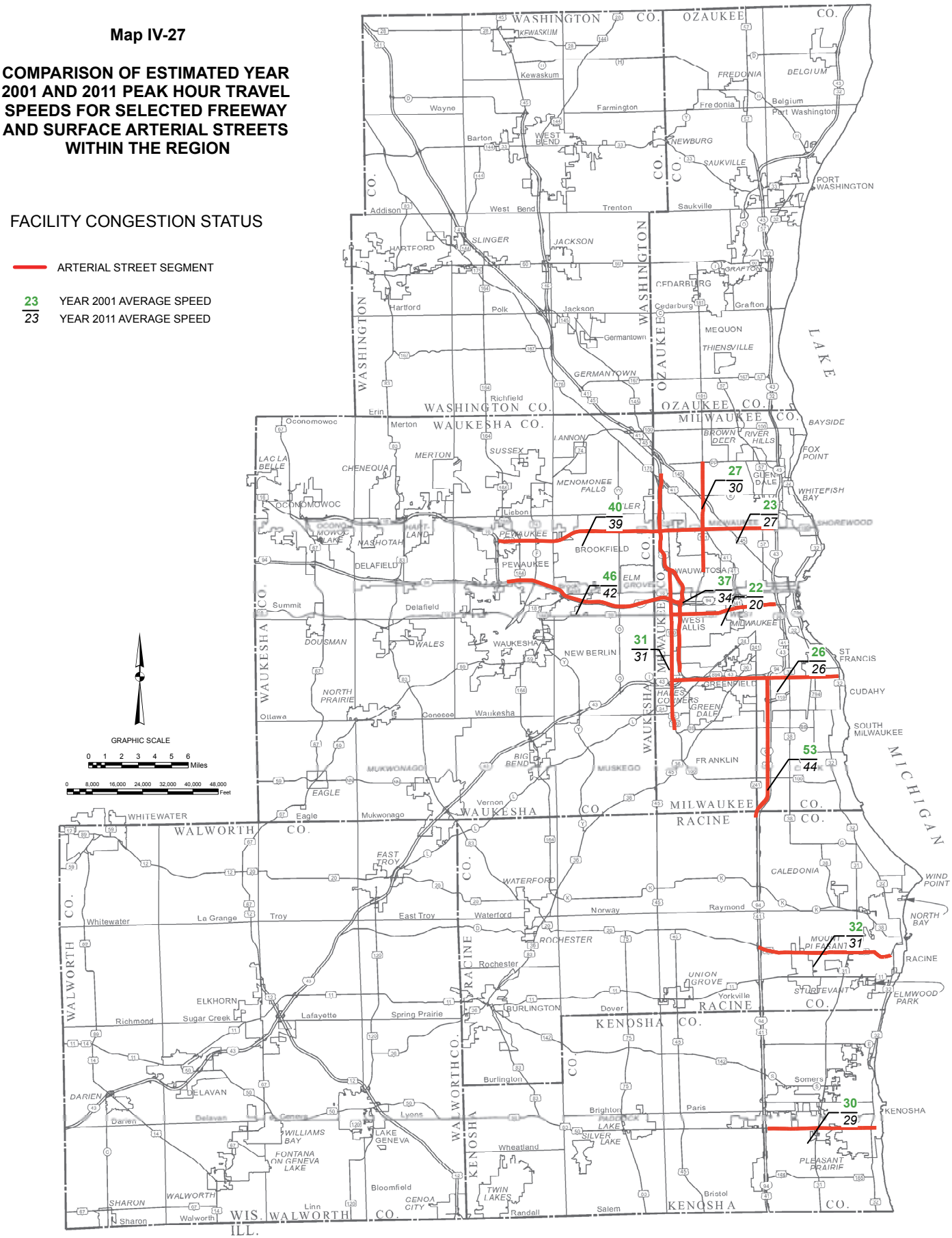


SOURCE: Wisconsin Department of Transportation and SEWRPC

DJM/djm
12/11/2013
I:\Tran\WORK\RTSP2050\Inventory\Maps\Ch 4\Map IV-26 - WISDOT Bridge Map.mxd

Map IV-27

COMPARISON OF ESTIMATED YEAR 2001 AND 2011 PEAK HOUR TRAVEL SPEEDS FOR SELECTED FREEWAY AND SURFACE ARTERIAL STREETS WITHIN THE REGION



Source: Wisconsin Department of Transportation and SEWRPC.

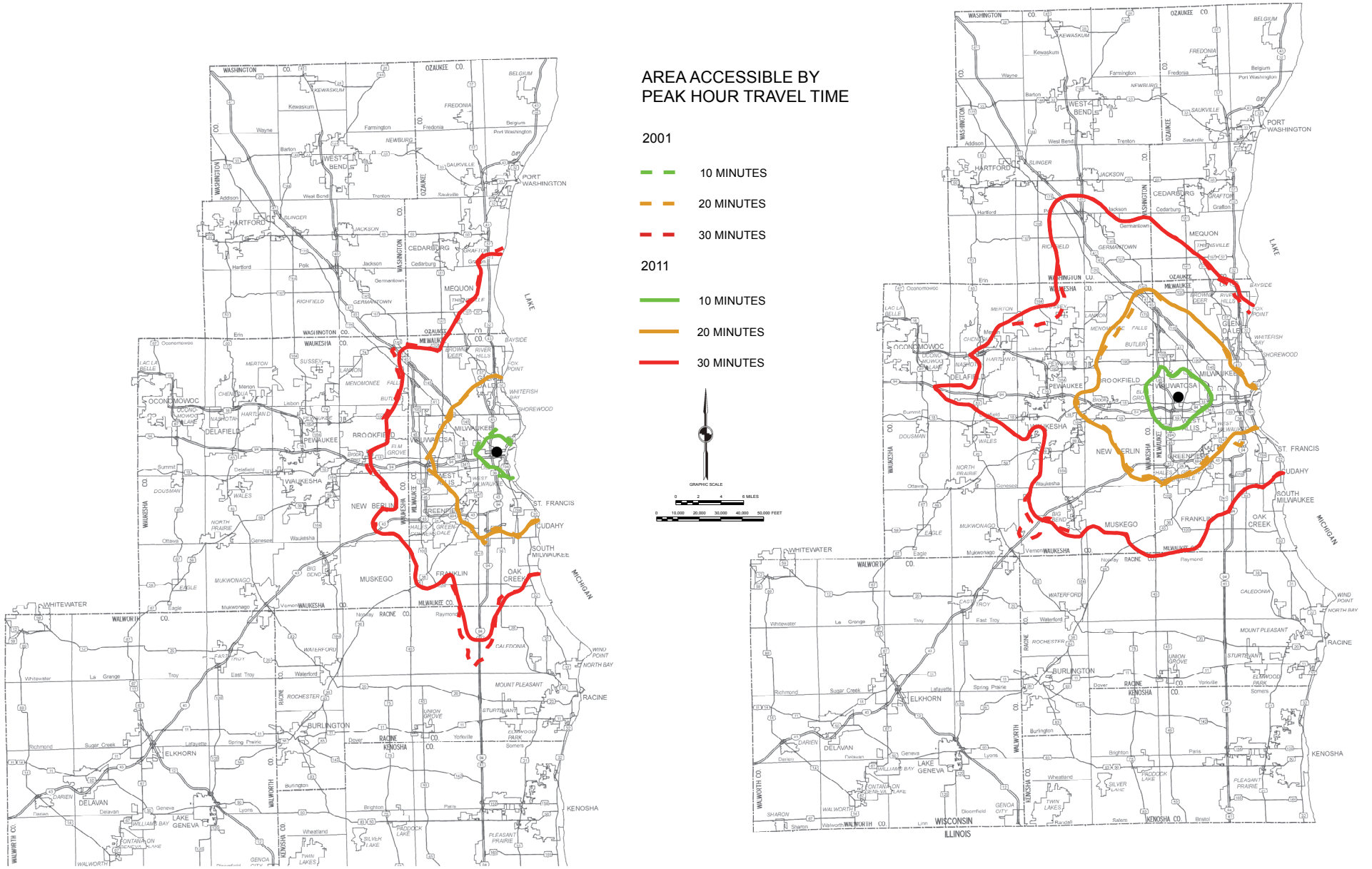
CTH/gba
2/14/2014
I:\Tran\WORK\RTSP2050\Inventory\Maps\Ch 4\Map IV-27 CongestedSpeeds.mxd

Map IV-28

ESTIMATED PEAK HOUR ARTERIAL STREET AND HIGHWAY TRAVEL TIME CONTOURS: YEARS 2001 AND 2011

MILWAUKEE CENTRAL BUSINESS DISTRICT

MILWAUKEE REGIONAL MEDICAL CENTER



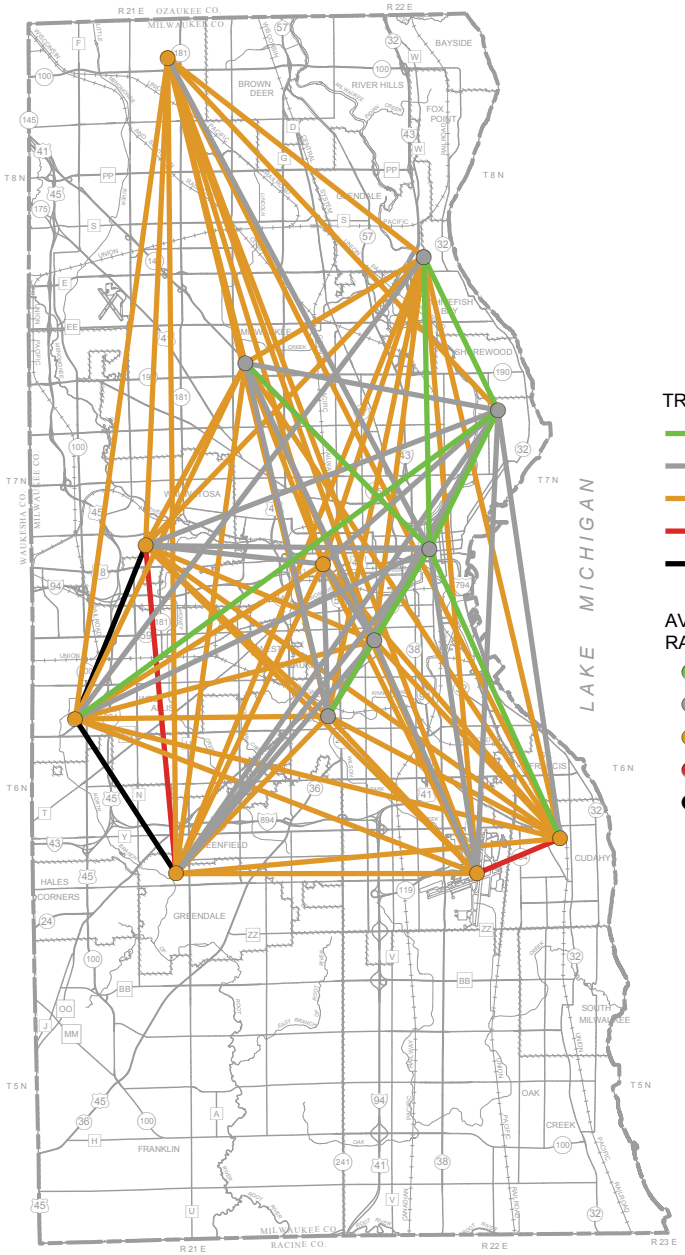
Source: SEWRPC

ESJ/CTH/KNR
02/10/2014
I:\Tran\WORK\RTSP2050\Inventory\Maps\Ch 4\Map IV-28 Peak Travel Time Contours With ImprovementsA.mxd

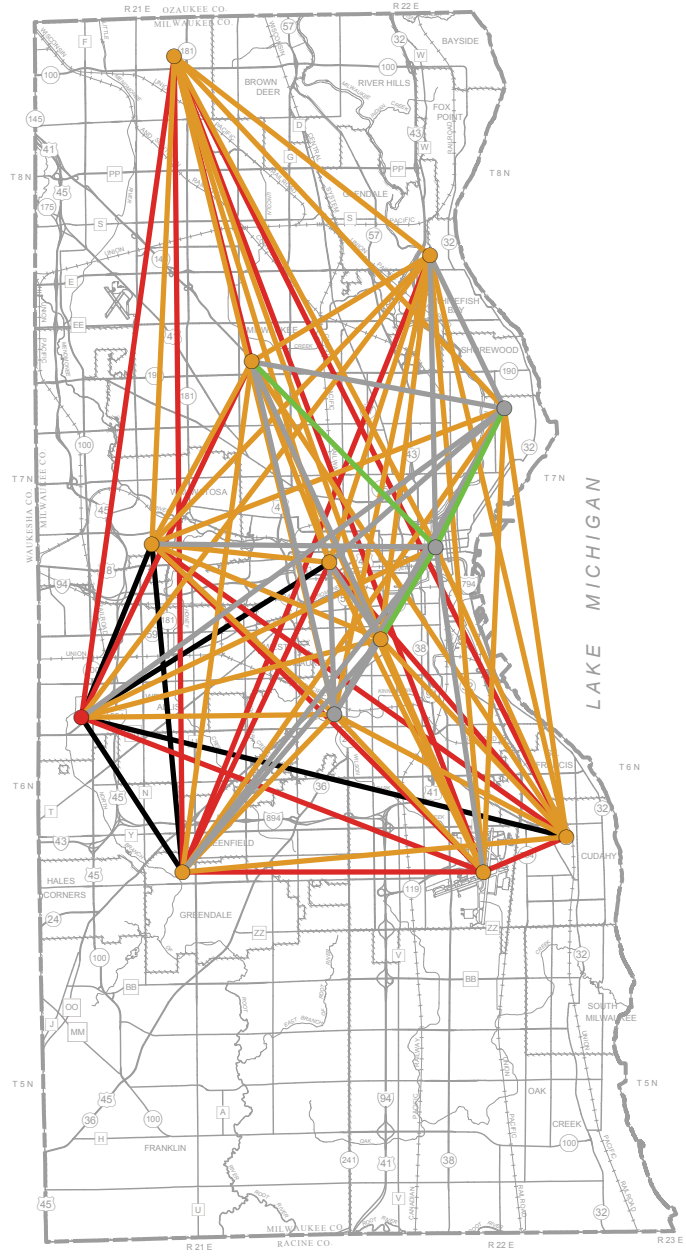
Map IV-29 (REVISED)

RATIOS OF OVERALL TRANSIT TRAVEL TIMES TO OVERALL AUTOMOBILE TRAVEL TIMES BETWEEN SELECTED LOCATIONS IN MILWAUKEE COUNTY FOR WEEKDAY PEAK AND OFF-PEAK PERIODS: 2011

MORNING PEAK PERIOD



MIDDAY OFF-PEAK PERIOD



TRANSIT TO AUTOMOBILE TRAVEL TIME RATIO

- 1.51 - 1.99
- 2.00 - 2.99
- 3.00 - 3.99
- 4.00 - 4.99
- 5.00 AND OVER

AVERAGE TRANSIT TO AUTOMOBILE TRAVEL TIME RATIO FOR SELECTED TRIPS FROM LOCATION

- 1.51 - 1.99
- 2.00 - 2.99
- 3.00 - 3.99
- 4.00 - 4.99
- 5.00 AND OVER

N

GRAPHIC SCALE

0 1 2 Miles

0 4,000 8,000 12,000 16,000 Feet

Source: SEWRPC.

CTH/gba/jwd
1/9/2015
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ESJ/DJM/djm/jwd
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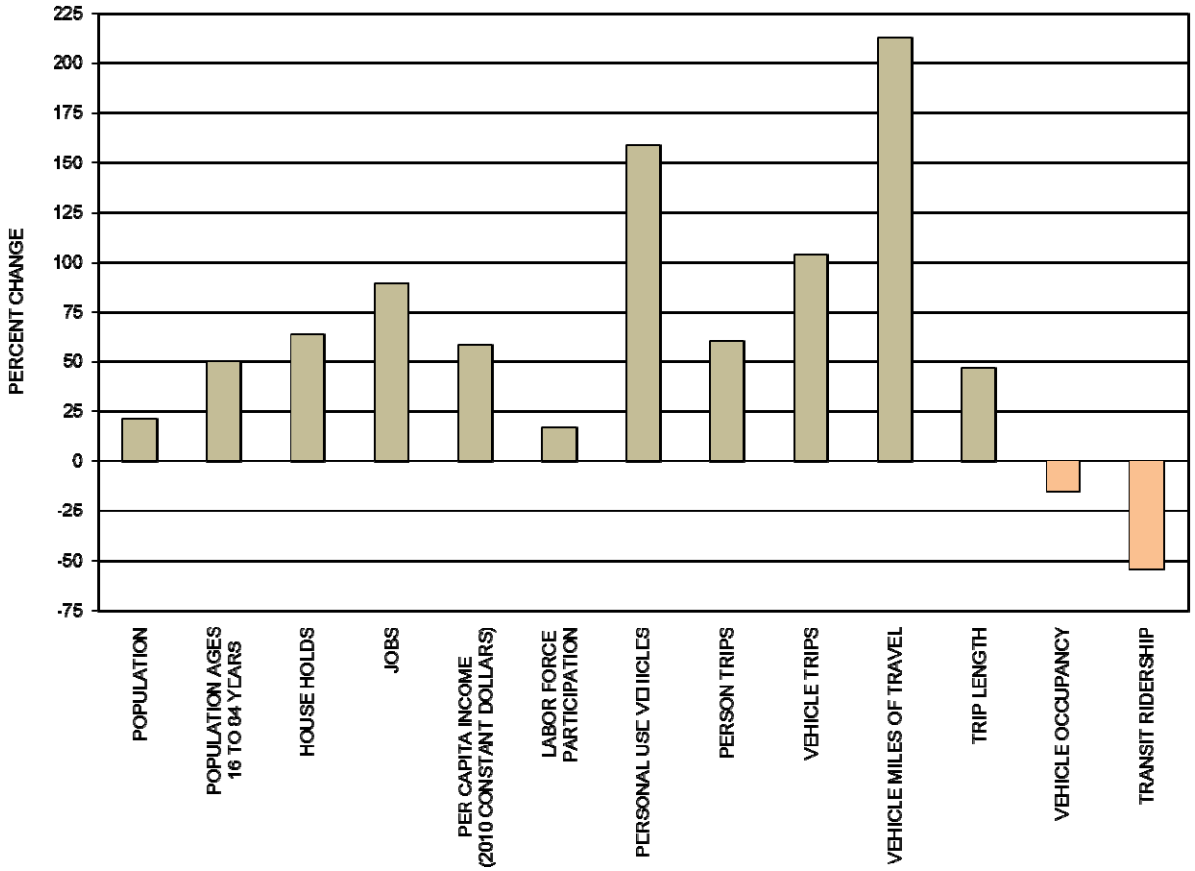
Excel: #216678
01/15/2015

Figure IV-1 (Revised)

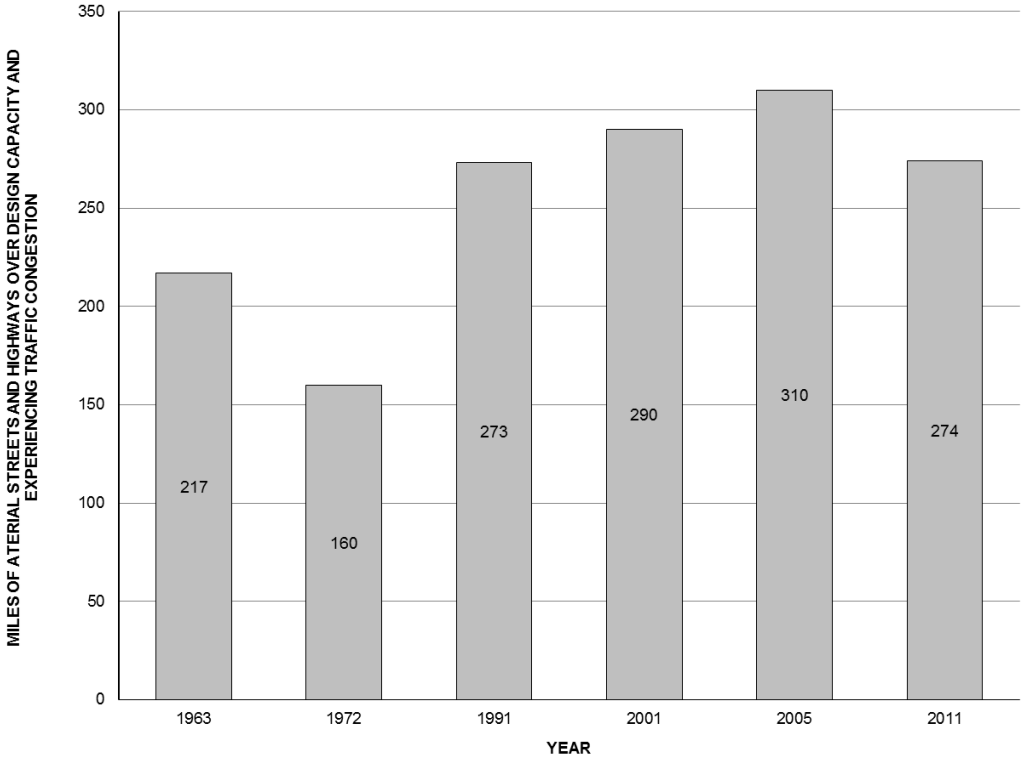
RELATIVE CHANGES IN SELECTED TRAVEL AND SOCIOECONOMIC CHARACTERISTICS WITHIN SOUTHEASTERN WISCONSIN: 1963 TO 2011



Source: SEWRPC.

Figure IV-2

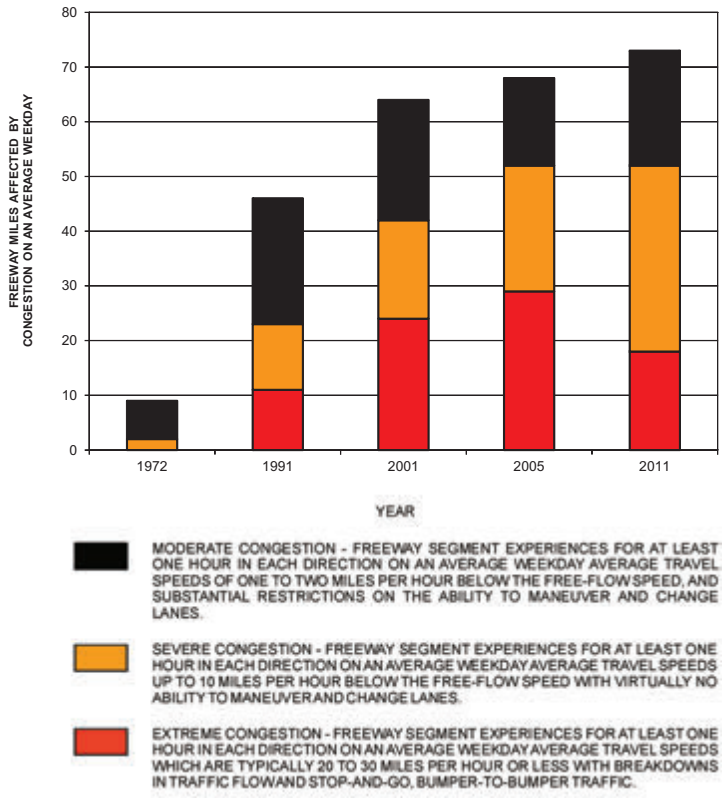
TRAFFIC CONGESTION ON THE ARTERIAL STREET AND HIGHWAY SYSTEM IN THE REGION: 1963, 1972, 1991, 2001, 2005, AND 2011



Source: SEWRPC.

Figure IV-3

ESTIMATED EXISTING SOUTHEASTERN WISCONSIN FREEWAY SYSTEM TRAFFIC CONGESTION ON AN AVERAGE WEEKDAY: 1972, 1991, 2001, 2005, AND 2011



I:\COMMON\VISION 2050\Chapters\Volume I\Chapter IV\Fig IV-3 freeway traffic congestion.cdr

Figure IV-4

TOTAL, PROPERTY-DAMAGE ONLY, AND INJURY AND FATAL VEHICULAR CRASHES REPORTED IN THE REGION: 1994-2012

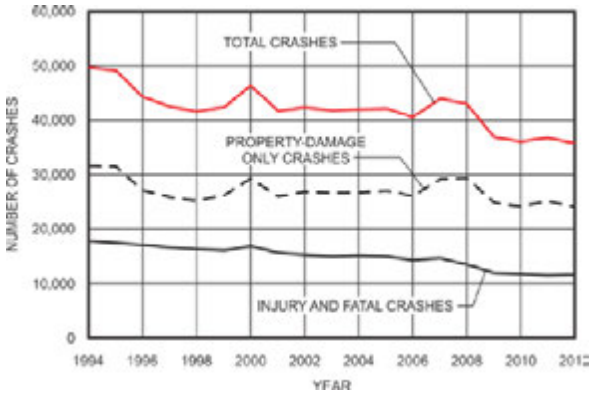
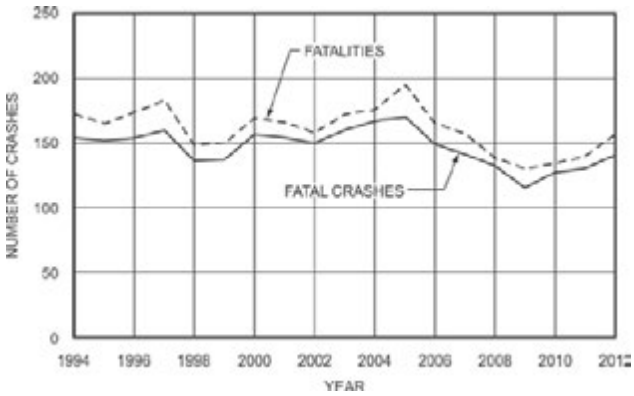


Figure IV-5

FATAL VEHICULAR CRASHES AND FATALITIES REPORTEDIN THE REGION: 1994-2012



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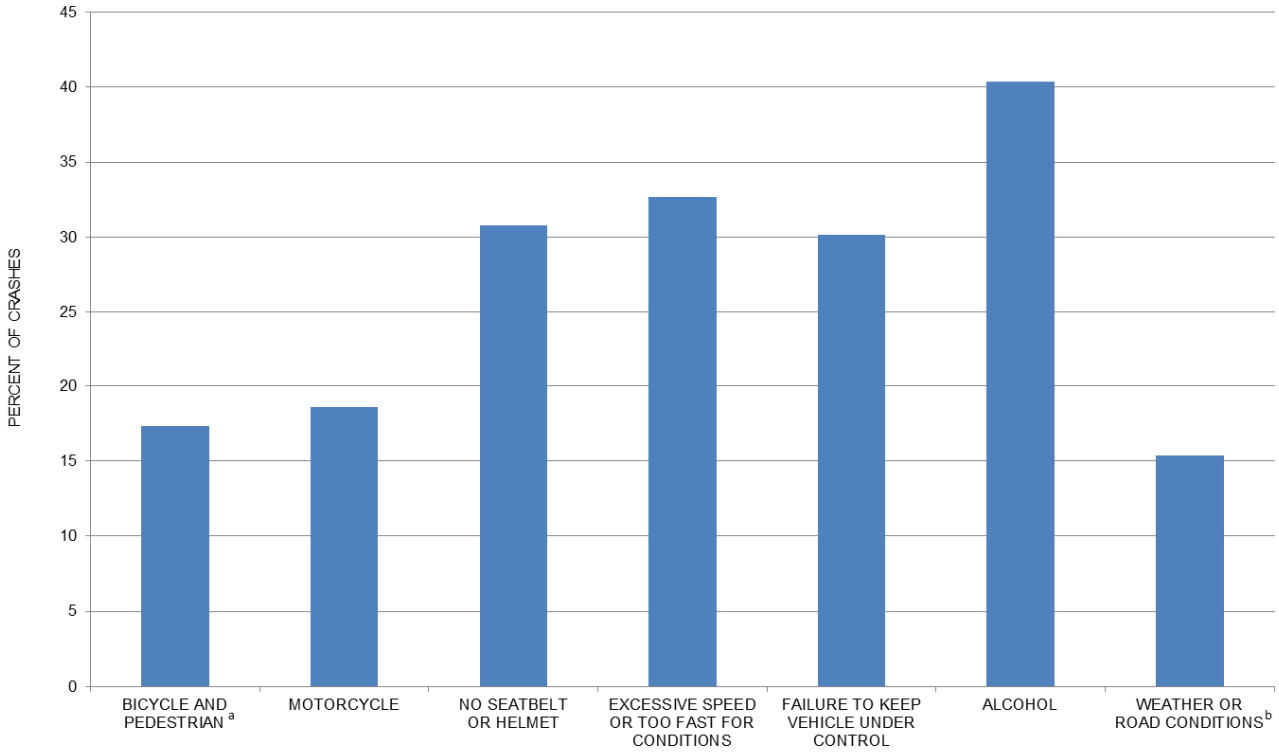
03/05/2014

Figure IV-6

SELECTED CHARACTERISTICS OF VEHICULAR CRASH-RELATED FATALITIES IN THE REGION: 2012



[a]In 2012, there were 4 bicycle fatalities (2.6% of total fatalities) and 23 pedestrian fatalities (14.7% of total fatalities).
[b]This category includes snowy, rainy, and foggy conditions and snow-covered, icy or wet roads.
Note: Fatalities attributable to multiple categories are counted more than once.

Figure IV-7

TOTAL NUMBER OF CRASHES RESULTING IN A SERIOUS INJURY REPORTED IN THE REGION: 1994-2012

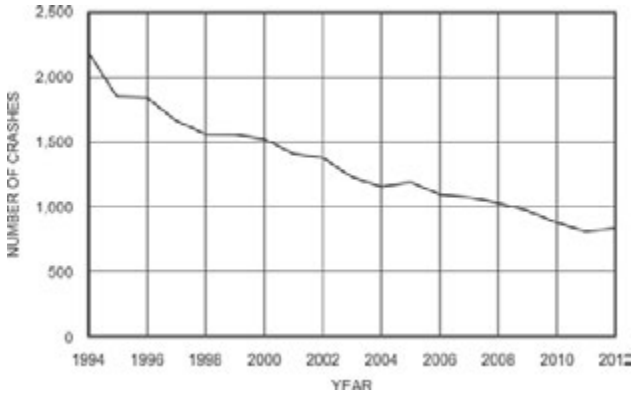


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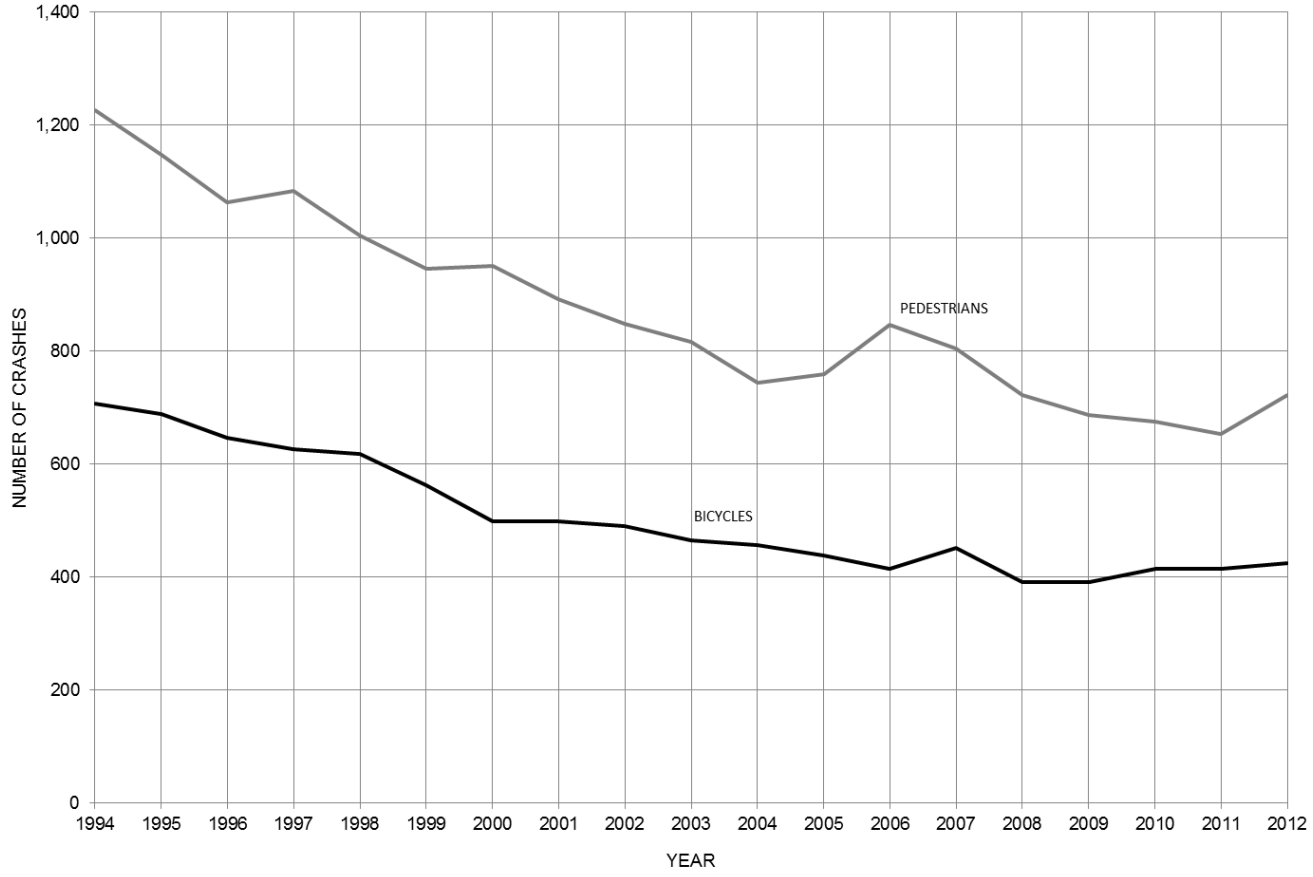
Figure IV-8

TOTAL NUMBER OF VEHICULAR CRASHES INVOLVING BICYCLES OR PEDESTRIANS AS REPORTED IN SOUTHEASTERN WISCONSIN: 1994-2012



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03/05/2014

Figure IV-9

TOTAL NUMBER OF VEHICULAR CRASHES INVOLVING BICYCLES OR PEDESTRIANS RESULTING IN A FATALITY OR A SERIOUS INJURY AS REPORTED IN SOUTHEASTERN WISCONSIN: 1994-2012

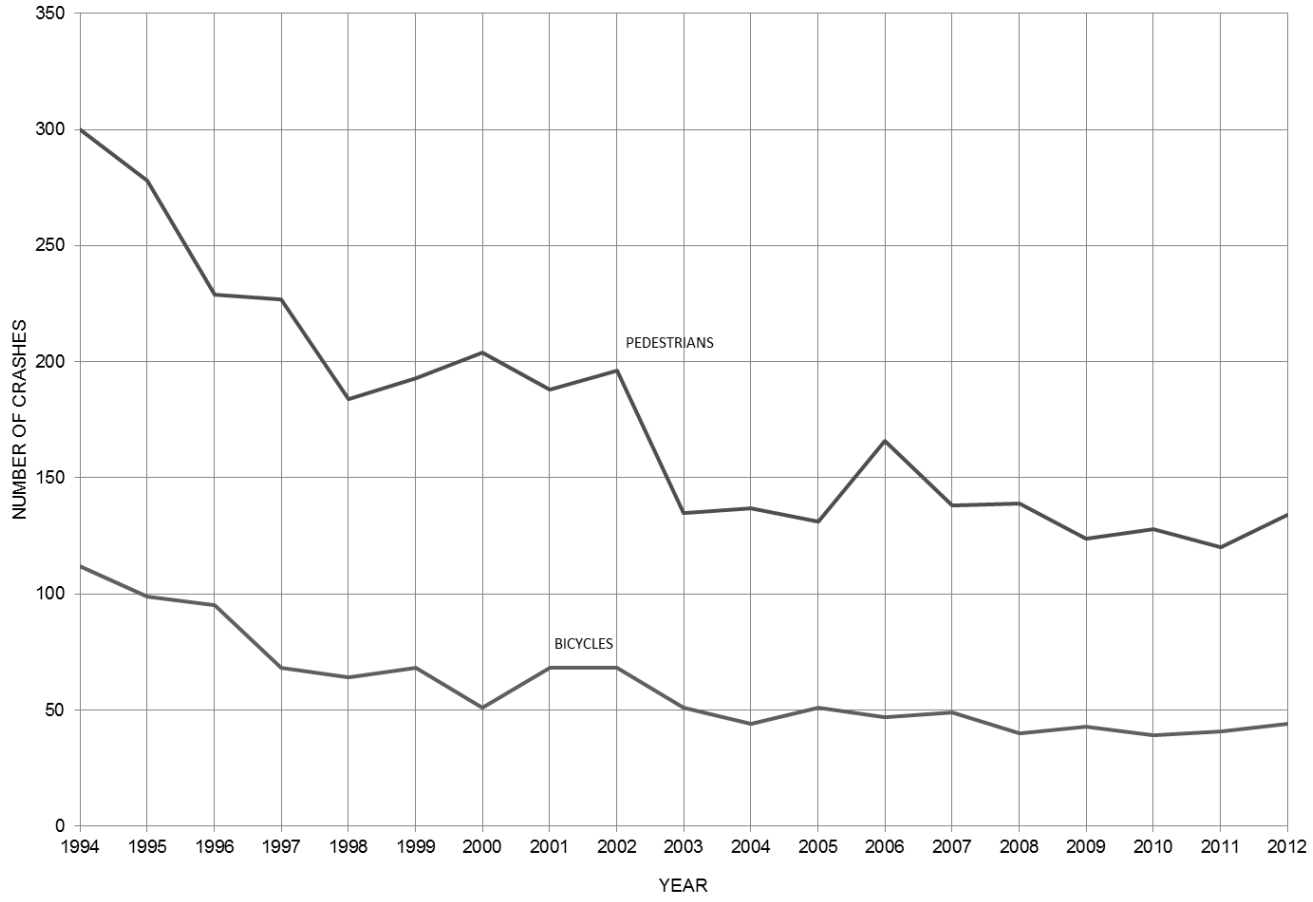
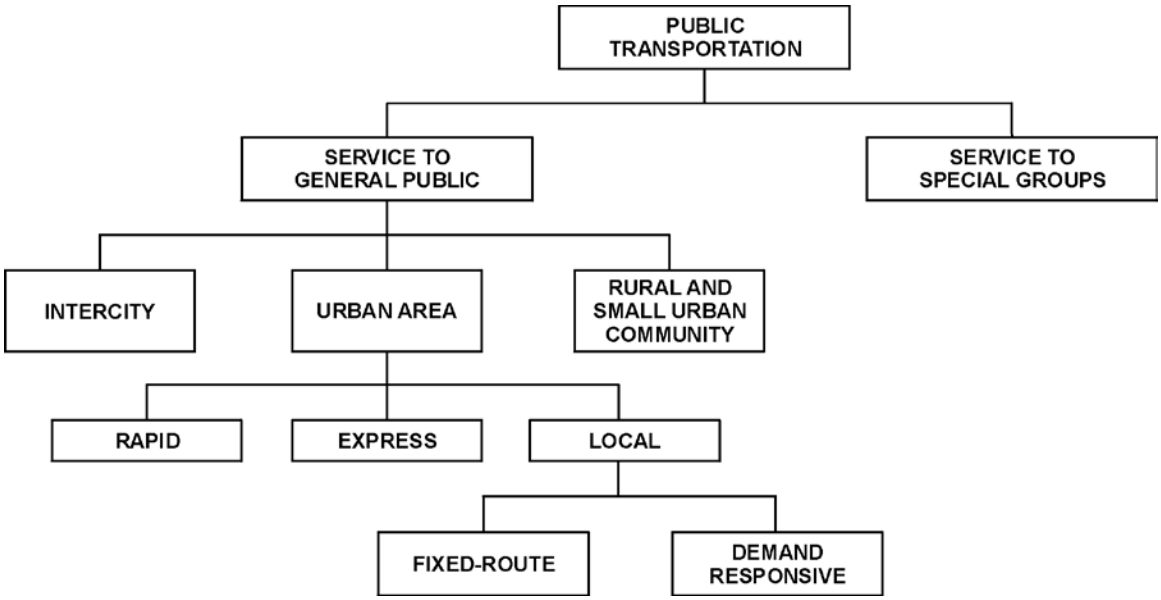


Figure IV-10

CLASSIFICATION OF PUBLIC TRANSPORTATION



Source: SEWRPC.

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03/05/2014

Figure IV-11

ANNUAL RIDERSHIP ON AMTRAK HIAWATHA SERVICE: 1990-2012