PLANNING REPORT NO. 55
(2ND EDITION)

VISION 2050 VOLUME III: RECOMMENDED REGIONAL LAND USE AND TRANSPORTATION PLAN

A REGIONAL LAND USE AND TRANSPORTATION PLAN FOR SOUTHEASTERN WISCONSIN

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VISION 2050
One Region, Focusing on Our Future

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See the inside of the back cover for special acknowledgment to individuals who served as previous members of the Committees.

**As of June 17, 2020 when plan was adopted.*

SOUTHEASTERN WISCONSIN REGIONAL PLANNING COMMISSION
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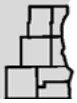

SUBJECT: Certification of Adoption of the Reaffirmation and Update of VISION 2050: A Regional Land Use and Transportation Plan for Southeastern Wisconsin

TO: The Legislative Bodies of All the Local Units of Government within the Southeastern Wisconsin Region, Consisting of the Counties of Kenosha, Milwaukee, Ozaukee, Racine, Walworth, Washington, and Waukesha

This is to certify that at a meeting of the Southeastern Wisconsin Regional Planning Commission held virtually on the 17th day of June 2020, the Commission, by unanimous vote of all Commissioners present, being 18 ayes and 0 nays, and by appropriate resolution, a copy of which is made a part hereof and is incorporated by reference to the same force and effect as if it had been specifically set forth herein in detail, did adopt a reaffirmation and update of VISION 2050, a design year 2050 regional land use and transportation plan for Southeastern Wisconsin, which plan was originally adopted by the Commission on the 28th day of July 2016, as part of the master plan for the physical development of the Southeastern Wisconsin Region. Said plan is documented in SEWRPC Planning Report No. 55 (2nd Edition), *VISION 2050: A Regional Land Use and Transportation Plan for Southeastern Wisconsin*, published in December 2020, which is attached hereto and made a part hereof. Such action taken by the Commission is hereby recorded on and is a part of said plan, which plan is hereby transmitted to all concerned levels and agencies of government in the Southeastern Wisconsin Region for implementation.

IN TESTIMONY WHEREOF, I have hereunto set my hand and seal and cause the Seal of the Southeastern Wisconsin Regional Planning Commission to be hereto affixed.

Dated at the City of Pewaukee, Wisconsin, this 8th day of December 2020.

Charles L. Colman, Chairman
Southeastern Wisconsin
Regional Planning Commission

ATTEST:

Kevin J. Muhs, Deputy Secretary

RESOLUTION NO. 2020-06

RESOLUTION OF THE SOUTHEASTERN WISCONSIN REGIONAL PLANNING COMMISSION REAFFIRMING AND UPDATING THE ADOPTED YEAR 2050 REGIONAL LAND USE AND TRANSPORTATION PLAN ("VISION 2050") FOR SOUTHEASTERN WISCONSIN, AND REAFFIRMING THE 2019-2022 TRANSPORTATION IMPROVEMENT PROGRAM FOR SOUTHEASTERN WISCONSIN AS AMENDED TO DATE

WHEREAS, the Southeastern Wisconsin Regional Planning Commission is charged with the responsibility of carrying out a long-range comprehensive planning program for the seven counties in the Southeastern Wisconsin Region and, as a part of that program, is presently engaged in a continuing, comprehensive, and cooperative areawide land use-transportation planning process pursuant to the provisions of the Federal Aid Highway Act of 1962 and the Federal Urban Mass Transportation Act of 1964, as amended; and

WHEREAS, the Southeastern Wisconsin Regional Planning Commission has been designated by the Governor of the State of Wisconsin as the official cooperative, comprehensive, continuing areawide transportation planning agency (Metropolitan Planning Organization, or MPO) under the rules and regulations promulgated by the U.S. Department of Transportation, Federal Highway Administration and Federal Transit Administration, with respect to the Kenosha, Milwaukee, Racine, West Bend, and Wisconsin portion of the Round Lake Beach urbanized areas, such rules and regulations being found in the Federal Register, dated Wednesday, May 27, 2016; and

WHEREAS, the aforesaid rules and regulations promulgated by the U.S. Department of Transportation Federal Highway Administration and Federal Transit Administration, require that the MPO shall develop and update a regional transportation plan and transportation improvement program (TIP) in cooperation with State and local officials, transit operators, and other affected agencies and individuals; and

WHEREAS, by Resolution 2016-07, the Southeastern Wisconsin Regional Planning Commission adopted the design year 2050 regional land use and transportation plan documented in SEWRPC Planning Report No. 55, *VISION 2050: A Regional Land Use and Transportation Plan for Southeastern Wisconsin*; and

WHEREAS, the Southeastern Wisconsin Regional Planning Commission amended VISION 2050 by Resolution 2018-11, Resolution 2018-24, and Resolution 2019-14; and

WHEREAS, by Resolution 2018-25, the Southeastern Wisconsin Regional Planning Commission prepared in cooperation with concerned State and local officials, transit operators and other interested parties and adopted, *A Transportation Improvement Program for Southeastern Wisconsin: 2019-2022*, identifying transportation improvements recommended for advancement during the period 2019-2022, providing for a staging of improvements over that time period consistent with the regional transportation plan, and amended this transportation improvement program to date as needed; and

WHEREAS, under the guidance of the Advisory Committees on Regional Land Use Planning and Regional Transportation Planning, the Commission staff reviewed and identified updates to VISION 2050, including updates to the financial analysis identifying the portion of the transportation system recommended in the updated VISION 2050 that can be funded by existing and reasonably expected costs and revenues, referred to as the fiscally constrained transportation system (FCTS), and updates to the equity analyses on the potential benefits and impacts to the Region's minority populations, low-income populations, and people with disabilities related to the updated land use and transportation components of VISION 2050, as documented in SEWRPC Memorandum Report No. 243, *2020 Review and Update of VISION 2050: A Regional Land Use and Transportation Plan for Southeastern Wisconsin*; and

WHEREAS, the 2020 Review and Update of VISION 2050 was the subject of a series of two rounds of public meetings held throughout the Region, along with similar meetings held with community partner

organizations representing diverse groups of traditionally underrepresented residents, nonprofits, and businesses in the Region, including groups representing minority populations, low-income populations, and people with disabilities; and

WHEREAS, the Advisory Committees on Regional Land Use Planning and Regional Transportation Planning unanimously approved the 2020 Review and Update of VISION 2050 at their meeting held on April 29, 2020; and

WHEREAS, the FCTS, as updated, and transportation improvement program have been determined to conform with the 2006 24-hour fine particulate standard and the existing State of Wisconsin Air Quality Redesignation and Maintenance Plan for the year 2006 24-hour fine particulate standard, the 1997 eight-hour ozone standard and the existing State of Wisconsin Maintenance Plan for the 1997 eight-hour ozone standard, the 2008 eight-hour ozone standard and the Redesignation and Maintenance Plan for the 2008 eight-hour ozone standard, and the 2015 eight-hour ozone standard and the budget tests described in 40 CFR 93.109 and 40 CFR 93.118 as required by the Federal Clean Air Act Amendments of 1990.

NOW THEREFORE, BE IT HEREBY RESOLVED:
FIRST: That in accordance with 23 CFR 450.336(a), the Southeastern Wisconsin Regional Planning Commission hereby certifies that the regional land use-transportation planning process is addressing the issues of the metropolitan planning area, and is being conducted in accordance with all applicable Federal laws, regulations, and requirements, including:

1. 23 U.S.C. 134, 49 U.S.C. 5303, and this subpart;

2. In nonattainment and maintenance areas, Sections 174 and 176 (c) and (d) of the Clean Air Act, as amended (42 U.S.C. 7504, 7506 (c) and (d)) and 40 CFR part 93;

3. Title VI of the Civil Rights Act of 1964, as amended (42 U.S.C. 2000d-1) and 49 CFR part 21;

4. 49 U.S.C. 5332, prohibiting discrimination on the basis of race, color, creed, national origin, sex, or age in employment or business opportunity;

5. Sections 1101(b) of the FAST Act (Pub. L. 114-357) and 49 CFR Part 26 regarding the involvement of disadvantaged business enterprises in USDOT funded projects;

6. 23 CFR part 230, regarding the implementation of an equal employment opportunity program on Federal and Federal-aid highway construction contracts;

7. The provisions of the Americans with Disabilities Act of 1990 (42 U.S.C. 12101 *et seq.*) and 49 CFR Parts 27, 37, and 38;

8. The Older Americans Act, as amended (42 U.S.C. 6101), prohibiting discrimination on the basis of age in programs or activities receiving Federal financial assistance;

9. Section 324 of title 23 U.S.C. regarding the prohibition of discrimination based on gender; and

10. Section 504 of the Rehabilitation Act of 1973 (29 U.S.C. 794) and 49 CFR part 27 regarding discrimination against individuals with disabilities.

SECOND: That the year 2050 regional land use and transportation plan, being a part of the master plan for the physical development of the Region and set forth in SEWRPC Planning Report No. 55, *VISION*

RESOLUTION NO. 2020-06

2050: A Regional Land Use and Transportation Plan for Southeastern Wisconsin, adopted in July 2016, hereby is reaffirmed and updated as set forth in SEWRPC Memorandum Report No. 243, *2020 Review and Update of VISION 2050: A Regional Land Use and Transportation Plan for Southeastern Wisconsin.*

THIRD: That the document entitled, *A Transportation Improvement Program for Southeastern Wisconsin: 2019-2022*, as amended to date be, and hereby is, endorsed as the transportation improvement program for the seven-county Southeastern Wisconsin Region.

FOURTH: That, in order to obviate the need to reconsider the transportation improvement program in the event that the air quality conformity findings for the new regional transportation plan and the TIP lapse, a revised program of projects would then be comprised of the projects identified in Appendix A of the aforereferenced document identified as "Exempt," as well as those projects that have either: 1) completed the NEPA process at such time as the air quality conformity finding lapses, or 2) are identified in the Code of Federal Regulations (Table 3, 40 CFR 51.462).

FIFTH: That a true, correct, and exact copy of this resolution and the aforereferenced report shall be forthwith distributed to each of the local legislative bodies of the government units within the Region entitled thereto and to such other bodies, agencies, or individuals as the law may require or as the Commission or its Executive Committee in their discretion shall determine and direct.

The foregoing resolution, upon motion duly made and seconded, was regularly adopted at the meeting of the Southeastern Wisconsin Regional Planning Commission held on the 17th day of June 2020, the vote being: Ayes _18_; Nays _0_.

Charles L. Colman, Chairman

ATTEST:

Kevin J. Muhs, Deputy Secretary

PLANNING REPORT
NUMBER 55 (2ND EDITION)

A REGIONAL LAND USE AND TRANSPORTATION
PLAN FOR SOUTHEASTERN WISCONSIN

VOLUME III: RECOMMENDED REGIONAL LAND USE AND TRANSPORTATION PLAN

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U.S. Department of Transportation
Federal Highway Administration
Federal Transit Administration

June 2020

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STATEMENT OF THE CHAIRMAN

As the Chairman of the Southeastern Wisconsin Regional Planning Commission, it is my pleasure to present the second edition of VISION 2050, the Region's long-range land use and transportation plan. This plan was originally adopted in 2016 and was updated in 2020. It was developed through extensive public involvement, and we would like to thank the concerned residents, Commissioners, staff, Advisory Committees, and Task Forces who provided valuable input and guidance.

The plan recognizes that we have reached a pivotal moment in our Region's development, and more than ever we will need to compete with other areas to attract talented young professionals and companies by leveraging the strengths of the Region. To that end, the plan builds on our strengths and seeks to improve areas where we do not compete well with our peers. In short, VISION 2050 recommends:

- Maintaining existing major streets in good condition, strategically adding capacity on highly congested roadways, and addressing key issues related to moving goods within the Region
- Efficiently using the capacity of existing streets and highways and incorporating "complete streets" roadway design concepts that provide safe and convenient travel for pedestrians, bicyclists, transit users, and motorists
- Significantly improving and expanding public transit to support compact growth, enhance the attractiveness of the Region, and provide access to jobs and opportunities for all residents
- Enhancing the Region's bicycle and pedestrian network to improve access to activity centers, neighborhoods, and other destinations
- Encouraging more compact development, ranging from high-density, transit-oriented development to traditional neighborhoods with homes within walking distance of parks, schools, and businesses
- Preserving the Region's most productive farmland and best remaining features of the natural landscape

I want to particularly draw your attention to Chapter 2 of Volume III, which describes the transportation system our Region can expect by 2050 if steps are not taken to increase funding for roadways and transit. We do not suggest the need for additional funding for transportation lightly, but recognize that achieving the full vision laid out in Chapter 1 of Volume III will only occur if the Region builds, operates, and maintains an economically competitive transportation system that improves the flow of goods and people in Southeastern Wisconsin. If adequately funded and implemented by all our communities and the State and Federal governments, VISION 2050 charts a course for Southeastern Wisconsin's future that improves services and infrastructure so that we can provide access to jobs for disadvantaged communities and effectively compete for the skilled workers and companies that sustain other dynamic regions of our Country.

The Commission asks that all concerned local, areawide, State, and Federal units of government and agencies endorse and use the plan as an advisory guide when making land use development and transportation decisions. This three-volume report, including a second edition of Volume III and the condensed plan summary, are available in hard copy and at vision2050sewis.org.

Respectfully submitted,

Charles L. Colman,
Chairman

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RECOMMENDED YEAR 2050 REGIONAL LAND USE AND TRANSPORTATION PLAN

1

Credit: SEWRPC Staff

1.1 INTRODUCTION

VISION 2050 recommendations will help make Southeastern Wisconsin more competitive by building on the Region's strengths.

Southeastern Wisconsin has reached a pivotal point in its development. The 2020 Review and Update of VISION 2050 affirmed that this statement from the originally adopted VISION 2050 is accurate, and that the expected workforce shortage caused by the Region's demographic trends is occurring at a rapid pace. In the four years between the original plan adoption and the development of this Second Edition of Volume III of the VISION 2050 plan report, the Region's notable economic growth has further magnified the need to attract new residents underscored in the originally adopted plan. These new residents need to be attracted at a level unseen in decades, putting Southeastern Wisconsin in direct competition with other metro areas. If the Region does not compete strongly to attract needed workers, economic growth may not continue to occur. The recommendations for land use and transportation in VISION 2050 will improve quality of life throughout the Region and are intended to make the Region more competitive over the next several decades.

While the trends between 2016 and early 2020 discussed above point to the urgency of attracting new residents to Southeastern Wisconsin, this updated version of Volume III was finalized during the first few months of the COVID-19 global pandemic. This was a time of unprecedented uncertainty as it relates to public health, the economy, and transportation, and the Commission recognizes that there could be some degree of change relative to historical and expected trends. Staff will continue to monitor any changing conditions and will consider amendments to the plan if they become necessary prior to the next review and update to be completed in 2024. Despite the potential for changes in response to the pandemic, it is important to continue to pursue VISION 2050 implementation to achieve the significant benefits the plan would have for Southeastern Wisconsin.

This volume of the VISION 2050 plan report presents the recommended year 2050 regional land use and transportation plan for Southeastern Wisconsin. VISION 2050 recommends:

- Encouraging sustainable and cost-effective growth
- Preserving the Region's most productive farmland and primary environmental corridors, which encompass the best remaining features of the Region's natural landscape
- Encouraging more compact development, ranging from high-density transit-oriented development to traditional neighborhoods with homes within walking distance of parks, schools, and businesses
- Significantly improving and expanding public transit, including adding rapid transit and commuter rail, and improving and expanding local and express transit services to support compact growth and enhance the attractiveness and accessibility of the Region
- Enhancing the Region's bicycle and pedestrian network to improve access to activity centers, neighborhoods, and other destinations
- Keeping existing major streets in a state of good repair and efficiently using the capacity of existing streets and highways
- Strategically adding capacity on highly congested roadways, incorporating "complete streets" roadway design concepts to provide safe and convenient travel for all, and addressing key issues related to moving goods into and through the Region

Groundwork for Vision and Plan Development

Volume I of the plan report includes information collected during the initial process to develop VISION 2050 on the existing and historical land use and transportation system in the Region; analyses of that information, including an analysis of progress in the implementation of the previous generation regional plans (year 2035); and forecasts of future needs for resources, land, and transportation based on the data. This information was vital in establishing a basis for preparing the technically sound plan that was originally adopted in 2016.

Extensive public outreach was conducted during each step of the original planning process.

Developing the Vision and Plan

Volume II documents the initial process used to prepare VISION 2050, including the extensive public outreach conducted as part of each step in the process. The process began by engaging residents in visioning for the future, which involved a variety of activities and surveys. The result was an initial vision comprised of a set of VISION 2050 Guiding Statements, which generally describe the desired future direction of growth and change in the Region with respect to land and transportation system development. The feedback obtained from initial visioning activities led into a scenario planning effort. This step involved comparing a series of five conceptual land use and transportation scenarios, including a baseline scenario representing a continuation of current trends and additional scenarios representing a range of possible futures for land use and transportation that could achieve the initial vision. Following public input on the scenarios, a series of three detailed land use and transportation alternative plans were prepared and thoroughly evaluated and compared using 50 criteria based on the Guiding Statements developed earlier in the process. The public input on these

detailed alternatives guided the development of a preliminary recommended regional land use and transportation plan. The Preliminary Recommended Plan was thoroughly evaluated and was the focus of the final round of public input during the initial VISION 2050 process.

The original VISION 2050 included refinement to the Preliminary Plan based on consideration of public input on the Preliminary Plan, as well as input from the Commission's Advisory Committees on Regional Land Use Planning and Regional Transportation Planning, Environmental Justice Task Force, Jurisdictional Highway Planning Committees in each county, and VISION 2050 task forces on key areas of interest.[1]

Amendments and Updates Following Original Plan Adoption

Following the adoption of VISION 2050 in 2016, the Commission amended the plan on three occasions and one interim review and update was conducted. One of the three plan amendments incorporated land use changes to accommodate additional residents and jobs directly or indirectly related to the Foxconn manufacturing campus in Racine County. In addition, the amendment incorporated transportation improvements to serve the Foxconn manufacturing campus area, including both highway and transit improvements. The other two plan amendments incorporated targets for a number of performance measures developed by the Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA) into VISION 2050, as required by the Moving Ahead for Progress in the 21st Century Act (MAP-21) and the Fixing America's Surface Transportation (FAST) Act. The established targets are included in Appendix P of this report.

Since 2016, the Commission has updated VISION 2050 through three amendments and one interim review and update.

Every four years, the Commission conducts an interim review and update of the plan, in part to address Federal requirements. The 2020 Review and Update of VISION 2050, guided by the Advisory Committees on Regional Land Use Planning and Regional Transportation Planning, was the first interim update. The 2020 Update reviewed plan implementation to date, current transportation system performance, and the year 2050 forecasts underlying the plan, then identified changes to VISION 2050 based on plan implementation to date and recent changes in technology, demographics, and the economy. The changes were also based on input received from the public and other stakeholders, including two rounds of public involvement held during the review and update process. Changes identified in the 2020 Update have been incorporated into this Second Edition of Volume III of the VISION 2050 plan report.

The VISION 2050 Plan

VISION 2050 includes a recommended land use development pattern and transportation system, together representing a desired future vision for the Region. It was developed to achieve the plan objectives documented in Chapter 3 of Volume II of this report and presented in Figure 1.1 (note: no priority is implied by the order of the plan objectives). These plan objectives are specific goals, or ends, that guided the preparation and evaluation of the alternatives and Preliminary Plan, and would be the desired outcome of the VISION 2050 recommendations presented in this chapter. The objectives are organized under the four important themes for VISION 2050: Healthy Communities, Equitable Access, Costs and Financial Sustainability, and Mobility. To emphasize the importance of these themes throughout the

VISION 2050 was developed to achieve plan objectives under four important themes: Healthy Communities, Equitable Access, Costs and Financial Sustainability, and Mobility.

[1] *The Preliminary Recommended Plan is set forth in Chapter 4 of Volume II of this report, and its evaluation is set forth in Appendix H. The refinements that were made to the Preliminary Recommended Plan are discussed in Section 4.5 of Chapter 4 of Volume II.*

Figure 1.1
VISION 2050 Plan Objectives Under the Four Plan Themes

HEALTHY COMMUNITIES

This theme revolves around creating healthy communities within our Region, with active transportation options and environmental preservation serving as cornerstones of the theme.

Objective 1.1: Vibrant, walkable neighborhoods that contribute to the Region's distinct character.

Objective 1.2: Active transportation options that encourage healthy lifestyles.

Objective 1.3: Compact urban development and limited rural development that maximize open space and productive agricultural land.

Objective 1.4: Environmentally sustainable development and transportation that minimize the use of nonrenewable resources and adverse impacts on the Region's natural environment, including biodiversity, air, and water.

Objective 1.5: A transportation system that minimizes disruption of neighborhood and community development, including adverse effects on the property tax base.

Objective 1.6: Safe and secure travel environments that minimize loss of life, injury, and property damage.

EQUITABLE ACCESS

This theme focuses on providing access to opportunity for all of the Region's residents.

Objective 2.1: Benefits and impacts of investments in the Region's transportation system should be shared fairly and equitably and serve to reduce disparities between white and minority populations.

Objective 2.2: Affordable transportation and housing that meet the needs and preferences of current and future generations.

Objective 2.3: Reduce job-worker mismatch.

COSTS AND FINANCIAL SUSTAINABILITY

This theme takes into account the need to make wise investment decisions that consider all the direct and indirect costs of developing the Region's land and transportation system.

Objective 3.1: A land development pattern and transportation system that support economic growth and a globally competitive economy.

Objective 3.2: A financially sustainable transportation system that minimizes life-cycle capital and operating transportation costs.

Objective 3.3: Transportation options that minimize private transportation costs.

Objective 3.4: Urban development that can be efficiently served by transportation, utilities, and public facilities.

MOBILITY

This theme is aimed at achieving a multimodal transportation system that serves the mobility needs of all of the Region's residents and provides access to important places and services.

Objective 4.1: A balanced, integrated, well-connected transportation system that provides choices among transportation modes.

Objective 4.2: Reliable, efficient, and universal access to employment centers, educational opportunities, services, and other important places.

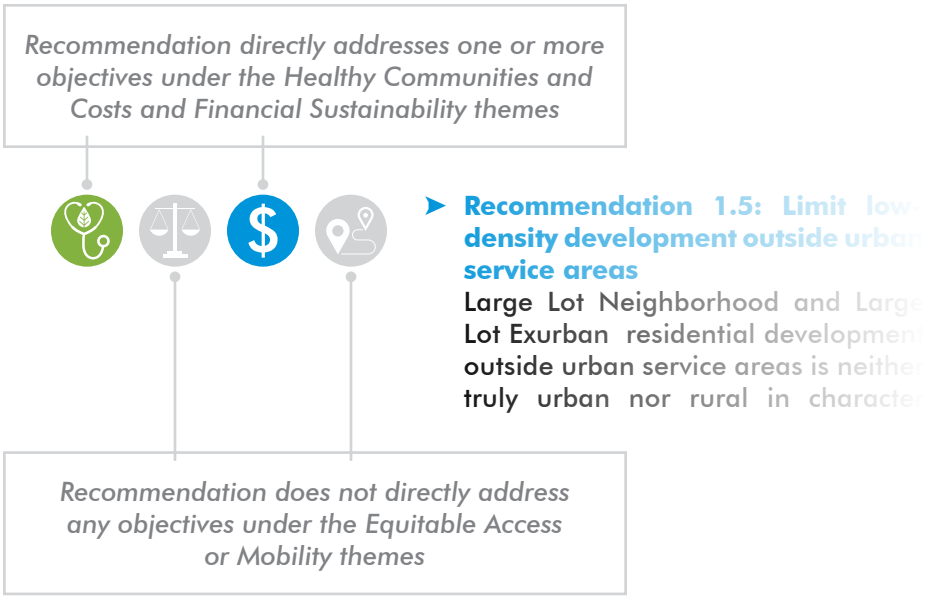
Objective 4.3: Well-maintained transportation infrastructure.

Objective 4.4: An acceptable level of service on the transportation system.

Objective 4.5: Fast, frequent, and reliable public transit services that maximize the people and jobs served.

Objective 4.6: Convenient, efficient, and reliable movement of goods and people.

Figure 1.2
Navigating the Four Plan Themes in the Chapter



recommended plan, plan recommendations that would have a significant impact on achieving objectives under each theme are identified using the icons associated with each theme, as shown in Figure 1.2.

This chapter presents the VISION 2050 plan recommendations, including changes identified in the 2020 Review and Update of VISION 2050. The following section of this chapter describes the VISION 2050 recommendations for land use, including the recommended land use development pattern. Design guidelines that provide additional direction for select land use recommendations are referenced within the chapter and presented in Appendix K of this volume. The subsequent section describes the recommendations for transportation, including the recommended transportation system. The transportation section also compares existing and reasonably expected costs and revenues for the recommended transportation system. This analysis identifies a funding gap for the recommended transportation system and identifies the portion of the recommended system that can be implemented with reasonably expected revenues. The funded portion of the recommended system is referred to as the "Fiscally Constrained Transportation System (FCTS)," and is presented in Chapter 2 of this volume. It is important to recognize that the FCTS does not represent a desired "plan;" rather, it represents the "system" expected to occur without sufficient funding levels to maintain and improve the transportation system as recommended in VISION 2050. Most notably, transit service levels under the FCTS would be expected to decline by about 35 percent rather than more than double as recommended under VISION 2050. There would also be a reduction in the amount of arterial streets and highways that can be reconstructed, widened, or newly constructed. VISION 2050 recommends significantly improving and expanding public transit based on numerous benefits identified during the plan development process and it is critical that the Region's arterial streets and highways be reconstructed in a timely manner. Significant negative consequences for Southeastern Wisconsin are expected if the recommended transportation system is not achieved due to the funding limitations, and the plan identifies potential ways to address the identified funding gap.

Also included in the plan are equity analyses of the recommended land use and transportation components, which are summarized in this chapter and presented in detail in Appendices L and N, respectively. These analyses focus on evaluating the potential benefits and impacts to people of color, low-income populations, and people with disabilities associated with VISION 2050. Notably, the transportation equity analysis indicates that the recommended transit system would significantly improve transit access for these population groups to jobs, healthcare, education, and other activities. However, the expected transit service decline under the FCTS would result in less access to jobs, healthcare, education, and other daily needs than under VISION 2050. This analysis concludes that without additional funding to implement the VISION 2050 public transit element, a disparate impact on the Region's people of color, low-income populations, and people with disabilities is likely to occur.

1.2 RECOMMENDED LAND USE COMPONENT

Areawide land use planning is necessary in a growing Region with seven counties and almost 150 cities, villages, and towns, where physical and economic development issues transcend political boundaries. While the Region includes only 5 percent of Wisconsin's total area, it accounts for over one-third of the State's population, jobs, and wealth. Geographically, the Region is well-located for continued growth and development. The Region is bounded on the east by Lake Michigan, which provides a unique, substantial, and high-quality water supply; is an unparalleled recreation resource; and is an integral part of a major international transportation network. It is bounded on the south by the metropolitan region of northeastern Illinois and is bounded on the west and north by the fertile agricultural and desirable recreation areas found in the rest of Wisconsin. In addition, many of the most important industrial areas and heaviest population concentrations in the Midwest are within 250 miles of the Region.

An additional 252,000 jobs are forecast for the Region by 2050, which will require an in-migration of workers.

The Region of 2050 will be different than the Region of today due to its potential for continued growth and development. It is expected there will be more than 400,000 additional residents and more than 250,000 additional jobs, which will require an in-migration of population and workers. This anticipated growth will create demand for land and improved transportation facilities, and increase pressure on the Region's natural resources.

A major focus of VISION 2050 is on achieving more compact development.

The land use component of VISION 2050 focuses on compact development and presents a development pattern and recommendations that accommodate projected growth in regional population, households, and employment in a sustainable manner consistent with VISION 2050 plan objectives. The compact development recommended under VISION 2050 ranges from high-density development such as transit-oriented development (TOD), to neighborhoods in smaller communities with housing within easy walking distance of neighborhood amenities such as parks, schools, and businesses.

This range of development is recommended because it has a number of benefits, including:

- Minimizing impacts on natural and agricultural resources
- Minimizing impacts to water resources and air quality
- Positioning the Region to attract potential workers and employers

- Maximizing redevelopment in areas with existing infrastructure
- Minimizing the cost of infrastructure and public services
- Meeting the needs of the Region's aging population
- Providing walkable neighborhoods that encourage active lifestyles and a sense of community
- Reducing the distance needed to travel between destinations
- Providing a variety of housing options near employment
- Supporting public transit connections between housing and employment
- Increasing racial and economic integration throughout the Region[2]

VISION 2050 recognizes the impact of market forces on the location, intensity, and character of future urban development. It also recognizes the important role of communities in development decisions, and encourages communities to act on the land use recommendations presented in VISION 2050 to make the Region an attractive place for all current and future residents and businesses.

Description of Land Use Component

The land use component of VISION 2050 recommends focusing development within planned urban service areas, preserving environmentally significant lands, and preserving highly productive agricultural lands. Existing local comprehensive plans, input from local planning officials, committed developments, and input from VISION 2050 public outreach activities were considered in allocating increases in regional population, households, employment, and associated land uses to develop the land use component of VISION 2050.

Figure 1.3 illustrates the land use categories to which population, households, and employment were allocated under VISION 2050 (more detailed descriptions are included in Chapter 3 of Volume II).

Map 1.1 presents the land use development pattern recommended under VISION 2050. Tables 1.1 and 1.2 provide information regarding existing and recommended land use. Actual and planned population, households, and employment by county and sub-area are presented in Table 1.3 (the sub-areas are shown on Map 1.2).

VISION 2050 is intended to provide a guide, or overall framework, for future land use within the Region. Implementation of the land use recommendations ultimately relies on the actions of local, county, State, and Federal agencies and units of government in conjunction with the private sector. Detailed design guidelines that serve to facilitate implementation of the recommendations are presented in Appendix K of this volume.

VISION 2050 implementation relies on the actions of local, county, State, and Federal governments in conjunction with the private sector.

[2] *An equity analysis of the VISION 2050 land use component is presented in Appendix L of this volume.*

Figure 1.3
VISION 2050 Land Use Categories

The recommended VISION 2050 land use pattern was developed by allocating new households and employment envisioned for the Region under the Commission's year 2050 growth projections to a series of seven land use categories that represent a variety of development densities and mixes of uses.

MIXED-USE CITY CENTER
Mix of very high-density offices, businesses, and housing found in the most densely populated areas of the Region

MIXED-USE TRADITIONAL NEIGHBORHOOD
Mix of high-density housing, businesses, and offices found in densely populated areas

SMALL LOT TRADITIONAL NEIGHBORHOOD (showing lots of about 7,000 square feet)
Mix of housing types and businesses with single-family homes on lots of ¼-acre or less and multifamily housing found within and at the edges of cities and villages

MEDIUM LOT NEIGHBORHOOD (showing lots of about 15,000 square feet)
Primarily single-family homes on ¼- to ½-acre lots found at the edges of cities and villages

LARGE LOT NEIGHBORHOOD (showing lots of about ½ acre)
Primarily single-family homes on ½-acre to one-acre lots found at the edges of cities and villages and scattered outside cities and villages

LARGE LOT EXURBAN (showing lots of about 1.5 acres)
Single-family homes at an overall density of one home per 1.5 to five acres scattered outside cities and villages

RURAL ESTATE (showing a cluster subdivision with one-acre lots)
Single-family homes at an overall density of one home per five acres scattered outside cities and villages

Map 1.1
Land Use Development Pattern: VISION 2050

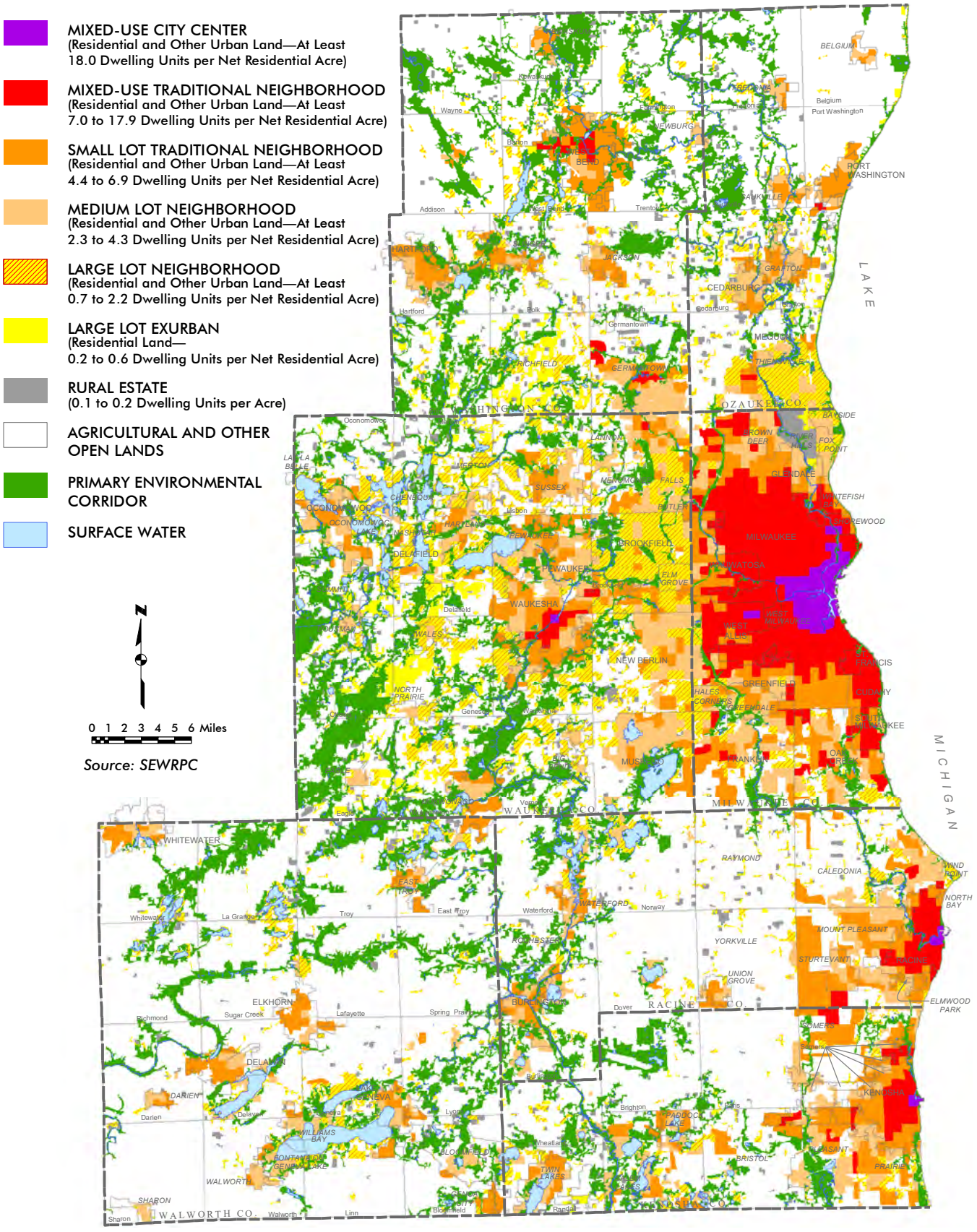


Table 1.1
Existing and Planned Land Use in the Region: 2010 and 2050

Land Use	Existing 2010		Planned Increment		Planned 2050	
	Square Miles	Percent of Total	Square Miles	Percent Change	Square Miles	Percent of Total
Developed Land						
Residential						
Mixed-Use City Center[a]	3.1	0.1	0.3	9.7	3.4	0.1
Mixed-Use Traditional Neighborhood[b]	45.8	1.7	3.3	7.2	49.1	1.8
Small Lot Traditional Neighborhood[c]	41.6	1.5	38.0	91.3	79.6	3.0
Medium Lot Neighborhood[d]	88.2	3.3	6.4	7.3	94.6	3.5
Large Lot Neighborhood[e]	160.5	6.0	4.7	2.9	165.2	6.1
Large Lot Exurban[f]	31.9	1.2	2.7	8.5	34.6	1.3
Rural Estate[g]	29.9	1.1	7.5	25.1	37.4	1.4
Residential Subtotal	400.9	14.9	63.0	15.7	463.9	17.2
Commercial	35.6	1.3	13.9	39.0	49.5	1.8
Industrial	35.2	1.3	9.4	26.7	44.6	1.7
Transportation, Communication, and Utilities	213.8	8.0	13.9	6.5	227.7	8.5
Governmental and Institutional	37.0	1.4	1.9	5.1	38.9	1.4
Recreational[h]	56.0	2.1	6.9	12.3	62.9	2.3
Unused Urban	46.0	1.7	-21.3	-46.3	24.7	0.9
Developed Land Subtotal	824.5	30.7	87.7	10.6	912.2	33.9
Undeveloped Land						
Agricultural[i]	1,155.5	43.0	-65.8	-5.7	1,089.7	40.6
Natural Resource Areas						
Surface Water	84.7	3.1	0.0	0.0	84.7	3.1
Wetlands	315.2	11.7	0.0	0.0	315.2	11.7
Woodlands	191.4	7.1	0.0	0.0	191.4	7.1
Natural Resource Areas Subtotal	591.3	21.9	0.0	0.0	591.3	21.9
Unused and Other Open Land[j]	118.5	4.4	-22.0	-18.6	96.5	3.6
Undeveloped Land Subtotal	1,865.2	69.3	-87.7	-4.7	1,777.5	66.1
Total	2,689.7	100.0	0.0	0.0	2,689.7	100.0

Note: Off-street parking area is included with the associated use.

[a] *18.0 or more dwelling units per net residential acre.*

[b] *7.0 to 17.9 dwelling units per net residential acre.*

[c] *4.4 to 6.9 dwelling units per net residential acre.*

[d] *2.3 to 4.3 dwelling units per net residential acre.*

[e] *0.7 to 2.2 dwelling units per net residential acre.*

[f] *0.2 to 0.6 dwelling units per net residential acre.*

[g] *No more than 0.2 dwelling units per acre. The Rural Estate category assumes there would be one acre of developed homesite area per dwelling, the remainder of the area being retained in open space.*

[h] *Includes only intensive use recreational land.*

[i] *Includes farmed wetlands.*

[j] *Includes landfills and mineral extraction sites.*

Source: SEWRPC

Table 1.2
Existing and Planned Land Use in the Region by County: 2010 and 2050

Land Use	Kenosha County (square miles)			Milwaukee County (square miles)			Ozaukee County (square miles)			Racine County (square miles)		
	2010	Increment	2050	2010	Increment	2050	2010	Increment	2050	2010	Increment	2050
Developed Land												
Residential												
Mixed-Use City Center[a]	0.1	0.0	0.1	2.8	0.2	3.0	0.0	0.0	0.0	0.2	0.0[b]	0.2
Mixed-Use Traditional Neighborhood[c]	2.8	1.1	3.9	37.7	1.2	38.9	0.0	0.1	0.1	3.8	0.3	4.1
Small Lot Traditional Neighborhood[d]	4.8	9.3	14.1	12.8	3.0	15.8	2.2	2.2	4.4	4.4	5.6	10.0
Medium Lot Neighborhood[e]	10.1	0.7	10.7	16.3	0.2	16.6	6.9	0.2	7.0	12.9	0.4	13.2
Large Lot Neighborhood[f]	10.4	0.4	10.8	9.0	0.1	9.1	16.2	0.9	17.1	15.7	0.4	16.1
Large Lot Exurban[g]	1.0	0.3	1.3	1.0	0.0	1.0	2.6	0.5	3.1	0.2	0.2	0.4
Rural Estate[h]	3.2	0.6	3.9	1.4	0.0	1.4	3.6	0.8	4.3	4.6	1.2	5.8
Residential Subtotal	32.4	12.4	44.8	81.0	4.8	85.8	31.5	4.6	36.0	41.8	8.0	49.8
Commercial	2.7	1.5	4.2	12.3	1.9	14.2	1.8	1.0	2.9	3.6	1.7	5.3
Industrial	2.9	1.5	4.5	11.2	0.7	11.9	2.0	1.2	3.1	4.3	2.8	7.1
Transportation, Communication, and Utilities	19.4	3.4	22.8	53.2	0.7	53.9	15.9	0.9	16.9	22.7	2.4	25.1
Governmental and Institutional	3.2	0.6	3.8	13.4	0.0	13.4	2.1	0.1	2.2	3.9	0.3	4.2
Recreational[i]	5.9	1.5	7.4	12.3	0.2	12.5	4.1	0.4	4.5	5.3	1.0	6.3
Unused Urban	4.5	-3.1	1.4	14.7	-4.5	10.2	3.0	-1.6	1.4	5.8	-2.7	3.1
Developed Land Subtotal	71.1	17.8	88.9	198.1	3.8	201.9	60.4	6.6	67.0	87.4	13.5	100.9
Undeveloped Land												
Agricultural[j]	136.6	-14.1	122.5	15.6	-2.4	13.2	118.2	-4.6	113.6	180.7	-10.8	169.8
Natural Resource Areas												
Surface Water	8.8	0.0	8.8	2.4	0.0	2.4	4.1	0.0	4.1	9.4	0.0	9.4
Wetlands	28.9	0.0	28.9	11.6	0.0	11.6	30.8	0.0	30.8	29.8	0.0	29.8
Woodlands	15.9	0.0	15.9	7.4	0.0	7.4	11.4	0.0	11.4	19.6	0.0	19.6
Natural Resource Areas Subtotal	53.7	0.0	53.7	21.4	0.0	21.4	46.3	0.0	46.3	58.7	0.0	58.7
Unused and Other Open Land[k]	17.1	-3.7	13.4	7.5	-1.4	6.1	10.6	-2.0	8.6	13.8	-2.6	11.2
Undeveloped Land Subtotal	207.4	-17.8	189.6	44.6	-3.8	40.7	175.1	-6.6	168.4	253.2	-13.5	239.7
Total	278.4	0.0	278.4	242.7	0.0	242.7	235.4	0.0	235.4	340.6	0.0	340.6

Table continued on next page.

Table 1.2 (Continued)

Land Use	Walworth County (square miles)			Washington County (square miles)			Waukesha County (square miles)			Region (square miles)		
	2010	Increment	2050	2010	Increment	2050	2010	Increment	2050	2010	Increment	2050
Developed Land												
Residential												
Mixed-Use City Center[a]	0.0	0.0	0.0	0.0	0.0	0.0	0.0[b]	0.0[b]	0.1	3.1	0.3	3.4
Mixed-Use Traditional Neighborhood[c]	0.0	0.0	0.0	0.6	0.5	1.1	0.9	0.1	1.0	45.8	3.3	49.1
Small Lot Traditional Neighborhood[d]	2.9	4.6	7.4	4.6	5.2	9.7	10.0	8.2	18.1	41.6	38.0	79.6
Medium Lot Neighborhood[e]	9.0	1.2	10.2	7.1	0.5	7.6	25.9	3.3	29.3	88.2	6.4	94.6
Large Lot Neighborhood[f]	16.3	0.6	16.9	19.9	0.2	20.2	72.9	2.1	75.0	160.5	4.7	165.2
Large Lot Exurban[g]	0.9	0.0	0.9	8.3	1.1	9.4	18.0	0.6	18.6	31.9	2.7	34.6
Rural Estate[h]	7.2	1.2	8.4	6.6	2.0	8.6	3.3	1.7	5.0	29.9	7.5	37.4
Residential Subtotal	36.3	7.6	43.9	47.0	9.5	56.5	131.0	16.0	147.0	400.9	63.0	463.9
Commercial	2.4	1.5	3.9	2.7	1.6	4.3	10.2	4.6	14.7	35.6	13.9	49.5
Industrial	2.5	0.5	3.0	2.9	1.1	4.1	9.3	1.6	11.0	35.2	9.4	44.6
Transportation, Communication, and Utilities	26.1	1.6	27.7	26.3	1.8	28.0	50.4	3.1	53.5	213.8	13.9	227.7
Governmental and Institutional	2.9	0.2	3.1	2.7	0.2	3.0	8.8	0.7	9.5	37.0	1.9	38.9
Recreational[i]	7.3	1.1	8.4	6.5	0.4	6.9	14.7	2.2	16.9	56.0	6.9	62.9
Unused Urban	3.4	-1.7	1.7	3.1	-1.8	1.3	11.1	-5.8	5.3	46.0	-21.3	24.7
Developed Land Subtotal	80.9	10.7	91.6	91.2	12.9	104.1	235.4	22.5	257.9	824.5	87.7	912.2
Undeveloped Land												
Agricultural[J]	352.6	-8.2	344.4	203.0	-8.8	194.2	148.8	-16.7	132.1	1,155.5	-65.8	1,089.7
Natural Resource Areas												
Surface Water	23.7	0.0	23.7	8.0	0.0	8.0	28.2	0.0	28.2	84.7	0.0	84.7
Wetlands	51.4	0.0	51.4	72.7	0.0	72.7	89.9	0.0	89.9	315.2	0.0	315.2
Woodlands	51.8	0.0	51.8	37.6	0.0	37.6	47.7	0.0	47.7	191.4	0.0	191.4
Natural Resource Areas Subtotal	127.0	0.0	127.0	118.3	0.0	118.3	165.8	0.0	165.8	591.3	0.0	591.3
Unused and Other Open Land[k]	16.0	-2.5	13.5	23.0	-4.0	19.0	30.5	-5.8	24.7	118.5	-22.0	96.5
Undeveloped Land Subtotal	495.5	-10.7	484.9	344.3	-12.9	331.4	345.1	-22.5	322.6	1,865.2	-87.7	1,777.5
Total	576.5	0.0	576.5	435.6	0.0	435.6	580.5	0.0	580.5	2,689.7	0.0	2,689.7

Note: Off-street parking area is included with the associated use.

[a] *18.0 or more dwelling units per net residential acre.*

[b] *Less than 0.05 square miles.*

[c] *7.0 to 17.9 dwelling units per net residential acre.*

[d] *4.4 to 6.9 dwelling units per net residential acre.*

[e] *2.3 to 4.3 dwelling units per net residential acre.*

[f] *0.7 to 2.2 dwelling units per net residential acre.*

[g] *0.2 to 0.6 dwelling units per net residential acre.*

[h] *No more than 0.2 dwelling units per acre. The Rural Estate category assumes there would be one acre of developed homesite area per dwelling, the remainder of the area being retained in open space.*

[i] *Includes only intensive use recreational land.*

[J] *Includes farmed wetlands.*

[k] *Includes landfills and mineral extraction sites.*

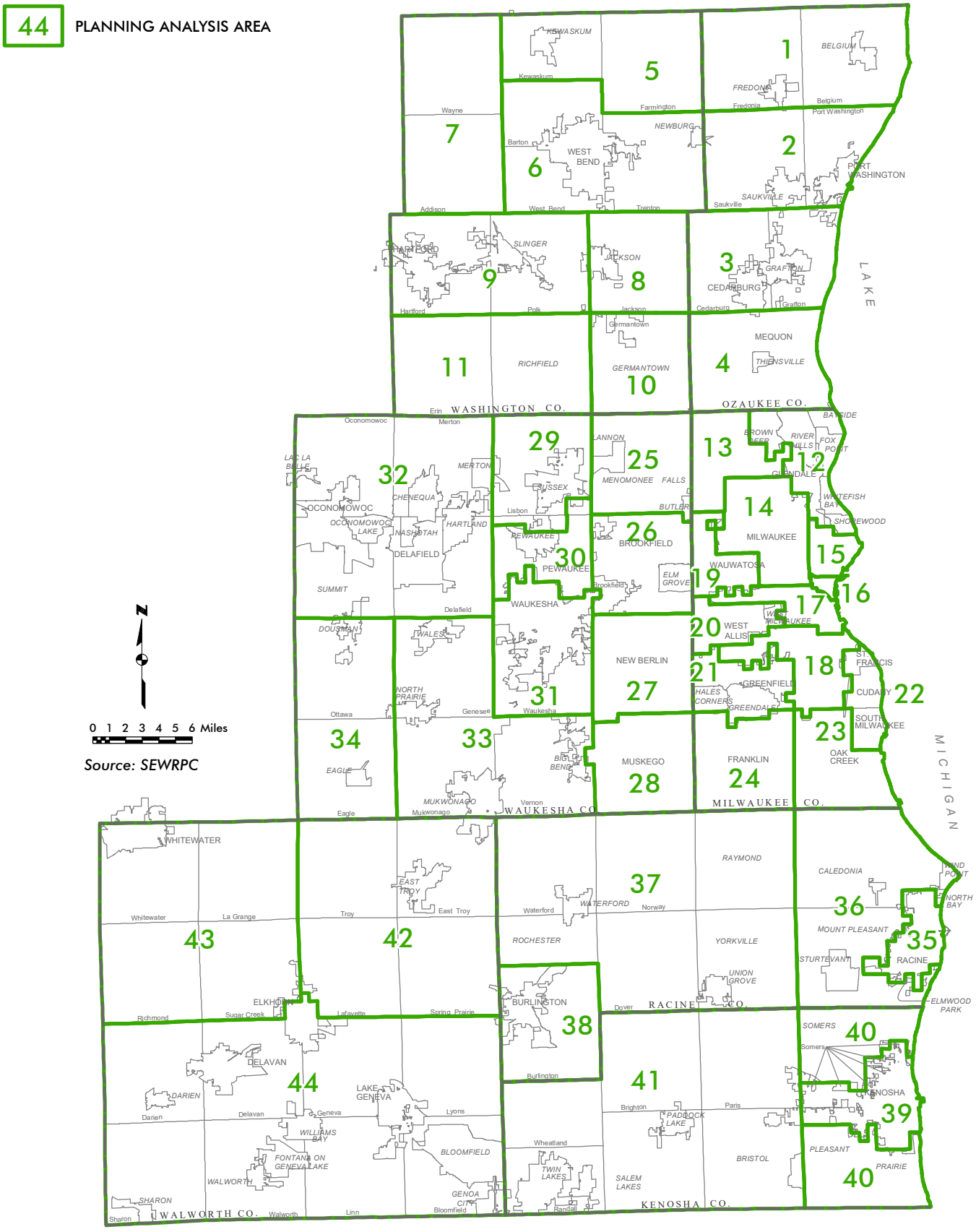
Source: SEWRPC

Table 1.3
Existing and Planned 2050 Population, Households, and Employment

County	Planning Analysis Area (See Map 1.2)	Population		Households		Employment	
		Existing 2010	Planned 2050	Existing 2010	Planned 2050	Existing 2010	Planned 2050
Ozaukee	1	7,990	9,880	3,000	3,810	2,840	5,300
	2	18,680	23,040	7,650	9,680	11,350	17,140
	3	32,870	42,820	13,170	17,790	16,560	21,700
	4	26,860	33,360	10,400	13,220	21,750	25,160
	Subtotal	86,400	109,100	34,200	44,500	52,500	69,300
Washington	5	9,070	11,550	3,440	4,620	2,370	2,590
	6	44,380	63,550	17,750	26,710	21,670	28,760
	7	5,660	6,950	2,080	2,710	2,550	2,720
	8	10,830	14,880	4,320	6,220	3,640	5,050
	9	26,890	35,760	10,580	14,710	15,830	22,970
	10	20,000	31,700	7,860	13,050	14,230	21,320
	11	15,050	16,120	5,580	6,280	3,610	3,990
	Subtotal	131,900	180,500	51,600	74,300	63,900	87,400
Milwaukee	12	65,460	66,180	28,430	29,690	43,700	44,780
	13	58,540	60,630	22,350	24,120	38,460	40,080
	14	228,370	229,130	84,810	88,560	68,860	75,100
	15	76,170	86,870	34,660	40,030	44,550	49,140
	16	11,230	19,870	4,940	8,700	72,980	82,510
	17	91,110	94,890	31,200	34,240	54,310	59,700
	18	118,120	116,980	47,710	49,070	53,280	57,070
	19	48,360	58,280	21,340	26,230	56,910	66,980
	20	69,990	70,910	31,180	32,640	48,530	51,490
	21	59,930	62,990	26,850	29,040	28,850	30,520
	22	49,070	51,530	21,760	23,580	22,420	23,870
	23	34,820	49,800	14,200	21,100	23,310	29,480
	24	36,580	51,040	14,180	20,780	19,240	23,850
	Subtotal	947,700	1,019,100	383,600	427,800	575,400	634,600
Waukesha	25	38,580	49,430	15,940	20,850	41,250	46,350
	26	49,620	57,120	19,610	23,390	55,690	65,780
	27	39,590	44,080	16,290	18,890	27,150	34,040
	28	24,140	35,860	9,070	14,060	7,730	13,970
	29	23,020	34,500	8,520	13,630	9,420	14,930
	30	20,160	28,040	8,790	12,580	29,030	34,760
	31	80,000	93,380	31,750	38,290	48,480	57,070
	32	67,440	84,460	25,450	33,450	35,050	47,350
	33	35,800	41,800	13,120	16,050	12,160	20,830
	34	11,550	12,730	4,120	4,710	2,930	3,320
	Subtotal	389,900	481,400	152,700	195,900	268,900	338,400
Racine	35	74,170	74,900	28,620	30,720	37,510	39,520
	36	65,010	98,050	25,790	41,340	25,100	54,930
	37	39,260	46,630	14,490	18,340	15,120	19,370
	38	16,970	20,170	6,750	8,550	10,570	13,180
	Subtotal	195,400	239,800	75,700	98,900	88,300	127,000
Kenosha	39	97,410	108,590	36,710	43,380	45,160	51,490
	40	30,520	70,980	11,420	28,670	17,950	31,170
	41	38,500	71,540	14,520	28,820	11,790	20,070
	Subtotal	166,400	251,100	62,600	100,900	74,900	102,700
Walworth	42	15,040	21,960	5,840	9,130	4,600	6,890
	43	22,170	26,580	8,460	10,910	10,660	12,390
	44	65,020	92,060	25,400	38,860	37,450	50,020
	Subtotal	102,200	140,600	39,700	58,900	52,700	69,300
Region	Total	2,019,900	2,421,600	800,100	1,001,200	1,176,600	1,428,700

Source: SEWRPC

Map 1.2
VISION 2050 Planning Analysis Areas



Population, Household, and Employment Projections

The Commission prepared population, household, and employment projections for the period 2010 to 2050 at the beginning of the VISION 2050 process.[3] As in previous projection efforts, a range of projections were prepared for VISION 2050. This range includes high, intermediate, and low population, household, and employment levels. The high and low projections are intended to provide a range of levels that could conceivably be achieved under significantly higher or lower, but plausible, growth scenarios for the Region. The intermediate projections are considered the most likely to be achieved for the Region. Population would increase from 2,019,900 in 2010 to 2,354,000 in 2050 under the intermediate projection, an increase of 16.5 percent. Households would increase from 800,100 in 2010 to 972,400 in 2050 (21.5 percent increase) and employment would increase from 1,176,600 in 2010 to 1,386,900 in 2050 (17.9 percent increase).

The VISION 2050 land use component has incorporated the eight rapid transit lines and four commuter rail lines recommended in the VISION 2050 transportation component. Consistent with experience nationwide and as envisioned during previous stages of the VISION 2050 process, high-density, TOD would be expected to occur within walking distance of the stations on the rapid transit and commuter rail lines. The land use component has also incorporated additional residents and jobs related to the Foxconn manufacturing campus in Racine County and associated new development in the immediate vicinity of the campus and in other parts of the Region. As a result, total forecast regional population growth from 2010 to 2050 was increased under VISION 2050 from 16.5 percent to 19.9 percent, household growth from 21.5 percent to 25.1 percent, and employment growth from 17.9 percent to 21.4 percent to account for additional anticipated growth and to maintain the intermediate-growth forecast for portions of the Region outside those station areas. Table 1.4 presents existing, intermediate forecast, and revised forecast population, household, and employment levels by county.

Residential Development Within Urban Service Areas

VISION 2050 recommends focusing residential development within urban service areas that typically include public sanitary sewer and water supply service, parks, schools, and shopping areas. Residential development would occur largely as infill, redevelopment, and new development under the Small Lot Traditional Neighborhood, Mixed-Use Traditional Neighborhood, and Mixed-Use City Center land use categories as shown on Map 1.1. About 97 percent of new households would be located within urban service areas.

Urban service areas include public sanitary sewer service, and typically include public water service, parks, schools, and businesses.

➤ **Recommendation 1.1: Develop urban service areas with a mix of housing types and land uses**

A mix of housing types and land uses would be possible under the Small Lot Traditional Neighborhood, Mixed-Use Traditional Neighborhood, and Mixed-Use City Center land use categories. VISION 2050 recommends that local governments in urban service areas include these land use categories in their comprehensive plans as shown on Map 1.1. The community's zoning and land division ordinances should be consistent with its comprehensive plan. This would allow for the development of multifamily housing and single-family homes on smaller lots (one-quarter acre or less) that tend to be more affordable to a wider range of households than single-family homes on larger lots. This would also encourage the development and redevelopment of walkable neighborhoods by allowing housing in proximity to a mix of uses, such as parks, schools, and businesses.

VISION 2050 recommends infill and redevelopment in existing urban service areas.

[3] *Projections are discussed in further detail in Chapter 6 of Volume I.*

Table 1.4
Forecast Growth in the Region: 2050

	County	Existing (2010)	Intermediate Forecast (2050)	Plan (2050)
Population	Kenosha	166,400	238,000	251,100
	Milwaukee	947,700	976,700	1,019,100
	Ozaukee	86,400	109,100	109,100
	Racine	195,400	227,700	239,800
	Walworth	102,200	140,600	140,600
	Washington	131,900	180,500	180,500
	Waukesha	389,900	481,400	481,400
	Region	2,019,900	2,354,000	2,421,600
Households	Kenosha	62,600	95,400	100,900
	Milwaukee	383,600	409,600	427,800
	Ozaukee	34,200	44,500	44,500
	Racine	75,700	93,800	98,900
	Walworth	39,700	58,900	58,900
	Washington	51,600	74,300	74,300
	Waukesha	152,700	195,900	195,900
	Region	800,100	972,400	1,001,200
Employment	Kenosha	74,900	101,300	102,700
	Milwaukee	575,400	608,900	634,600
	Ozaukee	52,500	69,300	69,300
	Racine	88,300	112,300	127,000
	Walworth	52,700	69,300	69,300
	Washington	63,900	87,400	87,400
	Waukesha	268,900	338,400	338,400
	Region	1,176,600	1,386,900	1,428,700

Source: U.S. Bureau of the Census, U.S. Bureau of Economic Analysis, and SEWRPC

➤ Recommendation 1.2: Focus TOD near rapid transit and commuter rail stations

VISION 2050 recommends transit-oriented development (TOD) in areas surrounding rapid transit and commuter rail stations recommended under the transportation component of VISION 2050. Rapid transit and commuter rail are described in more detail under Recommendations 2.1 and 2.2, respectively. Residential development within TODs should occur largely in multifamily buildings or buildings with a mix of uses such as commercial-retail space on the ground floor and dwellings on upper floors. Some buildings may have a mix of commercial-retail space on the ground floor with office space on upper floors. Public plazas, parks, and other governmental and institutional uses may also be incorporated into TOD. Streets and sidewalks within TODs should provide convenient and safe access for walking and bicycling to the transit station.

A Transit-Oriented Development
Credit: SEWRPC

TOD is a focus of VISION 2050 because it supports healthy communities, mobility, and revitalization of urban areas. Despite these benefits, TOD could result in gentrification and displacement of low-income households, if development strategies to address those possibilities are not implemented. Concerns regarding gentrification and displacement of low-income households were expressed during VISION 2050 public outreach activities. Table 1.5 includes strategies to address those concerns through the provision of mixed-income housing in TODs. Local governments with recommended rapid transit or commuter rail stations should incorporate these strategies into their land use policies. TOD design guidelines are included in Appendix K.

When pursuing TOD, it is important to include strategies for mixed-income housing.

➤ Recommendation 1.3: Focus new urban development in areas that can be efficiently served by essential municipal facilities and services

VISION 2050 is a systems-level plan that includes generalized boundaries for urban service areas, which are shown on Map 1.3.[4] Urban service areas include public sanitary sewer service. In addition, they typically include public water supply, parks, schools, and shopping areas. Urban services can be extended and provided to compact development in a more efficient and cost-effective manner than to lower-density development. Local government land use policies should allow development as recommended under Recommendation 1.1 to facilitate efficient and cost-effective provision of services to urban development. It is recommended that local governments consider limiting new development in the Medium Lot Neighborhood[5] and Large Lot Neighborhood[6] land use categories to existing vacant lots, as infill development in existing neighborhoods with similar residential densities, or where commitments have been made to such development through approved subdivision plats or certified survey maps.

Urban services can be provided to compact development at a lower cost than to lower-density development.

Residential Development Outside Urban Service Areas

VISION 2050 recommends residential development outside urban service areas occur in the Rural Estate land use category using cluster subdivision design. About 3 percent of new households would be located outside urban service areas.

➤ Recommendation 1.4: Consider cluster subdivision design in residential development outside urban service areas

VISION 2050 recommends that the demand for homes in an open space setting be accommodated on a limited basis through Rural Estate development where there would be no more than one home per five acres. Residential development at this density can accommodate future demand for living in an open space setting while minimizing impacts on the natural resource and agricultural base, maintaining rural character, and avoiding excessive demands on rural public facility and service systems, especially when cluster subdivision design is used. Local and county government land use policies should allow cluster subdivision design with no more than one acre of residential land (house and yard area) for each dwelling while maintaining an overall density of one home per five acres. Design guidelines to implement cluster subdivision design are included in Appendix K.

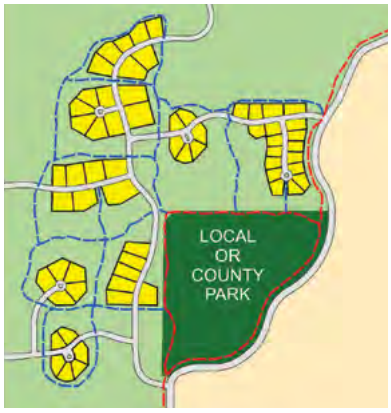


Illustration of Cluster Subdivision Design
Credit: SEWRPC

[4] *Table 1.6 presents area and population served with public sanitary sewer and water in 2010 and recommended to be served under VISION 2050.*

[5] *Primarily single-family homes on quarter- to half-acre lots.*

[6] *Primarily single-family homes on one-acre lots.*

Table 1.5
Mixed-Income Housing Strategies for TOD

Strategy	Description
Density Bonus	A density bonus is a flexible zoning regulation that allows additional residential units beyond the maximum for which a parcel is zoned in exchange for providing or preserving affordable housing units. Several local governments in the Region have adopted planned unit development (PUD) ordinances that allow for increased density as an incentive to provide public amenities. Local governments with rapid transit or commuter rail stations should develop density bonus programs or update existing PUD regulations to allow for increased density as an incentive for mixed-income housing.
Parking Regulations	Reducing the amount of required parking can lower construction costs for residential projects, and possibly be used as an incentive for including affordable housing units. A Transit Cooperative Research Program review of TOD case studies[a] found that personal vehicle trip generation was lower and transit use was higher than average for residents of TODs with high-quality transit service. The study found that the parking-to-housing-unit ratios could be lowered as much as 50 percent in TODs that have good transit connectivity to major employment centers. Lower parking ratios could result in an increase of 20 to 33 percent in the number of housing units and lower total construction costs, even with the additional units. Local governments should review parking-to-housing-unit ratio requirements for residential buildings, and consider alternatives such as shared parking with other uses in station areas.
Public/Private Partnerships	Public/private partnerships can be used as an incentive for developing mixed-income housing TOD through a number of options. Tax increment financing (TIF) can be used to publicly fund infrastructure such as parks, parking structures, and streetscape elements to encourage development. In addition, local governments can streamline rezoning and permitting processes. Land assembly and brownfields may also be issues within urban centers. Local governments can assist developers with land assembly and obtaining brownfield mitigation grants.
Targeted Funding	Government funding for affordable housing could be targeted to areas with rapid transit and commuter rail stations to encourage mixed-income TOD. An example would be to create a scoring category for the Wisconsin Housing and Economic Development Authority (WHEDA) Qualified Allocation Plan that would provide an incentive to locate Low-Income Housing Tax Credit (LIHTC) developments in station areas.

[a] *Transit Cooperative Research Program Report 128.*

Source: SEWRPC

➤ Recommendation 1.5: Limit low-density development outside urban service areas

Large Lot Neighborhood and Large Lot Exurban[7] residential development outside urban service areas is neither truly urban nor rural in character. Development of this nature generally precludes the provision of centralized sewer and water supply service and other urban amenities. VISION 2050 does recognize existing commitments to this type of development even though such development is not consistent with VISION 2050 objectives. This results in a small portion of the planned households in the Region being allocated to accommodate Large Lot Neighborhood and Large Lot Exurban development outside urban service areas where there are approved subdivision plats and certified survey maps. VISION 2050 recommends that local and county government land use policies limit Large Lot Neighborhood and Large Lot Exurban development beyond urban service areas to commitments to such development made during or before the VISION 2050 planning process. VISION 2050 also recommends limiting other development beyond urban service areas to highway-oriented business, utility, and recreational uses.

Commercial and Industrial Land

VISION 2050 recommends focusing new commercial and industrial development within urban service areas as infill, redevelopment, and new development.

➤ Recommendation 1.6: Provide a mix of housing types near employment-supporting land uses

Commercial land and business parks should be developed in mixed-use settings where compatible, or near a mix of housing types to avoid job-

[7] *Single-family homes on one and a half-acre to just under five-acre lots.*

Map 1.3
Planned Public Sanitary Sewer and Water Supply Service Areas: VISION 2050

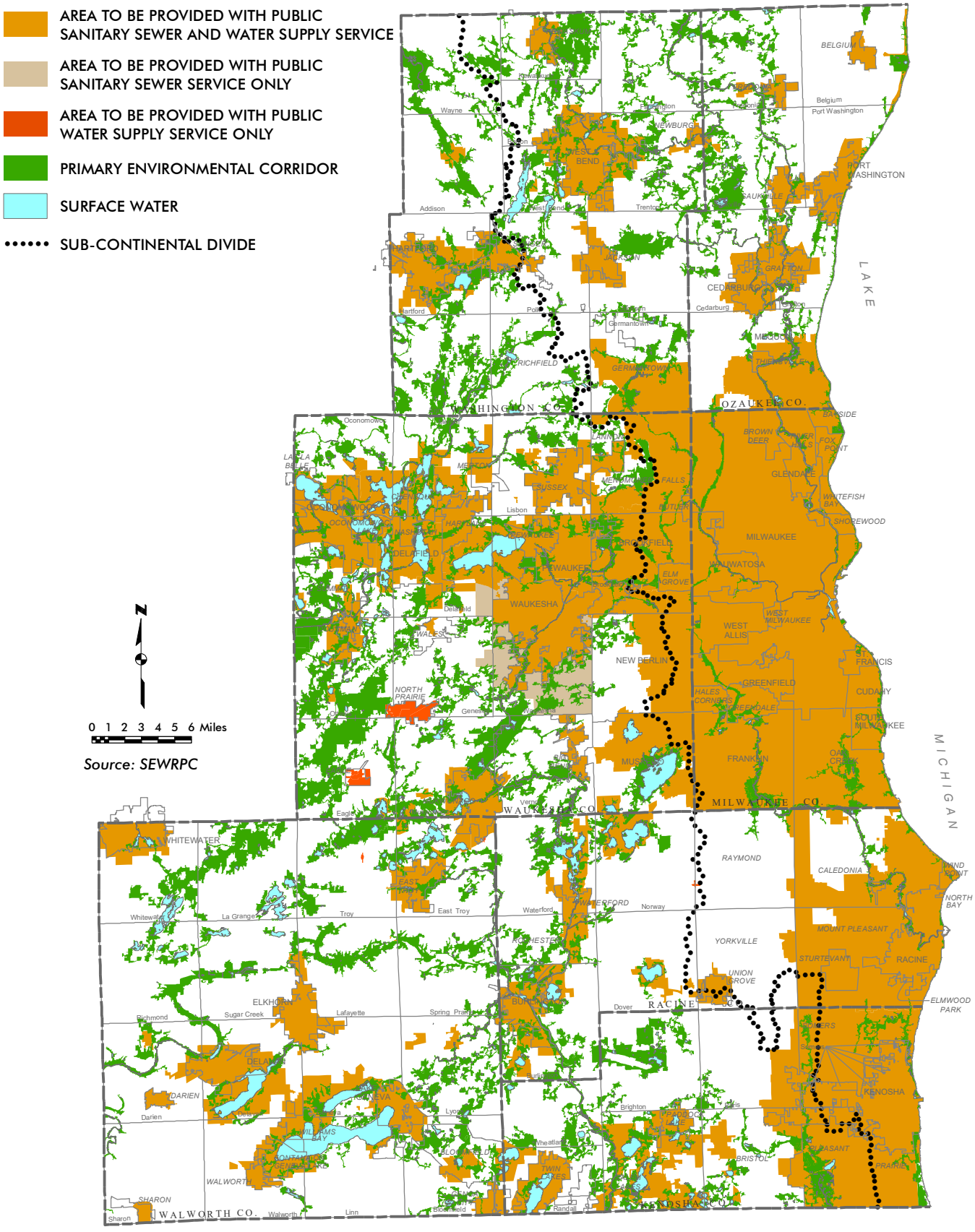


Table 1.6
Area and Population Served by Public Sanitary Sewer and Public Water: 2010 and 2050

	County	Area				Population			
		2010		2050		2010		2050	
		Square Miles	Percent	Square Miles	Percent	Population	Percent	Population	Percent
Public Sanitary Sewer	Kenosha	45.8	16.5	65.0	22.7	150,200	90.3	241,300	96.1
	Milwaukee	198.7	81.9	206.1	84.9	947,000	99.9	1,019,100	100.0
	Ozaukee	33.3	14.1	40.2	17.1	67,800	78.5	94,800	86.9
	Racine	57.0	16.7	69.2	20.3	176,100	90.1	222,900	93.0
	Walworth	30.3	5.3	40.8	7.1	70,500	69.0	113,100	80.4
	Washington	29.1	6.7	40.4	9.3	84,300	63.9	135,000	74.8
	Waukesha	130.3	22.4	154.1	26.5	301,100	77.2	425,600	88.4
	Region	524.5	19.5	615.6	22.9	1,797,000	89.0	2,251,800	93.0
Public Water	Kenosha	34.7	12.5	54.0	19.4	125,800	75.6	202,700	80.7
	Milwaukee	187.3	77.2	194.7	80.2	938,400	99.0	1,019,100	100.0
	Ozaukee	23.4	9.9	30.3	12.9	55,800	64.6	80,400	73.7
	Racine	44.3	13.0	56.6	16.6	154,900	79.3	195,700	81.6
	Walworth	24.4	4.2	34.9	6.1	63,400	62.0	103,000	73.3
	Washington	27.1	6.2	38.4	8.8	80,100	60.7	129,200	71.6
	Waukesha	102.6	17.7	124.9	21.5	261,500	67.1	365,400	75.9
	Region	443.8	16.5	533.6	19.8	1,679,900	83.2	2,095,500	86.5

Source: SEWRPC

worker mismatches. Local government land use policies should allow a mix of housing types and land uses as recommended under Recommendations 1.1 and 1.2 to promote accessibility between housing and jobs.

Local government land use policies should allow a mix of housing types near major economic activity centers to promote accessibility between housing and jobs.

➤ Recommendation 1.7: Encourage and accommodate economic growth

Major economic activity centers are defined as areas containing concentrations of commercial and/or industrial land with at least 3,500 employees or 2,000 retail employees. A total of 62 centers have been identified that have either reached major center status, or are anticipated to by 2050, based on existing employment, forecast employment growth, and input from local governments (see Map 1.4). VISION 2050 recommends continued development of major economic activity centers to encourage economic growth, including a focus on developing and redeveloping long-established major centers. In addition, local government land use policies should allow a mix of housing types as recommended under Recommendations 1.1 and 1.2 near major economic activity centers to promote accessibility between housing and jobs.

Governmental and Institutional Land

VISION 2050 recommends that new governmental and institutional developments, such as schools and libraries, be provided to meet the needs of the Region's planned population. VISION 2050 also envisions a system of major governmental and institutional centers throughout the Region, including: county courthouses and administrative offices, State and Federal office buildings, medical complexes,[8] universities,[9] technical colleges, and major cultural centers. These major centers are shown on Map 1.5.

[8] *Includes medical centers with 600 or more beds.*

[9] *Includes institutions with accredited bachelor's degree programs that have a total enrollment of 4,500 or more students.*

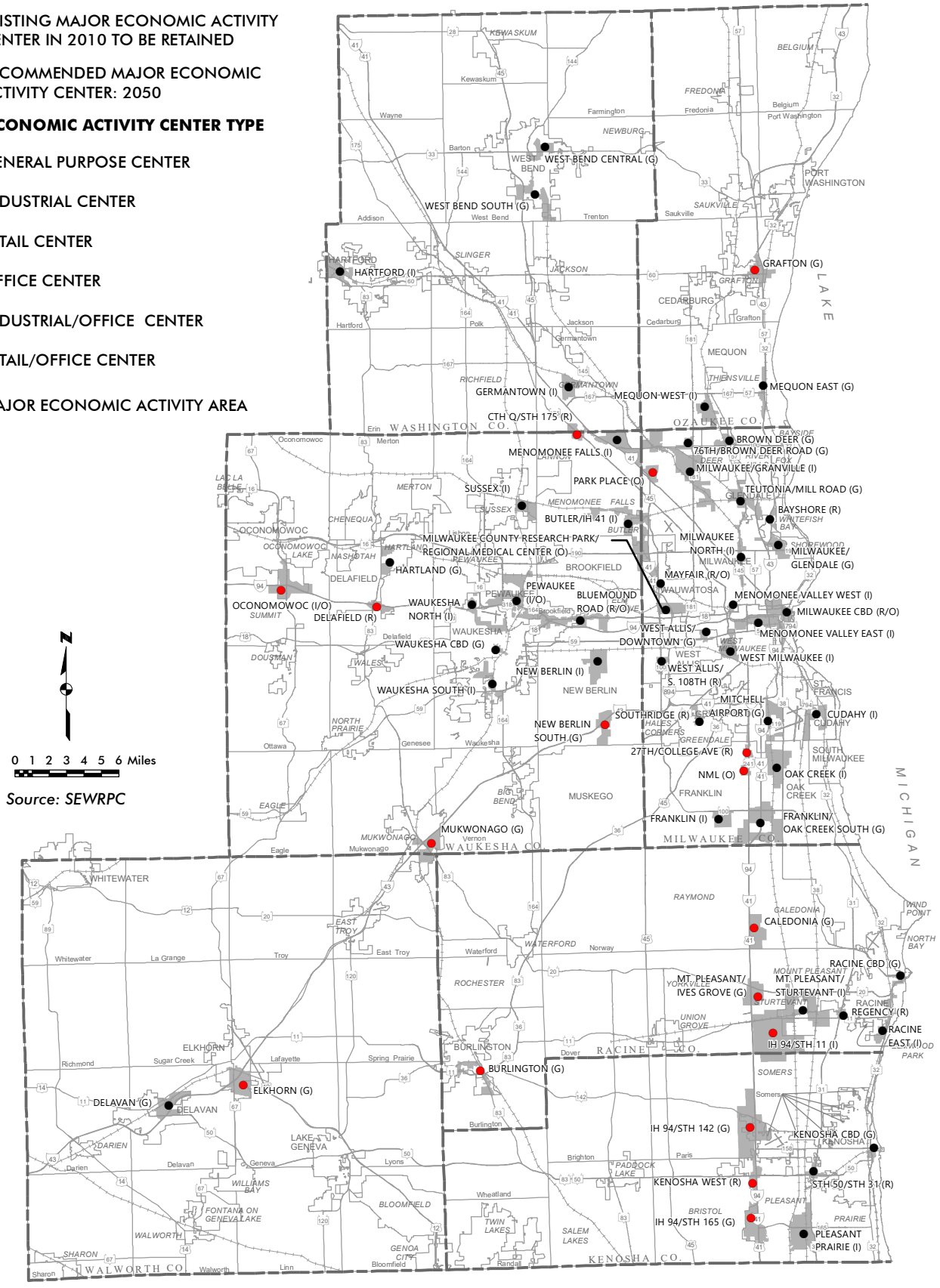
Map 1.4
Major Economic Activity Centers: VISION 2050

- EXISTING MAJOR ECONOMIC ACTIVITY CENTER IN 2010 TO BE RETAINED
- RECOMMENDED MAJOR ECONOMIC ACTIVITY CENTER: 2050

MAJOR ECONOMIC ACTIVITY CENTER TYPE

G	GENERAL PURPOSE CENTER
I	INDUSTRIAL CENTER
R	RETAIL CENTER
O	OFFICE CENTER
I/O	INDUSTRIAL/OFFICE CENTER
R/O	RETAIL/OFFICE CENTER

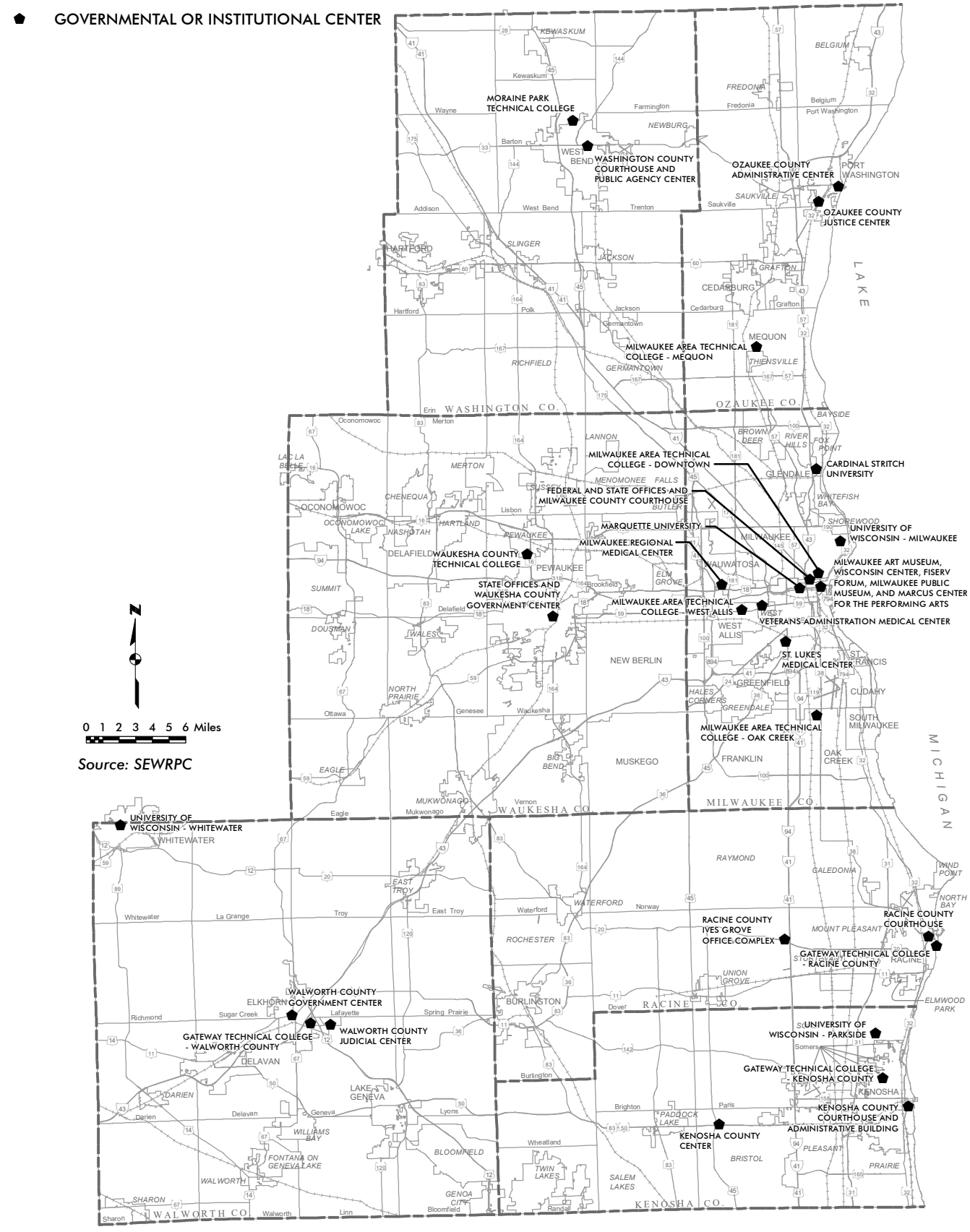
MAJOR ECONOMIC ACTIVITY AREA



0 1 2 3 4 5 6 Miles

Source: SEWRPC

Map 1.5
Major Governmental and Institutional Centers: VISION 2050



➤ Recommendation 1.8: Provide new governmental and institutional developments in mixed-use settings

VISION 2050 recommends that new governmental and institutional uses occur in mixed-use settings to the greatest extent possible to be accessible to the greatest number of residents possible.

Transportation, Communication, and Utility Land

VISION 2050 envisions that land devoted to transportation, communication, and utilities will increase due to land needed for streets and highways, airport expansions, and utility facilities. Major transportation and utility centers envisioned under VISION 2050 are shown on Map 1.6.

Recreational Land

VISION 2050 recommends an expansion of recreational land based on park site acquisition and development proposals set forth in county and local park and open space plans and the neighborhood parks attributable to new urban development. VISION 2050 also envisions a system of 32 major parks of regional size and significance as shown on Map 1.7.[10] Major parks have an area of at least 250 acres and provide opportunities for a variety of resource-oriented outdoor recreational activities. Map 1.7 also shows major special-use outdoor recreation and nature study sites.[11]

➤ Recommendation 1.9: Provide neighborhood parks in developing residential areas

VISION 2050 recommends reserving land for parks as new residential neighborhoods are developed within urban service areas (design guidelines are included in Appendix K).

Environmentally Significant Land

VISION 2050 recommends minimizing the impacts of new development on environmentally significant lands. New urban development should avoid environmentally significant lands, particularly primary environmental corridors. To the extent possible, new urban development should also avoid secondary environmental corridors and isolated natural resource areas. In addition, to the extent possible, new development should attempt to preserve other wetlands, woodlands, natural areas, critical species habitat sites, and park and open space sites outside environmental corridors.[12]

New development should avoid environmentally significant lands.

➤ Recommendation 1.10: Preserve primary environmental corridors

The most important elements of the natural resource base of the Region, including the best remaining woodlands, wetlands, prairies, wildlife habitat, surface water and associated floodplains and riparian buffers park and open space sites, scenic views, and natural areas and critical species habitat sites, occur in linear patterns in the landscape termed environmental corridors. The most important of these have been identified as primary environmental corridors, which are at least two miles long, 200 feet wide,

The Region's most important natural resources occur in environmental corridors.

[10] *The sites in Milwaukee County identified as "Lake Michigan North" and "Lake Michigan South" on Map 1.7 refer to clusters of parks along the Lake Michigan shoreline. Lake Michigan North includes Back Bay, Juneau, Lake, McKinley, O'Donnell, and Veterans County Parks; Bradford Beach; and Lakeshore State Park. Lake Michigan South includes Bay View, Grant, Sheridan, South Shore, and Warnimont County Parks.*

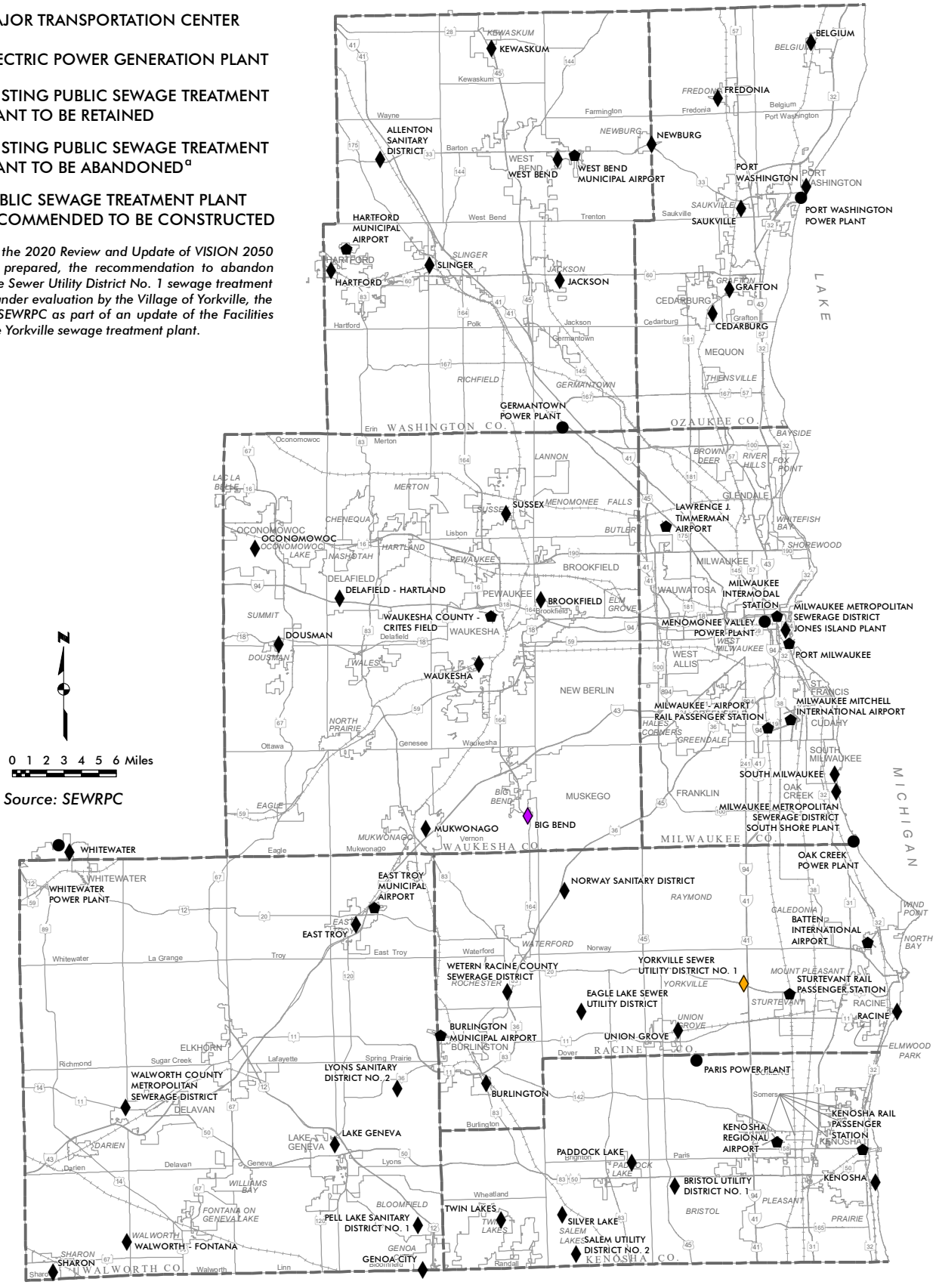
[11] *Major nature sites are public or private sites, other than sites identified as regional park sites, that are at least 100 acres in size and that have, or are proposed to have, an indoor interpretive nature center.*

[12] *The different types of environmentally significant lands are defined in Chapter 2 of Volume I and the design guidelines presented in Appendix K.*

Map 1.6
Major Transportation and Utility Centers: VISION 2050

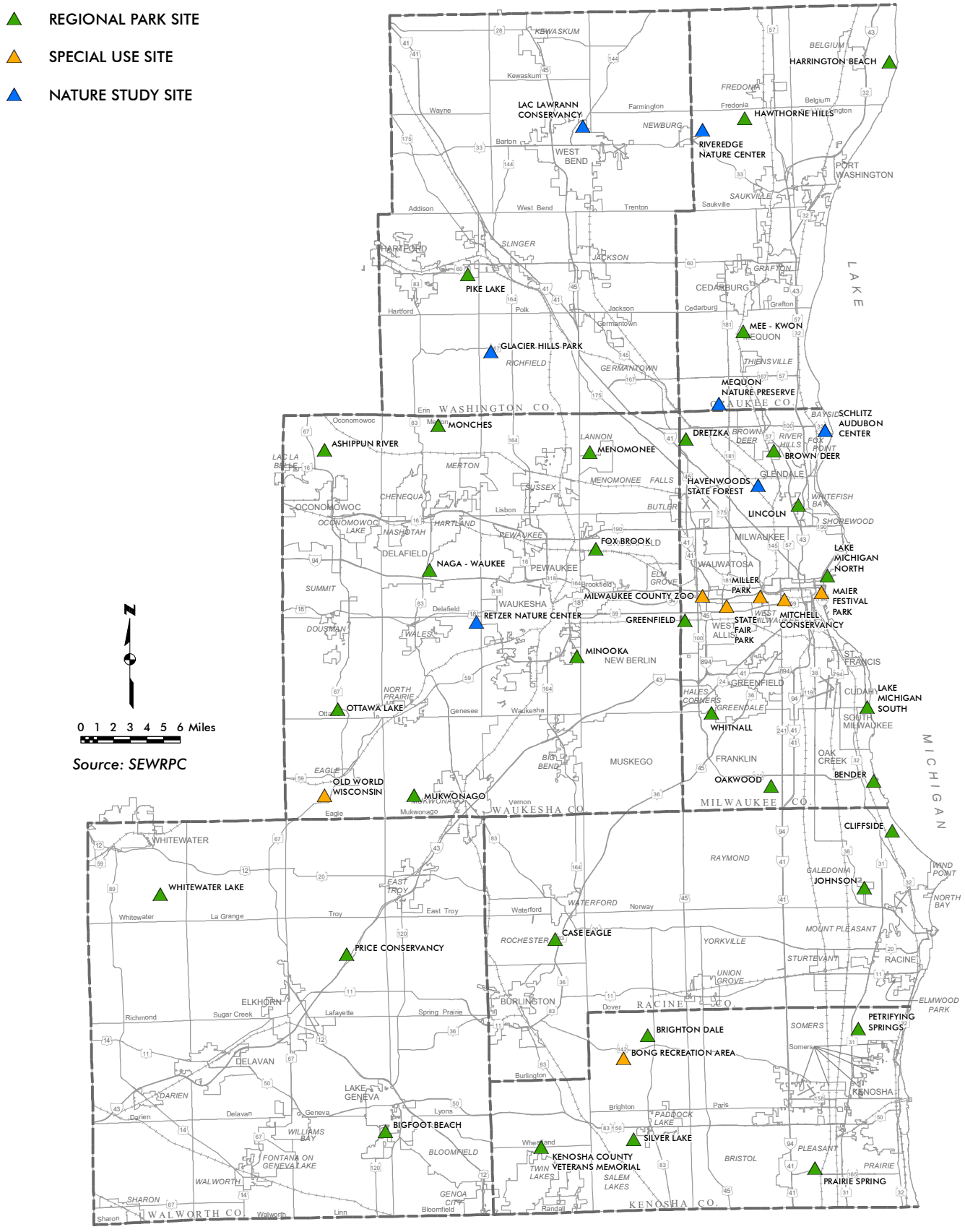
- MAJOR TRANSPORTATION CENTER
- ELECTRIC POWER GENERATION PLANT
- EXISTING PUBLIC SEWAGE TREATMENT PLANT TO BE RETAINED
- EXISTING PUBLIC SEWAGE TREATMENT PLANT TO BE ABANDONED[a]
- PUBLIC SEWAGE TREATMENT PLANT RECOMMENDED TO BE CONSTRUCTED

[a] *At the time the 2020 Review and Update of VISION 2050 was being prepared, the recommendation to abandon the Yorkville Sewer Utility District No. 1 sewage treatment plant was under evaluation by the Village of Yorkville, the DNR, and SEWRPC as part of an update of the Facilities Plan for the Yorkville sewage treatment plant.*



Source: SEWRPC

Map 1.7
Major Outdoor Recreation Centers: VISION 2050



and 400 acres in size. They are typically located along major stream valleys, along the Lake Michigan shoreline, or around major lakes. VISION 2050 recommends limiting development within the primary environmental corridors to essential transportation and utility facilities and compatible outdoor recreation facilities. Rural Estate residential development in upland corridors could also occur. Cluster subdivision design should be used if such development does occur (design guidelines are discussed in Chapter 3 of this volume and Appendix K). Local and county government land use polices, including comprehensive plans and land use ordinances, should incorporate this recommendation and related design guidelines. Planned primary environmental corridors are shown on Map 1.1 and existing primary environmental corridors are shown on Map 2.22 in Chapter 2 of Volume I. Table 1.7 shows that planned primary environmental corridors would encompass 493 square miles in 2050, which is an increase of about 2 percent over the existing area.[13]

➤ Recommendation 1.11: Preserve secondary environmental corridors and isolated natural resource areas

Other concentrations of natural resources have been identified as secondary environmental corridors or isolated natural resource areas. Secondary environmental corridors contain a variety of resource features and are at least one mile long and 100 acres in area. Isolated natural resource areas are concentrations of natural resources of at least five acres in size that have been separated from the environmental corridor network by urban or agricultural use. Existing secondary environmental corridors and isolated natural resource areas are shown on Map 2.22 in Chapter 2 of Volume I. It is recommended that local governments consider preserving secondary environmental corridors as natural, open space; or as drainage ways, stormwater detention or retention areas, or as local parks or recreation trails in developing areas. It is also recommended that local governments consider preserving isolated natural resource areas in natural open uses insofar as practicable, including incorporation as parks, protected open space, or for use as stormwater detention or retention areas where appropriate, as determined in local plans.

➤ Recommendation 1.12: Preserve natural areas and critical species habitat sites

A comprehensive inventory of the Region's natural areas and critical species habitat sites[14] was conducted as part of the regional natural areas and critical species habitat protection and management plan. The vast majority of natural areas and critical species habitat sites are located within environmental corridors and isolated natural resource areas. VISION 2050 recommends preserving all identified natural areas and critical species habitat sites.

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[13] *Primary environmental corridor delineations include certain farmed floodplains and other lands that are expected to revert to more natural conditions over time, eventually becoming part of the adjacent environmental corridors as envisioned in local sewer service area plans and local and county comprehensive plans. The delineation of primary environmental corridors was modified on Map 1.1 to reflect re-establishment of natural resource features resulting from such restorations. VISION 2050 also supports planned efforts to restore other farmland and open space to more natural conditions that result in the re-establishment of wetlands, woodlands, prairies, grasslands, and forest interiors.*

[14] *Natural areas are tracts of land or water that contain plant and animal communities believed to be representative of the pre-European settlement landscape. Critical species habitat sites are other areas that support endangered, threatened, or rare plant or animal species.*

Table 1.7
Existing and Planned Environmental Corridors and Isolated Natural Resource Areas in the Region: 2010 and 2050

	County	2010		Planned Increment		2050	
		Square Miles	Percent of Total	Square Miles	Percent of Total	Square Miles	Percent of Total
Primary Environmental Corridors	Kenosha	45.1	9.3	1.9	4.2	47.0	9.5
	Milwaukee	15.5	3.2	2.2	14.2	17.7	3.6
	Ozaukee	33.8	7.0	0.2	0.6	34.0	6.9
	Racine	36.9	7.6	1.2	3.3	38.1	7.7
	Walworth	106.3	22.0	-1.0	-0.9	105.3	21.4
	Washington	97.6	20.2	1.4	1.4	99.0	20.1
	Waukesha	148.8	30.7	3.3	2.2	152.1	30.8
	Region	484.0	100.0	9.2	1.9	493.2	100.0
Secondary Environmental Corridors	Kenosha	10.6	13.4	0.4	3.8	11.0	13.7
	Milwaukee	5.7	7.2	-0.6	-10.5	5.1	6.3
	Ozaukee	8.4	10.6	0.6	7.1	9.0	11.2
	Racine	11.2	14.2	1.0	8.9	12.2	15.1
	Walworth	14.8	18.8	-0.1	-0.7	14.7	18.3
	Washington	16.2	20.5	0.3	1.9	16.5	20.5
	Waukesha	12.1	15.3	-0.1	-0.8	12.0	14.9
	Region	79.0	100.0	1.5	1.9	80.5	100.0
Isolated Natural Resource Areas	Kenosha	6.5	9.3	--	--	6.5	9.4
	Milwaukee	3.7	5.3	-0.1	-2.7	3.6	5.2
	Ozaukee	6.3	9.1	-0.2	-3.2	6.1	8.8
	Racine	13.2	19.0	0.2	1.5	13.4	19.3
	Walworth	14.4	20.7	0.3	2.1	14.7	21.2
	Washington	11.3	16.2	-0.1	-0.9	11.2	16.2
	Waukesha	14.2	20.4	-0.4	-2.8	13.8	19.9
	Region	69.6	100.0	-0.3	-0.4	69.3	100.0

Source: SEWRPC

Agricultural Land

VISION 2050 recommends minimizing the impacts of new development on productive agricultural land, including highly productive Class I and II soils (prime agricultural land) as classified by the U.S. Natural Resources Conservation Service. Some Class I and II farmland located in the vicinity of existing urban service areas may be converted to urban use as a result of planned expansion of those urban service areas to accommodate efficient regional growth. Also, as previously discussed, a small amount of residential development is anticipated outside planned urban service areas. A total of 1,090 square miles would remain in agricultural use under VISION 2050, which is 94 percent of the existing area.

➤ Recommendation 1.13: Preserve productive agricultural land

VISION 2050 recommends a compact urban development pattern that would minimize the conversion of agricultural land to urban uses, including prime agricultural lands and other productive agricultural lands. Local and county government land use policies should incorporate VISION 2050 recommendations, which include:

- A compact development pattern for urban service areas
- Cluster subdivision design to minimize the impact of Rural Estate development on agricultural land

Compact development minimizes the conversion of agricultural land to urban uses.

- Limiting Large Lot Neighborhood and Large Lot Exurban development beyond urban service areas to commitments to such development made during or before the VISION 2050 planning process

➤ Recommendation 1.14: Preserve productive agricultural land through farmland preservation plans

The Wisconsin Farmland Preservation law (Chapter 91 of the *Wisconsin Statutes*) requires counties to update their farmland preservation plans as one of the conditions for continued landowner participation in the Farmland Preservation tax credit program. Kenosha, Ozaukee, Racine, Walworth, Washington, and Waukesha Counties have prepared and adopted farmland preservation plans that have been certified by the Wisconsin Department of Agriculture, Trade, and Consumer Protection. Each plan identifies land to preserve for agricultural and agricultural-related uses, which is shown on Map 3.7 in Chapter 3 of Volume I. Farmland preservation areas may not include any areas that are planned for nonagricultural development within 15 years after the date the plan is adopted. VISION 2050 recommends continued agricultural use in these areas. Therefore, no incremental development was allocated to farmland preservation areas identified in county farmland preservation plans outside planned urban service areas under VISION 2050.

➤ Recommendation 1.15: Develop a regional food system

VISION 2050 recognizes a need to improve access to healthy foods for low-income residents in the Region's "food deserts."

VISION 2050 recognizes the relationship between the Region's urban centers and agricultural resources. The compact development pattern recommended by VISION 2050 would help to preserve agricultural land. In addition, the Region's urban centers provide a market for agricultural products from the Region. VISION 2050 also recognizes the need to make healthy foods accessible in all areas of the Region. A number of census tracts in the Region with concentrations of low-income households are "food deserts," which the U.S. Department of Agriculture defines as an area where residents are more than one mile from a large supermarket or grocery store.[15] VISION 2050 recommends developing a regional food system that connects food producers, distributors, and consumers to ensure access to healthy foods throughout the entire Region. In addition to encouraging supermarkets and grocery stores near residential areas, local government land use policies should consider allowing urban agriculture, such as vertical farming and community gardens on vacant lots. Local governments should also support farmers markets as an alternative source of healthy foods. There are a number of organizations in the Region that could partner with local governments to better connect food production, distribution, and land use policy.

Lake Michigan and groundwater are the two major sources of water for development in the Region.

Water Supply

The residential, commercial, industrial, institutional, and agricultural land uses in the Region rely on two major sources of water supply: surface water supply primarily from Lake Michigan, and groundwater supplied from both deep and shallow aquifer systems. Groundwater is susceptible to depletion in quantity and deterioration in quality as a result of urban and rural development, and diversion of Lake Michigan water west of the subcontinental divide that bisects the Region is constrained by the Great Lakes – St. Lawrence River Basin Water Resources Compact. The Commission recognizes the relationship between land use planning and water supply and has prepared and adopted a regional water supply plan.

[15] *At least 500 people or 33 percent of the census tract's population must reside more than one mile from a supermarket or large grocery store in an urban area and 10 miles in a rural area.*

The year 2035 regional land use plan served as the basis for the regional water supply plan. It was indicated at the beginning of the water supply planning effort that the land use plan would be amended if water resource constraints were identified due to the development pattern recommended under the land use plan. The water supply planning effort found that water supply would not be a limiting factor within the Region with respect to the recommended development pattern either east or west of the subcontinental divide. The water supply plan also found that implementing the recommended development pattern would have benefits, such as preserving areas with high groundwater recharge potential. This is due to the focus of the year 2035 land use plan on infill, redevelopment, and compact development within planned urban service areas. The forecast population under the year 2035 plan of 2,276,000 residents is about 94 percent of the forecast population under VISION 2050 (2,421,160 residents) and the forecast employment under the year 2035 plan of 1,368,300 jobs is about 96 percent of the forecast employment under VISION 2050 (1,428,700 jobs). Therefore, the regional water supply plan conclusion that water supply would not be a limiting factor within the Region with respect to the development pattern recommended under the year 2035 regional land use plan also applies to VISION 2050.

➤ **Recommendation 1.16: Preserve areas with high groundwater recharge potential**

VISION 2050 land use recommendations carry forward the focus on infill, redevelopment, and compact development within planned urban service areas embodied in the year 2035 regional land use plan. The VISION 2050 development pattern would result in about 96 percent of areas with high or very high groundwater recharge potential remaining in open space or agricultural use. Areas with high or very high groundwater recharge potential are shown on Map 2.19 in Chapter 2 of Volume I. Design guidelines for areas with high groundwater charge potential are included in Appendix K.

The VISION 2050 land use development pattern would preserve 96% of areas with high or very high groundwater recharge potential.

Sustainable Land Use

Sustainable land use concepts relate to arranging land uses and site features to protect natural resources, and avoid converting productive agricultural land and other rural areas to urban use. VISION 2050 recommendations embody sustainable land use concepts through higher-density, mixed-use development/redevelopment in compact urban service areas. In addition to preserving natural and agricultural resources, compact, mixed-use development promotes healthy communities through opportunities for more travel by transit, walking, and bicycling. Compact development is also more energy efficient and results in less greenhouse gas emissions than lower-density development. In addition, the cost of extending and maintaining sewer pipes, water mains, and local roads, and providing fire protection, school transportation, and solid waste collection all decrease as density increases.

VISION 2050 recommendations embody sustainable land use concepts.

➤ **Recommendation 1.17: Manage stormwater through compact development and sustainable development practices**

The compact development pattern recommended by VISION 2050 would minimize impervious surface coverage of new development in the Region. Additional sustainable development measures can be used to increase stormwater infiltration and reduce negative impacts on water quality, such as green roofs, porous pavement, rain gardens, and biofiltration and infiltration facilities. VISION 2050 recommends that local and county governments incorporate the VISION 2050 land use recommendations into their land use policies to minimize the amount of impervious surface in the Region. Local and county governments should also encourage

sustainable development practices, which are described in the design guidelines included in Appendix K.

➤ **Recommendation 1.18: Target brownfield sites for redevelopment**
VISION 2050 recommends that local governments target brownfield sites for cleanup and redevelopment as a key element in planning for the revitalization of urban areas. Tools such as Tax Increment Financing (TIF) and State and Federal brownfield remediation grants and loans may assist in these efforts.

1.3 RECOMMENDED TRANSPORTATION COMPONENT

The VISION 2050 transportation component includes six elements:
- **Public transit**
- **Bicycle and pedestrian**
- **Transportation systems management**
- **Travel demand management**
- **Arterial streets and highways**
- **Freight transportation**

The transportation component of VISION 2050 includes the following six elements: public transit, bicycle and pedestrian, transportation systems management, travel demand management, arterial streets and highways, and freight transportation. Each element is described below, including specific plan recommendations. Figure 1.4 provides key definitions for the different types of transportation investment recommended in VISION 2050. A financial analysis of the VISION 2050 transportation component is also described later in the chapter, including identification of anticipated funding gaps related to implementing plan recommendations and potential revenue sources to achieve the full plan. In addition to the transportation recommendations in this section, Appendix M of this volume provides specific VISION 2050 recommendations for the portion of Jefferson County that is located outside of the seven-county Region, but within the Milwaukee urbanized area.[16]

As required by the Moving Ahead for Progress in the 21st Century Act (MAP-21) and the Fixing America's Surface Transportation (FAST) Act, the Commission established targets for a number of performance measures developed by the Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA). The established targets are included in Appendix P of this volume and summarized later in this chapter.

VISION 2050 recommends a significant improvement and expansion of public transit—more than doubling existing service levels.

Description of Public Transit Element
The public transit element of VISION 2050 recommends a significant improvement and expansion of public transit in Southeastern Wisconsin, including four commuter rail lines, eight rapid transit lines, and significantly expanded local bus, express bus, commuter bus, and shared-ride taxi services. Map 1.8 displays the routes and areas served by the various components of the recommended transit element. Altogether, service on the regional transit system would be increased from service levels existing in 2018 by about 113 percent measured in terms of revenue transit vehicle-hours of service provided, from about 4,870 vehicle-hours of service on an average weekday in the year 2018 to 10,350 vehicle-hours of service in the year 2050 (see Table 1.8).

The recommended service improvements and expansion include expansion of service area and hours, and significant improvements in the frequency and speed of service. Table 1.9 shows the span of service hours and frequencies under VISION 2050.

[16] *The Commission and Jefferson County entered into a cooperative agreement to provide the necessary transportation planning and programming services for the County's portion of the Milwaukee urbanized area, including the inclusion of this area in VISION 2050.*

Figure 1.4
Transportation System Definitions

The recommended VISION 2050 transportation system is comprised of different types of transportation investment, with some of the key types defined and illustrated below.

Local Transit
Lower-speed routes with closely spaced stops, primarily with buses (or streetcars) operating over arterial and collector streets and in mixed traffic (can also include shared-ride taxi , shuttles, demand-responsive microtransit, or shared-use automobiles through partnerships with transportation network companies like Uber and Lyft)

Express Transit
Limited-stop, higher-speed routes, with buses operating in mixed traffic or in reserved street lanes and stops typically spaced every ½ to one mile

Rapid Transit
Either bus rapid transit (BRT) or light rail transit lines, with vehicles operating in exclusive lanes and using signal priority or preemption, and stations typically spaced every ½ to one mile

Commuter Transit
Longer-distance routes or lines, with either buses operating on freeways or rail vehicles operating in a rail corridor (i.e., commuter rail) and stops or stations typically spaced every three to five miles

On-Street Bicycle Facility
Accommodations for bicycles provided on surface arterial streets, with either standard facilities (bicycle lanes, paved shoulders, and widened outside travel lanes) or enhanced facilities

Off-Street Bicycle Path
Separate from motor vehicle traffic and typically developed in former railway rights-of-way and parkway corridors

Enhanced Bicycle Facility
On-street bicycle facilities that go beyond the standard facilities to provide a comfort level similar to off-street paths, with examples including protected bicycle lanes, buffered bicycle lanes, raised bicycle lanes, and a separate path within a road's right-of-way

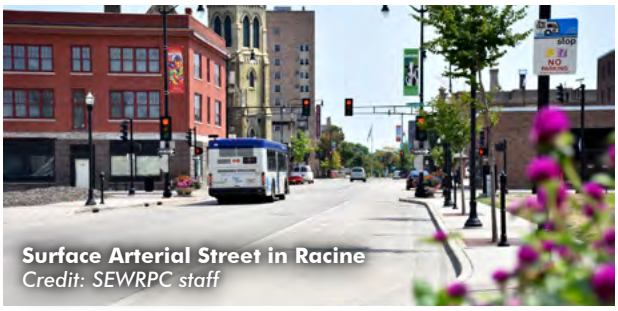
Surface (or Standard) Arterial Street
Major streets with primarily at-grade intersections that may also provide direct access through driveways

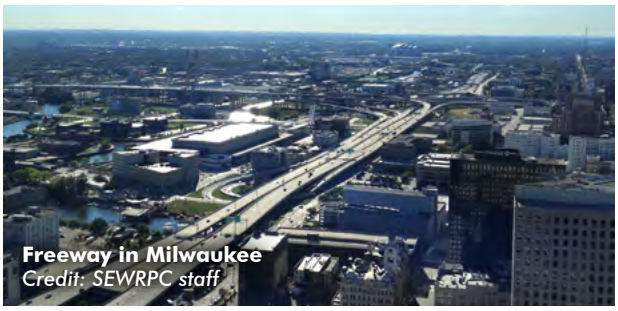
Freeway
Divided arterial highway with full access control and grade separations (over- and under-passes) at all interchanges, providing the highest degree of mobility

Rapid Transit (Light Rail) in Portland
Credit: SEWRPC staff


Off-street Bicycle Path in Ozaukee County
Credit: Wisconsin Bike Federation


Enhanced Bicycle Facility in Washington, D.C.
Credit: Stewart Eastep


Surface Arterial Street in Racine
Credit: SEWRPC staff


Freeway in Milwaukee
Credit: SEWRPC staff

Map 1.8
Transit Services: VISION 2050

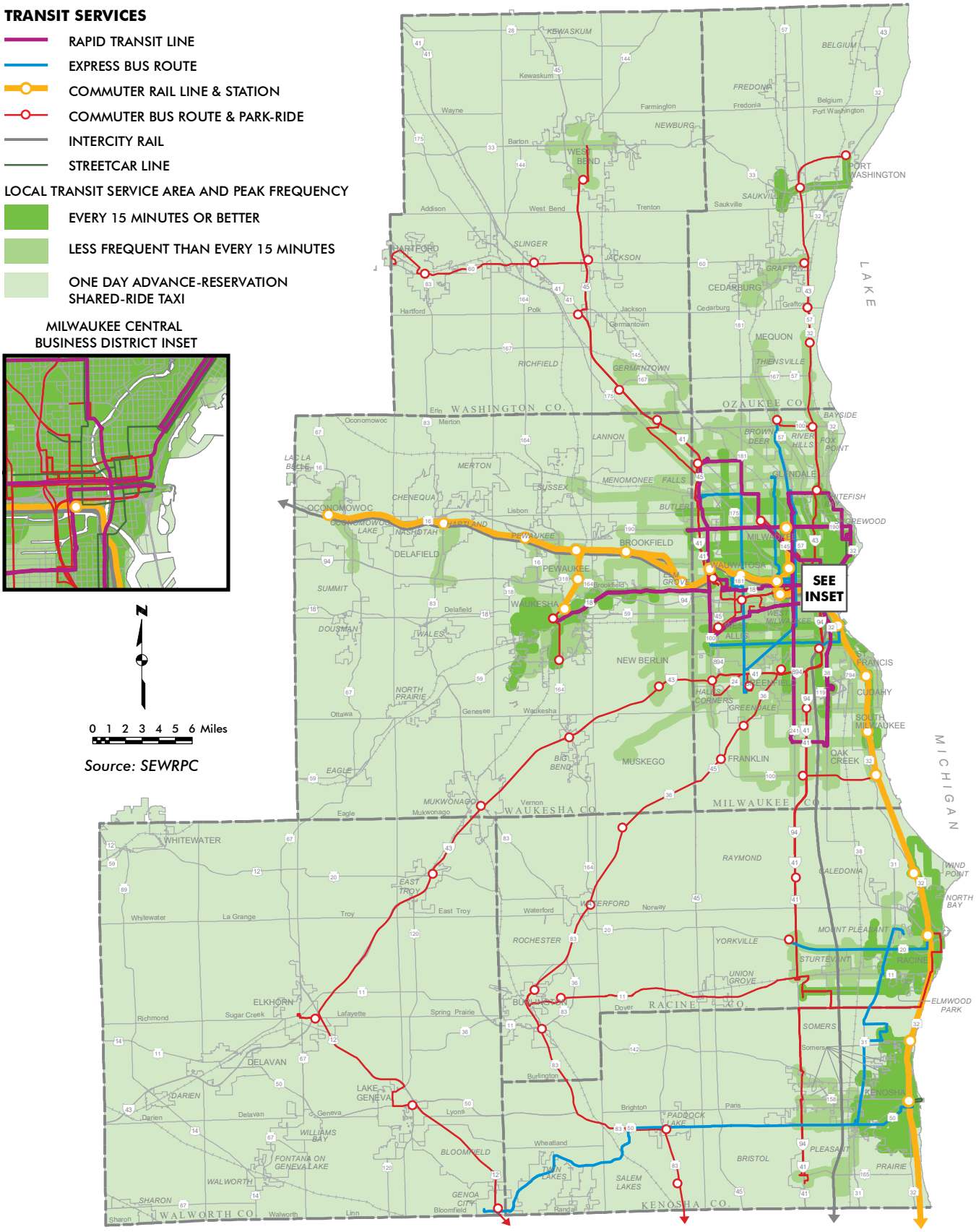


Table 1.8
Fixed-Route Public Transit Service Levels: VISION 2050

Average Weekday Transit Service Characteristics	Existing (2018)	Plan (2050)
Revenue Vehicle-Hours		
Rapid Transit	--	1,170
Commuter Rail	10	190
Commuter Bus	290	990
Express Bus	880	870
Local Transit	3,690	7,130
Total	4,870	10,350
Revenue Vehicle-Miles		
Rapid Transit	--	23,500
Commuter Rail	100	8,200
Commuter Bus	5,700	24,300
Express Bus	10,400	12,670
Local Transit	46,100	84,100
Total	62,300	152,770

Source: National Transit Database, MCTS, and SEWRPC

Table 1.9
Transit Service Hours and Frequency: VISION 2050

Service Type	Weekdays/ Weekends	Existing (2015)		Plan (2050)	
		Service Hours	Service Headways	Service Hours	Service Headways
Rapid Transit	Weekdays	No service	No service	Up to 24 hours a day	8 – 15 minutes
	Weekends	No service	No service	Up to 24 hours a day	10 – 15 minutes
Commuter Rail	Weekdays	6 a.m. – 2 a.m.	30 – 360 minutes	6 a.m. – 2 a.m.	15 – 30 minutes
	Weekends	7 a.m. – 2 a.m.	60 – 480 minutes	7 a.m. – 2 a.m.	15 – 60 minutes
Commuter Bus	Weekdays	5 a.m. – 10 a.m. 12 p.m. – 8 p.m. many services peak direction only	10 – 225 minutes many services peak direction only	4 a.m. – 11 p.m. both directions	10 – 60 minutes both directions
	Weekends	8 a.m. – 11 p.m. KRM Bus only	90 – 240 minutes KRM Bus only	7 a.m. – 11 p.m. both directions	30 – 120 minutes both directions
Express Bus					
Milwaukee County	Weekdays	4 a.m. – 2 a.m.	10 – 35 minutes	4 a.m. – 2 a.m.	10 – 15 minutes
	Weekends	5 a.m. – 2 a.m.	20 – 45 minutes	5 a.m. – 2 a.m.	12 – 15 minutes
Kenosha and Racine Counties	Weekdays	6 a.m. – 7 p.m.	60 – 75 minutes	5 a.m. – 12 a.m.	15 – 60 minutes
	Weekends	No service	No service	5 a.m. – 12 a.m.	30 – 60 minutes
Local Transit					
Milwaukee County	Weekdays	4 a.m. – 2 a.m.	10 – 70 minutes	Up to 24 hours a day	10 – 60 minutes
	Weekends	5 a.m. – 2 a.m.	12 – 100 minutes	Up to 24 hours a day	12 – 60 minutes
Remainder of Region	Weekdays	6 a.m. – 10 p.m.	30 – 60 minutes	5 a.m. – 12 a.m.	15 – 60 minutes
	Weekends	6 a.m. – 10 p.m.	30 – 60 minutes	5 a.m. – 12 a.m.	30 – 60 minutes

Source: SEWRPC

The recommended expansion of public transit discussed in the following pages would have significant costs to the Region's taxpayers and is not recommended without due consideration of the increased public revenue that would be required to build and operate this investment. However, the significant improvement and expansion of public transit is essential for Southeastern Wisconsin's future for many reasons:

- Public transit expands traffic carrying capacity in the Region's heavily traveled corridors and densely developed activity centers, helping to mitigate congestion in crowded corridors. Rapid transit (either bus rapid transit or light rail) provides a reliable alternative to driving on congested roadways, with consistent travel times and minimal wait times.

- Fixed-guideway transit investment can guide development by focusing jobs and housing around its stations, leading to more compact, walkable neighborhoods that encourage active transportation and improve public health.

- The regionwide transit system recommended under VISION 2050 (including shared-ride taxi service in rural parts of the Region) would assist residents across Southeastern Wisconsin in aging in place, without needing to move from their home as their ability to drive declines. As Chapter 2 of Volume I notes, there will be a significant increase in the proportion of the Region's population aged 75 and older in the near future.

- For the 1 in 10 households in the Region without access to a car, households that are more likely to be minority or low income than the overall proportion of the Region's population, transit is vital to providing access to jobs, healthcare, education, and other daily needs. Improving and expanding public transit would significantly improve this access for people of color, low-income residents, and people with disabilities. Conversely, a continuing decline in transit due to a lack of funding, as the financial analysis later in this chapter expects, would likely result in a disparate impact on these population groups.

- Although many of the Region's jobs are currently accessible via transit, the lack of fast, frequent transit service in much of the Region limits access to a large number of the Region's jobs for households without access to a car due to excessive travel time. Approximately 1,422,000 of the Region's residents (or 70 percent of the Region's year 2050 population) would be able to use transit to reach 10,000 jobs or more in less than 30 minutes under VISION 2050, compared to 499,000 residents (or 21 percent) under the Trend.[17]

- In addition to providing access to daily needs for households without a car, a robust transit system can provide employers with access to a larger labor force, increasing the number of available candidates for job openings.

[17] *VISION 2050 is compared to a "Trend" alternative future, under which the transportation system and land use development and funding trends of the last 15 to 20 years are projected to continue to the year 2050.*

- Other than Milwaukee, only three out of the 39 metropolitan areas with more than 1.5 million residents in the United States (Cincinnati, Detroit, and San Antonio) do not currently have light rail, bus rapid transit, or commuter rail. Although transit alone does not make a metro area successful, it is one of the amenities expected of an economically competitive city.

- Replacing a car with transit use would save an average Southeastern Wisconsin household about $4,500 per year, money that can be saved or spent on other goods. By 2050, providing the recommended transit system would result in $144 million being saved annually by the Region's residents compared to the Trend.

- In dense areas, parking garages can be a significant part of the cost of a development, with each space costing an average of $20,000 to $25,000 to build. Providing fast and frequent transit service has been shown to decrease the demand for parking, allowing communities to reduce or eliminate parking requirements, developers to build fewer spaces, and commercial and residential tenants to pay less.

- Fast, frequent transit service also reduces the need for multi-car garages to be built for single-family homes in dense urban areas, allowing for more green space and larger yards without increasing lot size.

- Although the effect is expected to be somewhat limited, carbon emissions from transportation are expected to be 2 percent less under VISION 2050 than the Trend, due to the reduced dependence on cars and the recommended compact land development pattern reducing the distance between destinations.

- An expansive transit system can provide economic resiliency. Should the Region experience greater economic success than currently predicted, the increase in congestion caused by a growing workforce could have significant negative impacts without a reliable alternative to driving. Similarly, should fossil fuel prices rise dramatically before alternative methods of powering cars and trucks are more mainstream, the negative impacts on the Region's residents and its economy would be significant without a robust transit system to provide an alternative to driving.

Achieving these benefits for the Region will require additional revenue, likely from an increase in local taxes, such as a sales tax. Implementing the transit recommendations would also be most easily implemented by a regional transit agency that would construct, manage, and operate the recommended transit system, although a regional transit agency is not required to achieve VISION 2050. This is discussed further in the Financial Analysis section of this chapter.

➤ Recommendation 2.1: Develop a rapid transit network

VISION 2050 recommends eight rapid transit corridors (either bus rapid transit or light rail), with dedicated transit lanes and transit signal priority or preemption. Stations would be spaced every one-half to one mile and would include off-board fare payment, real-time information screens, and raised platforms. Service would be provided every 15 minutes or better for nearly the entire day, with service being provided 24 hours a day in some corridors. Fares would be identical to that of local fixed-route

VISION 2050 recommends eight rapid transit corridors intended to provide travel times competitive with those of an automobile.

and express bus services. The intent of the recommended rapid transit services is to provide travel times that are similar to the travel time of an automobile using parallel arterial street and highway facilities during congested peak periods. The eight bus rapid transit or light rail corridors recommended are shown in purple on Map 1.8 and would travel:

- From downtown Waukesha to downtown Milwaukee via the Milwaukee Regional Medical Center, predominately on E. Main Street, W. Blue Mound Road, and Wisconsin Avenue.

- From Bayshore Town Center in Glendale to downtown Milwaukee via the University of Wisconsin-Milwaukee, predominately on N. Oakland Avenue, N. Prospect Avenue, and N. Farwell Avenue.

A Bus Rapid Transit Vehicle
Credit: Greater Cleveland Regional Transit Authority

A Light Rail Transit Vehicle
Credit: MetroTransit

- From the Park Place complex on the northwest edge of Milwaukee to downtown Milwaukee, predominately on W. Fond du Lac Avenue.

- From the retail centers located around the intersection of S. 108th Street and W. Cleveland Avenue in West Allis to downtown Milwaukee, predominately on W. National Avenue.

- From Northwestern Mutual's Franklin Campus on S. 27th Street to downtown Milwaukee via General Mitchell International Airport, predominately along S. Howell Avenue and S. 1st Street.

- From Bayshore Town Center in Glendale to W. Drexel Avenue, predominately on 27th Street.

- From the Park Place Complex on the northwest edge of Milwaukee to the retail centers located around the intersection of S. 108th Street and Cleveland Avenue in West Allis via Mayfair Mall, predominately on N. Mayfair Road and S. 108th Street (STH 100).

- From Shoppers World of Brookfield at N. 124th Street and W. Capitol Drive to the University of Wisconsin-Milwaukee, predominately on Capitol Drive.

The recommended commuter rail lines and improved commuter bus services would provide travel times competitive with cars over longer distances.

➤ Recommendation 2.2: Develop commuter rail corridors and improve and expand commuter bus services

VISION 2050 recommends four commuter rail lines and a significant improvement and expansion of existing commuter bus services. Both types of commuter services would provide frequent service, with service every 15 minutes in the peak in both directions and every 30 to 60 minutes in both directions at other times. Commuter bus services would be extended to serve new areas, and existing services would run in both directions throughout the day. Fares would start at the same level as local, express, and rapid services, and would increase with travel distance. Map 1.8 shows the recommended commuter bus services in red (park-ride lots served by commuter bus are identified by circles) and commuter rail services in orange (station locations are identified by circles). The recommended commuter services would generally have stops or stations at least two miles apart and are intended to provide travel times that are competitive or better than cars over longer travel distances.

- **Commuter Rail Service** – The commuter rail corridors recommended by VISION 2050 would connect Kenosha, Racine, Milwaukee, Wauwatosa, Brookfield, Waukesha, Oconomowoc, and communities in between by making upgrades to existing freight rail corridors to allow passenger rail at speeds of up to 79 miles per hour, providing a fast service connecting many of the larger population centers in the Region with vehicles similar to that shown in the photo. In addition to the four corridors recommended by VISION 2050, there are a number of other freight rail corridors in the Region that could be utilized for commuter rail, should an entity be interested in pursuing their development. These additional corridors are not included in VISION 2050 because they are forecast to have markedly lower ridership than the four corridors recommended by VISION 2050, but are shown on Map 1.9 as an acknowledgment that they could be pursued in the future.

A Commuter Rail Vehicle
Credit: SEWRPC Staff

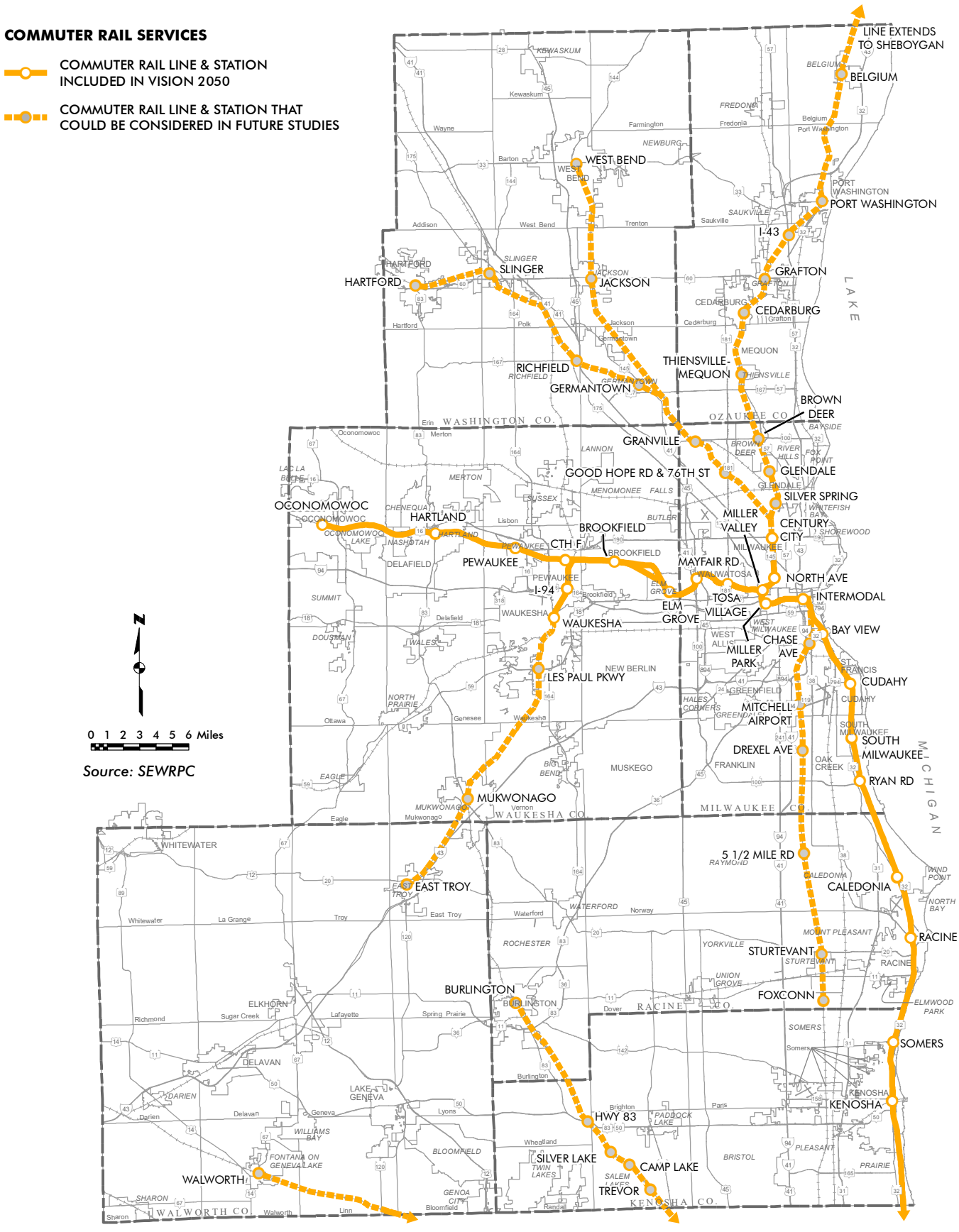
- **Commuter Bus Service** – The commuter bus services recommended by VISION 2050 mostly provide radial service connecting communities of the Region with downtown Milwaukee. A few services also provide connections between communities or existing park-ride lots and the recommended commuter rail services, including connections between communities in Walworth, Racine, and Kenosha Counties and Metra commuter rail services in northeastern Illinois. Wherever there is sufficient shoulder width, transit operators are encouraged to work with the Wisconsin Department of Transportation (WisDOT) to permit buses to travel on highway shoulders whenever regular travel lanes are congested, which would assist commuter bus services in achieving travel times that are competitive with cars (known as bus-on-shoulder operations, and discussed further under Recommendation 4.1 of the transportation systems management element).

➤ Recommendation 2.3: Improve existing express bus service and add service in new corridors

VISION 2050 recommends additional express bus services in the Region, and improvements to the existing express bus services that would not be replaced by rapid transit lines. In the Milwaukee area, the express route serving 27th Street would be extended north to Brown Deer Road and south to Southridge Mall in Greendale along W. Forest Home Avenue, and both that route and the express route serving Sherman Boulevard would see increased frequency. Additional express routes would be added on 76th Street and Oklahoma Avenue in Milwaukee County, traveling from the Ives Groves Park-Ride to the Corinne Reid-Owens Transit Center in Racine County, traveling from Genoa City to the Metra Station in Kenosha County, and connecting the western part of the City of Racine to the western part of the City of Kenosha. Stops would be spaced at least one-half mile apart, and therefore the services would provide better travel times than local bus routes. Express services in Milwaukee County would come at least every 15 minutes nearly the entire day, and services in Kenosha and Racine Counties would come every 15 minutes during the peak and every 30 minutes at other times. Fares would be identical to those charged for rapid and local fixed-route services.

Travel on the improved and expanded express bus routes would be faster than local bus routes due to stops being spaced further apart.

Map 1.9
Potential Extensions of the Commuter Rail Network: VISION 2050



➤ Recommendation 2.4: Increase the frequency and expand the service area of local transit

VISION 2050 recommends an expansion of local transit service, including improving the frequency and expanding the service area of local bus services, expanding streetcar service, extending shared-ride taxi service to any areas of the Region without local bus service, and continuing to provide paratransit service in areas served by local bus service. Map 1.8 shows the area served by local transit services of different types, with the shared-ride taxi service area shaded the lightest green, followed by areas served by less frequent local fixed-route bus service the next shade darker, and then areas served by frequent local fixed-route bus service the darkest shade of green. Streetcar service is shown as a dark green line. The paratransit service area is not shown, but paratransit service would be provided wherever the accessible shared-ride taxi service would not be available.

- **Local Transit Service** – The recommended expansion of local transit service focuses on developing new transit services to suburban employment centers, new services connecting businesses and residents to nearby commuter and rapid services, and improving the frequency of local transit service in corridors and areas not served by rapid and express service. In addition to traditional fixed-route bus services, alternatives could include the operation of shuttles, microtransit (a form of demand-responsive transit that can be a useful alternative to traditional local bus service by using smaller vehicles and, in some cases, flexible routes and schedules), and shared-use automobiles through partnerships with transportation network companies like Uber and Lyft. When compared to the existing transit services provided in the Region, Map 1.8 demonstrates both the expansion of local service and the improved frequency of existing local services. Fares for local transit services are recommended to be identical to those charged for rapid and express services.

One focus of expanding local transit service is on improving connections to suburban employment centers and to commuter and rapid transit services.

- **Streetcar Service** – The recommended expansion of streetcar service within Milwaukee is represented by the lines shown on Map 1.8. At the time VISION 2050 was updated in 2020, the City of Milwaukee was operating service on an initial line of the Hop Streetcar and had mostly constructed an extension to the Lakefront. The transit system recommended by VISION 2050 includes further streetcar extensions that have been identified for implementation over the next decade by the City, including connections to Bronzeville, Walker's Point, the University of Wisconsin-Milwaukee, and other neighborhoods adjacent to downtown Milwaukee.

- **Shared-Ride Taxi Service** – VISION 2050 recommends expanding accessible shared-ride taxi service across much of the Region, wherever local fixed-route transit service is unavailable. The recommended service would be 24-hour advance reservation, requiring riders to call a day ahead of their planned journey to schedule a ride, and would provide rides to all members of the general public who have a journey with at least one end outside the service area of local fixed-route bus or streetcar service. Service is recommended to be available as early as 5 a.m. and as late as 2 a.m., depending on the day of the week, and fares are recommended to be as low as those charged for local fixed-route, express, and rapid transit services for shorter journeys, with longer journeys charged a premium similar to those on commuter services.

Shared-ride taxi service is envisioned wherever local fixed-route transit service is unavailable.

- **Paratransit Service** – VISION 2050 recommends that paratransit service be provided consistent with the Federal Americans with Disabilities Act (ADA) of 1990. Under ADA provisions, all transit vehicles that provide conventional fixed-route transit service must be accessible to people with disabilities, including those using wheelchairs. All public entities operating fixed-route transit systems must provide paratransit service to people with disabilities who are unable to use fixed-route transit services consistent with Federally specified eligibility and service requirements. The complementary paratransit service must serve any person with a permanent or temporary disability who is unable to independently board, ride, or disembark from an accessible vehicle used to provide fixed-route transit service; who is capable of using an accessible vehicle, but one is not available for the desired trip; or who is unable to travel to or from the boarding or disembarking location of the fixed-route transit service. The recommended paratransit service would be available during the same hours as the local, express, and rapid fixed-route transit services, and be provided to eligible people on a 24-hour advance reservation basis. Fares on paratransit are Federally required to be no more than twice the amount charged for local fixed-route services.

➤ Recommendation 2.5: Improve intercity transit services and expand the destinations served

Intercity rail and bus services provide transit connections between the Region and destinations outside Southeastern Wisconsin. Because the primary focus of intercity transit services is to connect communities within the Region to communities in other parts of the State and the remainder of the Midwest, the Commission uses long-range plans completed by WisDOT as the basis of the Commission's recommendations for intercity transit services. VISION 2050 recommends that the number of intercity bus services be expanded and that existing services be enhanced with increased service frequencies. Two new intercity rail lines are recommended, one connecting Chicago to Minneapolis and St. Paul via Milwaukee and Madison, and another connecting Chicago to Green Bay via Milwaukee and the Fox Valley. Both services would be operated as extensions of the existing Amtrak Hiawatha service from Chicago, and all three lines would operate at speeds up to 110 miles per hour. Map 1.10 shows the segments of the intercity services recommended by WisDOT that are within the Region, and the stations that would be served within the Region.

An Intercity Passenger Rail Trainset
Credit: Michael Kolanowski

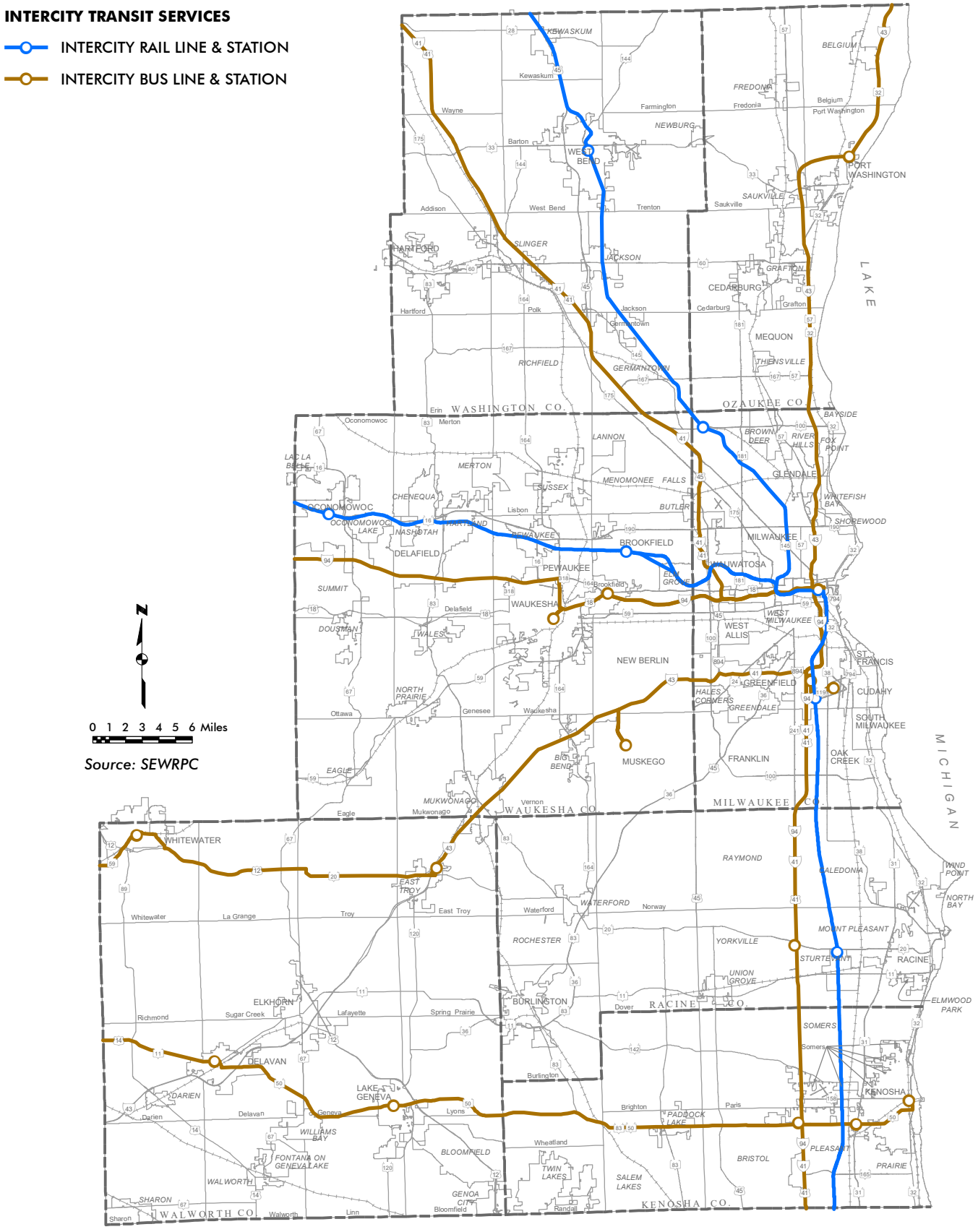
➤ Recommendation 2.6: Implement "transit-first" designs on urban streets

VISION 2050 recommends that transit operators work with local governments during the reconstruction of a roadway to include transit-first features on the roadway when it carries rapid, express, or major local transit routes, including transit signal priority systems, dedicated lanes for transit, and "bus bulbs" at significant transit stops. Transit signal priority systems could also be added when existing signals along a roadway are being modified.

Transit-first design features include transit signal priority systems, dedicated lanes for transit, and "bus bulbs."

- **Transit Signal Priority Systems** – Transit signal priority systems allow a transit vehicle to modify the normal traffic signal operation as it approaches the intersection to reduce the travel time delay associated with traffic signals; either by shortening red lights

Map 1.10
Intercity Transit Services: VISION 2050



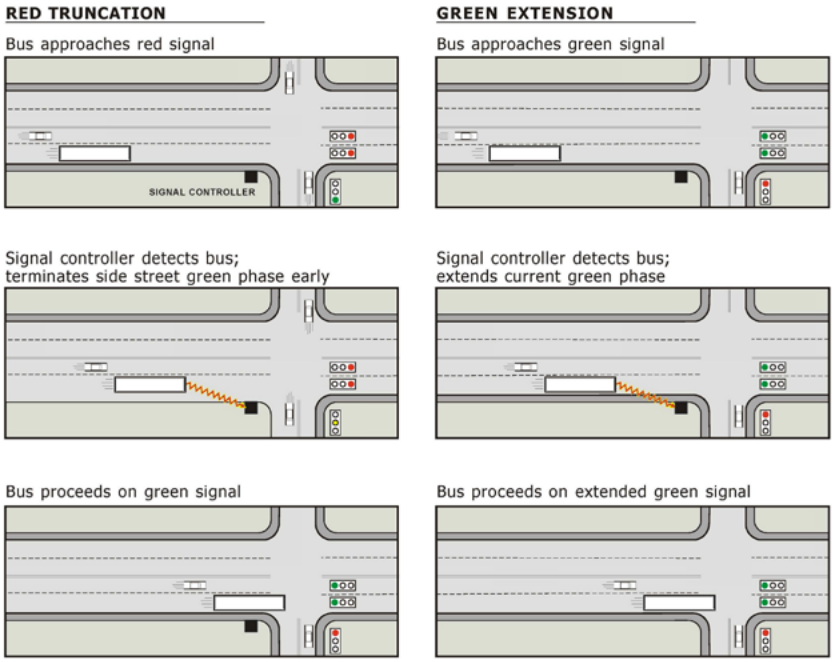


Illustration of a Transit Signal Priority System
Credit: Transit Capacity and Quality of Service Manual, Third Edition

(referred to as red truncation) or extending green lights (referred to as green extension). Transit signal priority systems work best when queue jump lanes or dedicated transit lanes are also provided. Such transit signal priority is currently used for the Hop Streetcar. VISION 2050 recommends implementing transit signal priority systems along all rapid, express, and major local transit routes.

- **Dedicated Transit Lanes** – Dedicated lanes allow transit vehicles to bypass vehicle queues at traffic signals. Dedicated lanes along congested arterial streets and highways can reduce transit travel times and improve transit travel time reliability during peak travel periods. Such lanes are currently provided along portions of Bluemound Road in Waukesha County and portions of the Hop Streetcar route. Dedicated lanes may be provided via auxiliary lanes, or where right-of-way is constrained, through peak-period, peak-direction curb-lane parking restrictions. VISION 2050 recommends the use of dedicated lanes along all rapid transit routes. Dedicated bus lanes could also be considered to improve express and major local transit routes.

Illustration of a Bus Bulb (in Yellow)
Credit: NACTO

- **Bus Bulbs** – Bus bulbs provide additional space for waiting passengers, provide room to implement many of the enhancements listed in Recommendation 2.7, allow for additional on-street parking by removing the approach or departure space needed for a standard bus stop, and increase transit travel speeds by eliminating the need for a bus to weave in and out of traffic to serve a stop. In addition to bus bulbs, the reconstruction of a roadway should consider other transit-friendly elements, including providing enhanced pedestrian accommodations (discussed further under Recommendation 3.5). These accommodations, which can include highly visible crosswalks and curb extensions and pedestrian median islands to reduce crossing distances at intersections, should be considered for increasing pedestrian safety near transit stations and stops.

➤ Recommendation 2.7: Enhance stops, stations, and park-ride facilities with state-of-the-art amenities

VISION 2050 recommends that transit operators, business improvement districts, neighborhood associations, and local governments coordinate to significantly enhance local bus stops and park-ride facilities, particularly those with significant boardings. These enhancements include improved information on bus stop signs and polls, shelters at more stop locations, accessible paths to and from all stops, real-time information screens, radiant heating, and raised platforms for boarding. For park-ride facilities, these stop enhancements should also include bike lockers.

➤ Recommendation 2.8: Accommodate bicycles on all fixed-route transit vehicles

VISION 2050 recommends that all fixed-route transit vehicles in the Region be able to accommodate bicycles, either on a rack on the front of the bus for local buses, or on board rapid transit and commuter transit vehicles.

➤ Recommendation 2.9: Implement programs to improve access to suburban employment centers

Recommendations 2.1 through 2.5 recommend a robust and expansive transit system, one that will take time to develop and construct. In addition, even once the full recommended transit system is completed, there will be some smaller suburban employment centers that will not be served by fixed-route transit, and others that will be served but may not currently be designed to accommodate pedestrians, making the "last-mile" journey from the bus stop to a place of employment difficult. For these reasons, VISION 2050 recommends that the Commission continue to support and expand the efforts of the Workforce Mobility Team, created in 2018 through a collaboration between the Commission and the Regional Transit Leadership Council. The Team is staffed by the Commission and provides assistance to employers in the Region who experience challenges retaining and attracting workers as a result of those workers having limited or no commuting transportation options available. VISION 2050 also recommends a series of programs be considered to improve access to suburban employment centers.

- **Vanpool Programs** – Vanpool programs allow multiple individuals to carpool to work on a larger scale. They generally work well in situations where at least five employees of one or more businesses located near each other all commute from approximately the same area, and the distance between work and home is relatively long. Vanpools should be considered in Southeastern Wisconsin where a specific journey from a population center to an employment center is not served with a relatively easy trip via the fixed-route transit system.

- **Network Transportation Companies** – Network transportation companies, such as Uber or Lyft, provide on-demand taxi service accessed by users via a smartphone app. These companies could connect individuals to employment opportunities not served by transit that are relatively close to—but beyond walking distance of—a rapid, commuter, or express transit line. Network transportation companies could be used in these instances to fill a gap in the transit network by providing on-demand rides to complete the last segment of a transit rider's journey to work. If multiple transit riders have the same destination, most network transportation companies offer services that allow individuals to split a fare, reducing costs for each rider.

- **Pedestrian Facility Enhancements** – Many suburban office and industrial parks do not have continuous sidewalks along both sides of a road, marked cross walks at intersections, or sidewalks from the road to a business's front door. These gaps in the pedestrian network can make completing a journey to work difficult for a transit rider. VISION 2050 recommends that transit operators and local governments work with business park associations and large employers to ensure that an accessible sidewalk network is provided between bus stops and businesses' front doors.

- **Job Access Programs** – As previously mentioned, even at its full build out, the recommended fixed-route transit system will not provide access to every job within the Region. In some instances, it may not be reasonable for an individual to take transit or another alternative mode to work, and a private automobile may be required. To address this, VISION 2050 recommends that all levels of government support job access programs, including driver's license recovery programs and low-interest vehicle loan programs for low-income individuals, to assist low-income individuals in accessing job opportunities.

Undertaking activities to promote transit use can attract new transit users and encourage residents to use public transit more often.

➤ Recommendation 2.10: Provide information to promote transit use

VISION 2050 recommends a range of activities to be undertaken by transit agencies in the Region to promote transit use and enhance the quality of transit service, including real-time and trip planning transit information and transit marketing. Promoting transit use and enhancing the quality of service would increase its desirability, attracting new transit users and encouraging residents to use public transit more often.

- **Real-Time and Trip Planning Transit Information** – Real-time transit information—such as transit vehicle arrival and departure times and maps that display where vehicles are located in real time—make transit services more attractive by addressing rider uncertainties and reducing perceived wait times. As of 2020, MCTS, the City of Racine (RYDE), and the Hop Streetcar all had mobile applications that allow transit users to access real-time information about each service. VISION 2050 recommends widespread provision of real-time information for all transit operators at transit centers, transit stops, on websites, and on mobile devices. Additionally, transit operators should continue to provide real-time information and up-to-date routing data to companies that include such information in their mapping applications.

- **Joint Marketing and Research Among Transit Operators** – The Region's transit operators would collectively benefit from joint marketing and research efforts. VISION 2050 recommends that transit agencies collaborate to advertise their respective services and conduct joint research involving emerging technologies that would enhance transit service, including innovative fare payment systems that facilitate intersystem transfers (discussed under Recommendation 2.11).

➤ Recommendation 2.11: Implement a universal fare system and free transfers across all transit operators

As transit operators invest in new fare systems across the Region, VISION 2050 recommends that operators coordinate to use the same fare system. This would require significant cross-agency coordination

on accounting and procurement, but could offer large benefits to the public by allowing riders to more easily use multiple transit services to complete a journey. Many other metropolitan areas across North America with multiple transit operators have achieved a universal fare system as part of a regionwide adoption of a smart card fare system similar to the MCTS M-Card. Either as part of adopting a universal fare system or as a separate initiative, operators are encouraged to make transfers between services free, with no rider paying more than the cost of one trip on the most expensive transit service used during a journey. In 2019, Milwaukee County, in partnership with Waukesha County, the City of Milwaukee, and the City of Waukesha, obtained funds to expand the Ride MCTS mobile application to include additional transit operators, which could begin to implement a universal fare program in the Region.

A consistent fare system would allow riders to more easily use multiple transit services to complete a journey.

➤ Recommendation 2.12: Consider implementation of proof-of-payment on heavily used transit services

One of the significant causes of delays that make travel times on local transit services uncompetitive with the automobile is the amount of time a bus spends at stops, waiting for passengers to pay their fare and board (known as "dwell time"). One method of significantly reducing dwell times on transit services where more than four or five riders board at a stop is to allow people to board the bus at any door, and validate their paper ticket or tap their fare card at a reader placed a few steps inside the bus. Using multiple doors allows multiple passengers to load in significantly less time, and placing the card reader or ticket validator further inside the bus allows the buses doors to close and the vehicle to begin moving before all passengers have paid. This concept is called "proof-of-payment" because it relies on occasional checks by transit system staff to ensure that riders have paid their fare, and has been shown to measurably increase the speed of buses where it has been implemented, including on certain bus routes in Los Angeles and on all bus routes in San Francisco. VISION 2050 recommends that transit operators in the Region, particularly MCTS, study the possibility of implementing proof-of-payment on some or all transit routes.

➤ Recommendation 2.13: Promote and expand transit pricing programs

VISION 2050 recommends building on existing transit pricing programs conducted by the Region's transit operators. Transit pricing programs involve a number of strategies that promote transit ridership, thus increasing transit use and reducing traffic volume and congestion, by providing discounted fares and providing more flexibility and accessibility for transit riders. These strategies include college and university transit pass programs and employer transit pass programs.

- **College and University Transit Pass Programs** – College and university transit pass programs provide unlimited transit use to students through a reduced fee included in student tuition and fees. MCTS has implemented a transit pass program at six area colleges and universities. This program encourages students to use transit instead of driving a personal vehicle to class, reducing the amount of traffic and congestion, particularly near campuses. Reducing the amount of vehicular traffic also improves pedestrian and bicycle safety around college and university campuses. VISION 2050 recommends expanding the MCTS college and university transit pass programs to include additional colleges and universities and establishing similar programs for other transit systems in the Region.

- **Employer Transit Pass Programs** – Employer transit pass programs involve a partnership between transit operators and employers that provide discounted transit passes—annual, monthly, or weekly—to employees. Employer transit pass programs provide employees a safe and easy commute to work and help employers attract and retain employees. MCTS has implemented the Commuter Value Program, which provides transit passes to employers at a reduced fee, allowing those employers to offer discounted transit passes to their employees. VISION 2050 recommends expanding existing employer transit pass programs such as the MCTS Commuter Value Program and encourages other transit operators to negotiate annual or monthly fees with individual employers to provide discounted transit passes to employees.

➤ **Recommendation 2.14: Expand "guaranteed ride home" programs**
A guaranteed ride home program provides a free ride home to transit users in cases of emergencies, unplanned overtime, or other unexpected issues. A guaranteed ride home program is currently offered to MCTS Commuter Value Program members and Washington County Commuter Express riders. VISION 2050 recommends expanding the guaranteed ride home program to include other transit operators.

VISION 2050 recommends a well-connected bicycle and pedestrian network that improves access to activity centers, neighborhoods, and other destinations in the Region.

Description of Bicycle and Pedestrian Element
The ability to support biking and walking is an important component of improving quality of life and achieving healthy, vibrant communities. While the Region has a colder climate and the proportion of residents that currently travel by bicycle is small, improving the bicycling and walking environment can have numerous benefits to the Region's residents. As the alternatives evaluation presented in Appendix F of Volume II showed, well-connected infrastructure and a development pattern that provides a mix of uses within short distances make it easier to bike and walk. This encourages people to incorporate active travel into their daily routine, which can improve their health and reduce their healthcare costs. It is also important to integrate bicycle and pedestrian travel and public transit travel, which often begins and ends by either biking or walking. Recognizing the benefits of encouraging active transportation, the bicycle and pedestrian facilities element of VISION 2050 recommends a well-connected bicycle and pedestrian network that improves access to activity centers, neighborhoods, and other destinations in the Region. The element seeks to encourage bicycle and pedestrian travel as a safe, attractive alternative to driving.

Bicycle recommendations for VISION 2050 include providing on-street bicycle accommodations on the arterial street and highway system (non-freeways), expanding the off-street bicycle path system, implementing enhanced bicycle facilities in key regional corridors, and expanding bike and scooter share program implementation. As shown in Table 1.10, VISION 2050 recommends approximately 2,997 miles of standard on-street bicycle accommodations, 393 miles of enhanced bicycle facilities, and 731 miles of off-street bicycle paths. Map 1.11 shows the recommended bicycle network, which identifies on-street bicycle facilities, potential corridors for enhanced bicycle facilities, off-street bicycle paths, and nonarterial street connections to the off-street bicycle network.

VISION 2050 also includes recommendations for the location, design, and construction of pedestrian facilities. VISION 2050 further recommends that local communities develop bicycle and pedestrian plans to supplement the regional plan.

Table 1.10
Miles of Bicycle Facilities: VISION 2050

Bicycle Facility	Estimated Mileages	
	Existing (2019)	Plan (2050)
On-street Accommodations		
Standard	893.9	2,997.3
Enhanced	106.9	392.7
Off-Street Paths	310.6	730.5

Source: SEWRPC

➤ Recommendation 3.1: Expand the on-street bicycle network as the surface arterial system is resurfaced and reconstructed

VISION 2050 recommends that as the existing surface arterial street system of about 3,300 miles is resurfaced and reconstructed segment-by-segment, bicycle accommodation be considered and implemented, if feasible, through bicycle lanes, paved shoulders, widened outside travel lanes, or enhanced bicycle facilities (defined in Recommendation 3.3).[18] Bicycles are prohibited from using freeway facilities by State law.[19] It also recommends that bicycle accommodation be considered and implemented on newly constructed surface arterials.

VISION 2050 envisions an extensive on-street bicycle network, made up of bicycle lanes, paved shoulders, widened outside travel lanes, and enhanced bicycle facilities.

The surface arterial street system of the Region provides a network of direct travel routes serving virtually all travel origins and destinations within Southeastern Wisconsin. Arterial streets and highways—particularly those with high-speed traffic or heavy volumes of truck or transit vehicle traffic—require one of the standard or enhanced bicycle improvements described in the previous paragraph to safely accommodate bicycle travel. VISION 2050 considers providing one type of bicycle facility to be sufficient to accommodate bicycles on an arterial. In other words, if a separate path is provided adjacent to an arterial, bicycle lanes or another type of bicycle facility may not be necessary to accommodate bicycles on that arterial. Land access and collector streets, because of low traffic volumes and speeds, should be capable of accommodating bicycle travel with no special accommodation for bicycle travel. In addition to accommodating bicycles on arterials, VISION 2050 encourages bicycle travel through intersections be appropriately accommodated.

➤ Recommendation 3.2: Expand the off-street bicycle path system to provide a well-connected regional network

VISION 2050 recommends that a system of off-street bicycle paths be provided between the Kenosha, Milwaukee, Racine, Round Lake Beach, and West Bend urbanized areas and the cities and villages within the Region with a population of 5,000 or more located outside these five urbanized areas. These off-street bicycle paths would primarily be located in natural resource and utility corridors and are intended to provide reasonably direct connections between the Region's urbanized and small urban areas on safe and aesthetically attractive routes with separation

The recommended off-street bicycle path system would connect the Region's urbanized areas and each city and village outside an urbanized area with a population of 5,000 or more.

[18] *There may be locations on arterials in urban environments where on-street bicycle accommodations may not be feasible. For example, on Brady Street in the City of Milwaukee, the right-of-way is restricted by two traffic lanes and two parking lanes. In these instances, nearby nonarterial streets may be considered sufficient for accommodating bicycle travel rather than implementing an accommodation on the arterial.*

[19] *The Hoan Bridge in Milwaukee is part of a freeway facility (IH 794) and, therefore, does not include a bicycle accommodation under VISION 2050. Should State law change to allow bicycles on the Hoan Bridge, or the Hoan Bridge not be designated a freeway, bicycle accommodation should be considered.*

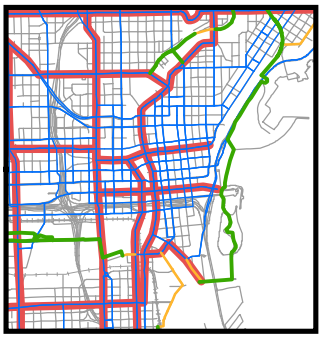
Map 1.11
Bicycle Network: VISION 2050

BICYCLE FACILITIES

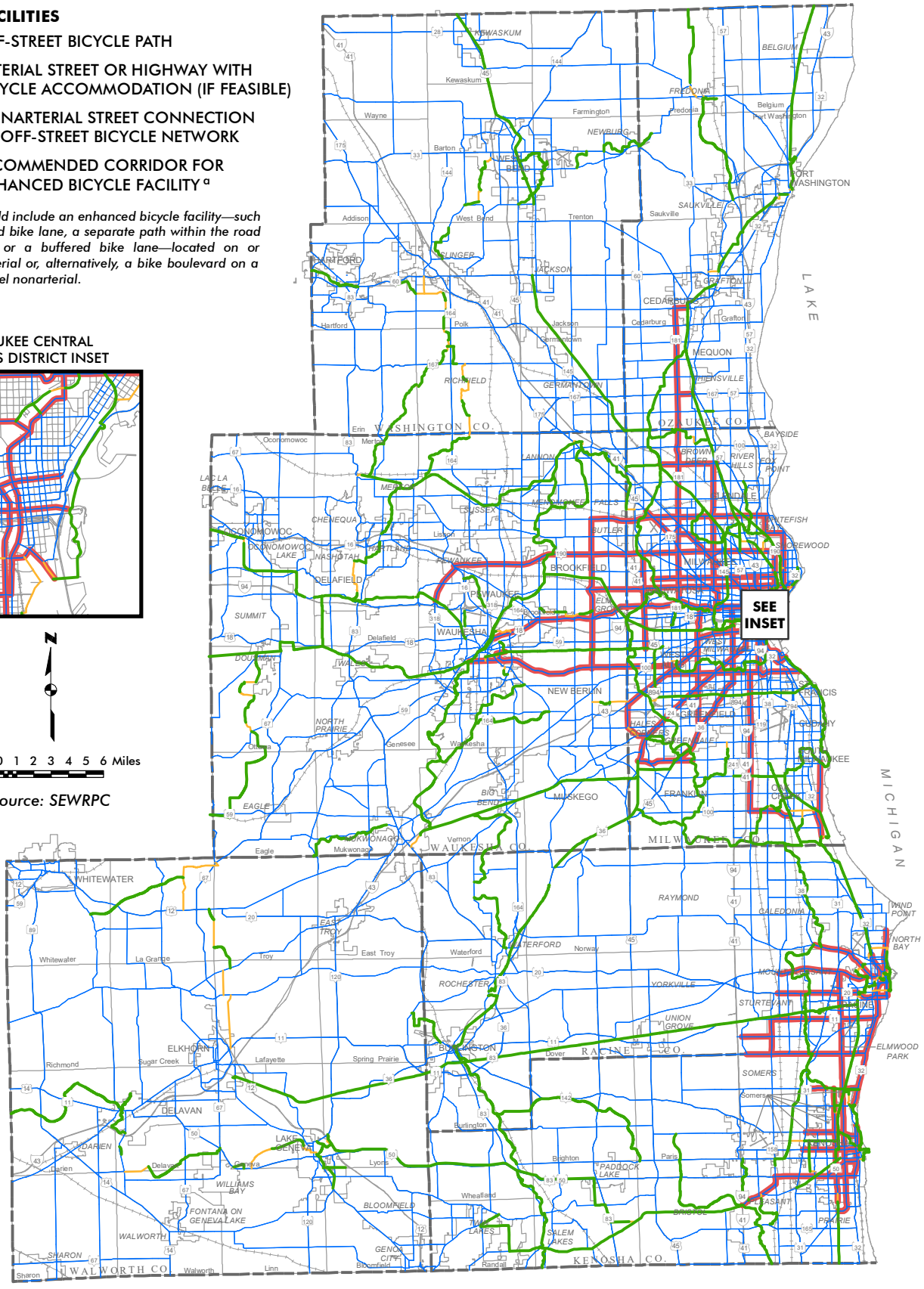
- OFF-STREET BICYCLE PATH
- ARTERIAL STREET OR HIGHWAY WITH BICYCLE ACCOMMODATION (IF FEASIBLE)
- NONARTERIAL STREET CONNECTION TO OFF-STREET BICYCLE NETWORK
- RECOMMENDED CORRIDOR FOR ENHANCED BICYCLE FACILITY [a]

[a] *Corridor would include an enhanced bicycle facility—such as a protected bike lane, a separate path within the road right-of-way, or a buffered bike lane—located on or along an arterial or, alternatively, a bike boulevard on a nearby parallel nonarterial.*

MILWAUKEE CENTRAL BUSINESS DISTRICT INSET



Source: SEWRPC



from motor vehicle traffic. Some on-street bicycle connections would be required to connect segments of this system of off-street paths. These connections, if provided over surface arterials, should include some type of bicycle accommodation—bicycle lanes, paved shoulders, widened outside travel lanes, enhanced bicycle facilities, or separate parallel bicycle paths. If provided over a nonarterial collector or land access street, they may not require special accommodation.

Bicycle connectivity under VISION 2050 would be improved through the construction of on- and off-street bicycle improvements to address gaps in the regional bicycle network. Gaps include those between cities and villages with populations of 5,000 or more where on- or off-street bicycle facilities either do not exist or only exist in intermittent segments. They also include those between two off-street path segments where a viable connection could be made by constructing either an on- or off-street bicycle facility between the path segments. Bicycle connectivity ensures that bicyclists have direct routes to destinations and reduces out-of-direction travel. An evaluation of bicycle connectivity and an analysis of gaps in the Region's on- and off-street network is presented in Appendix H.

Map 1.12 shows the regional off-street bicycle path system, which includes existing and recommended paths as well as surface arterial and nonarterial connections to the path system. VISION 2050 envisions expanding the existing 311 miles of off-street paths to approximately 731 miles of off-street paths. In addition to providing off-street paths and on-street connections to paths, VISION 2050 encourages off-street paths to be appropriately marked through an intersecting street.

➤ Recommendation 3.3: Implement enhanced bicycle facilities in key regional corridors

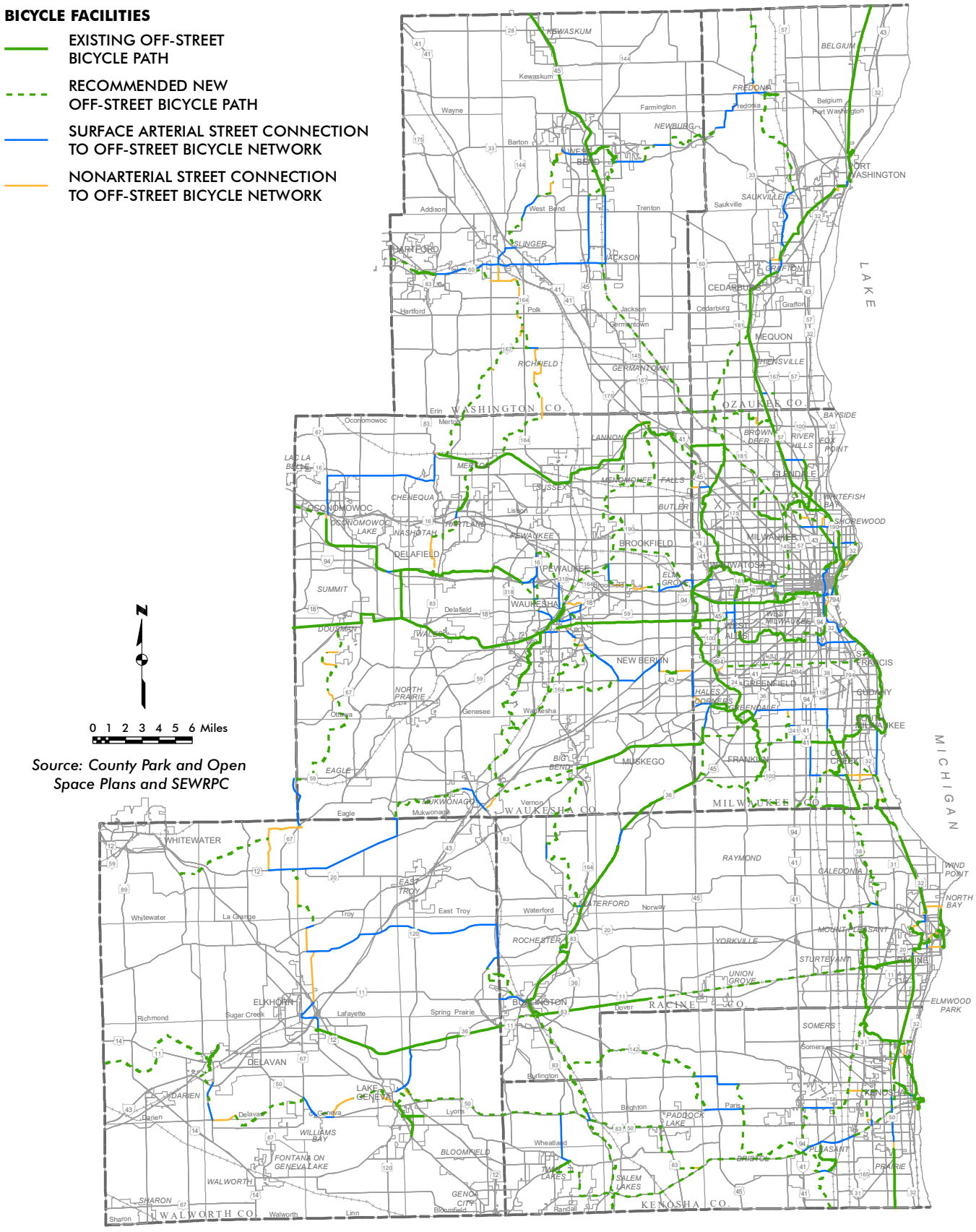
VISION 2050 recommends a network of enhanced bicycle facility corridors through the Kenosha, Milwaukee, and Racine urbanized areas that would connect multiple communities, serve important regional destinations, and link segments of the off-street bicycle path system. Enhanced bicycle facilities—such as protected, buffered, and raised bicycle lanes and separate paths within a road right-of-way—are bicycle facilities on or along an arterial that go beyond the standard bicycle lane, paved shoulder, or widened outside travel lane. They are meant to improve safety, define bicycle space on roadways, and provide clear corridors for bicycle usage. These corridors would be about two blocks in either direction of an arterial street or highway and would either involve implementing an enhanced bicycle facility on or along the arterial street or implementing a bike boulevard on a parallel nonarterial, which is a low-speed street optimized for bicycle traffic. Bike boulevards may also be implemented in residential neighborhoods outside of these enhanced bicycle corridors. Bike boulevards should be considered as an alternate bicycle facility when a nearby arterial street has limited right-of-way that restricts construction of a standard or enhanced bicycle facility. VISION 2050 recommends expanding the existing 107 miles of enhanced bicycle facilities to a network of approximately 393 miles of enhanced bicycle facility corridors that would link multiple communities throughout Kenosha, Milwaukee, Ozaukee, Racine, and Waukesha Counties.

The enhanced bicycle facility corridors identified in VISION 2050 would connect multiple communities, serve important regional destinations, and link segments of the off-street system.

A Protected Bike Lane
Credit: People for Bikes

Particular consideration should be given to enhancing the treatment of existing and recommended enhanced bicycle facilities at intersections. Dashed white lines for protected,

Map 1.12
Off-Street Bicycle Path System: VISION 2050



buffered, and raised bicycle lanes should be used through intersections to clearly define space and the intended path for bicycles. Colored pavement between the dashed lines can further make these facilities visible in the intersection. In addition, a separate path within a road right-of-way should be brought into the functional area of the intersection to increase the visibility of bicyclists.

The continued implementation of on-street bicycle accommodations, particularly enhanced bicycle facilities, can improve the level of comfort experienced by bicyclists. Appendix H of Volume II includes an evaluation of the safety and comfort of streets based on factors that include presence of a bicycle facility, traffic volumes and traffic speeds, surrounding land use, and parking turnover rates, all of which can either encourage or deter a bicyclist to use that roadway. Based on that evaluation, the existing arterial street network has about 800 miles of arterial streets with high levels of bicycle comfort. Under VISION 2050, there would be approximately 1,900 miles of arterial streets with high levels of bicycle comfort due to the increase in on-street bicycle accommodations and the implementation of enhanced bicycle facilities in key regional corridors.

➤ Recommendation 3.4: Expand bike and scooter share program implementation

Bike and scooter share programs provide residents and visitors with options to use bicycles, e-bikes, or scooters for short trips within and between downtown areas and adjacent neighborhoods. These programs are most effective in serving high-density areas with a mix of residential and commercial uses. They have been shown to provide a viable option for utilitarian, commuter, and other shorter-distance trips and for reducing trips by automobile. They can also provide important first-mile/last-mile connections, functioning as a feeder service to transit systems to extend the reach of transit services and often encouraging an increase in trips using both of these modes.

A Bike Share Station
Credit: Bublr Bikes

Standard "docked" bike share programs, such as those operated in the Cities of Milwaukee, Wauwatosa, and West Allis and the Village of Shorewood, offer opportunities for people to use a bicycle from designated stations. Dockless bike and scooter share programs pose unique challenges, but can expand the geographic coverage area of standard bike share since they do not need to be returned to designated stations. Including adaptive bicycles in either standard or dockless bike share programs expands accessibility for users of all abilities. E-bikes can also provide additional value to bike share systems by enabling riders to travel longer distances with less effort, helping them to get to destinations faster, and reducing physical obstacles to bicycling, such as climbing hills.

VISION 2050 recommends expanding bike and scooter share programs, including those that incorporate adaptive bicycles and e-bikes, to make these options a viable mode of travel for more short distance trips in the Region. VISION 2050 also recommends that local governments adopt and enforce regulations that address potential safety concerns relating to this type of micromobility, including requiring that users obey traffic laws and that dockless bike and scooter parking is located in safe locations that do not impede the pedestrian clear zone.

Pedestrian recommendations seek to improve accessibility and connectivity, while addressing pedestrian safety.

➤ Recommendation 3.5: Provide pedestrian facilities that facilitate safe, efficient, and accessible pedestrian travel

VISION 2050 recommends that sidewalks be provided along streets and highways in areas of existing or planned urban development based on identified criteria presented in the design guidelines; that gaps in the pedestrian network be addressed through neighborhood connections to regional off-street bicycle paths, transit, and major destinations; that sidewalks be designed and constructed using widths and clearances appropriate for the levels of pedestrian and vehicular traffic in any given area; and that terraces or buffered areas be provided, where feasible, between sidewalks and streets for enhancing the pedestrian environment. VISION 2050 further encourages making efforts to maximize pedestrian safety at street crossings, including:

- The timing of walk signal phases
- The construction of pedestrian median islands in wide, heavily traveled, or otherwise hazardous roadways
- The construction of curb extensions ("bulb-outs") that narrow the crossing distance for pedestrians at intersections
- Implementing speed humps, raised crosswalks, and raised intersections to slow traffic and increase the visibility of pedestrians

VISION 2050 also emphasizes that all pedestrian facilities be designed and constructed in accordance with the Federal Americans with Disabilities Act (ADA) and its implementing regulations. The ADA requires all pedestrian facilities that access public and commercial buildings and services to accommodate people with disabilities. Consistent with ADA requirements, VISION 2050 encourages communities with 50 or more employees to maintain updated ADA transition plans, which evaluate and plan for physical improvements to address accessibility for people with disabilities.

VISION 2050 also recommends the development of walkable neighborhoods for the health and vibrancy of communities in the Region. Walkability refers to the ease by which people can walk in an area to various destinations such as schools, parks, retail services, and employment. Walkability can be increased through compact development patterns that have a number of destinations that are within walking distance. Sidewalks with good accessibility provide a safe place for people to reach these destinations and a well-connected network of sidewalks and bicycle facilities can encourage residents to walk or bike rather than drive. Under VISION 2050, approximately 844,000 residents would live in walkable areas compared to approximately 702,600 residents who currently live in walkable areas.

➤ Recommendation 3.6: Prepare local community bicycle and pedestrian plans

VISION 2050 recommends that local units of government prepare community bicycle and pedestrian plans to supplement the regional plan. The local plans should provide for facilities to accommodate bicycle and pedestrian travel within neighborhoods, providing for convenient travel between residential areas and shopping centers, schools, parks, and transit stops within or adjacent to the neighborhood. Local communities should also consider developing pedestrian safety action plans for improving pedestrian safety through street redesign and other engineering

countermeasures. Implementation of Safe Routes to School programs by local communities and school districts should be encouraged in their local planning efforts to further address bicycle and pedestrian safety near schools. In addition, local units of government should encourage more compact and walkable development patterns through local land use policies in order to facilitate safe and efficient pedestrian and bicycle travel.

Description of Transportation Systems Management Element

Transportation systems management (TSM) involves managing and operating existing transportation facilities to maximize their carrying capacity and travel efficiency. TSM recommendations for VISION 2050 relate to freeway traffic management, surface arterial street and highway traffic management, and major activity center parking management and guidance. The specific TSM measures within each of the three categories collectively would be expected to result in a more efficient and safer transportation system.

Recommended transportation systems management measures aim to manage and operate existing transportation facilities to maximize their carrying capacity and travel efficiency.

Freeway Traffic Management

Freeway traffic management strategies include measures that improve the operational control, advisory information, and incident management on the regional freeway system. Some of these measures are currently in use in Southeastern Wisconsin and are recommended to be expanded and enhanced. Several newer technologies also provide potential opportunities, and certain measures not currently used in the Region are recommended to be considered for future implementation. Essential to implementing freeway traffic management measures is the State Traffic Management Center (TMC) in the City of Milwaukee, from which all freeway segments in the Milwaukee area are monitored, freeway operational control and advisory information is determined, and incident management detection and confirmation is conducted. Freeway traffic management measures are described below, along with recommendations related to specific measures.

➤ **Recommendation 4.1: Implement freeway operational control measures**

Recommended measures to improve freeway operation involve monitoring freeway operating conditions and controlling traffic on and entering the freeway.

VISION 2050 recommends measures to improve freeway operation—both during average weekday peak traffic periods and during minor and major incidents—through monitoring of freeway operating conditions and control of traffic traveling on and entering the freeway. This would include expanding and enhancing current operational control measures, such as traffic detectors and freeway on-ramp meters, and considering measures that are not currently in use, or not in widespread use, such as ramp meter control strategies, lane use control, speed limit control, part-time shoulder use, junction control, and truck restrictions.

- **Traffic Detectors** – Traffic detectors measure the speed, volume, and density of freeway traffic, and are used in operational control as well as advisory information and incident management. Traffic detectors have been implemented at about one-half mile intervals on the freeways in Milwaukee County and on IH 94 in Waukesha County, and at about one- to two-mile intervals on IH 94 in Kenosha and Racine Counties. The data collected from these detectors are monitored by the TMC to detect freeway system travel speed and time, traffic congestion, traffic flow breakdowns, and incidents. Freeway ramp meter traffic entry rates could be modified based upon the traffic volume and congestion indicated by the traffic detectors. Travel information on traffic congestion and delays are provided to freeway system users through the WisDOT website and on variable message signs. Traffic speeds and congestion indicated by traffic

detectors could instantaneously identify the presence of a freeway incident. VISION 2050 recommends that existing freeway system traffic detectors be maintained, and that traffic detectors be installed on the freeway system as it is reconstructed throughout the Region at one-half mile intervals. The only exceptions for installing detectors on freeway segments may be those segments with current and expected future traffic volumes that would be substantially less than freeway traffic carrying design capacity, including IH 43 north of STH 57 in Ozaukee County, USH 45 north of the Richfield Interchange and IH 41 north of STH 60 in Washington County, and IH 43 and USH 12 in Walworth County.

- **Ramp Meters** – Ramp meters are traffic signals located on freeway entrance ramps used to control the rate of vehicles entering onto a freeway segment by breaking up platoons, or groups, of cars to achieve a more efficient operation of the adjacent freeway segment and the downstream freeway system. To encourage ridesharing and transit use, preferential access for high-occupancy vehicles (HOV) is provided at ramp meter locations to allow the HOVs to bypass traffic waiting at a ramp-metering signal. There are currently about 121 freeway on-ramps in the Milwaukee area equipped with ramp meters. Buses and HOVs receive preferential access at 55 of the 121 on-ramp-meter locations. VISION 2050 recommends that ramp meters be installed on all freeway on-ramps in the Region as the freeway system is reconstructed, with HOV preferential access provided at metered ramps (dependent on right-of-way and on-ramp geometric constraints), particularly those that would be used by existing and planned public transit. The only exception for ramp meter installation may be those freeway segments previously identified that would be expected to carry current and future traffic volumes well below their design capacity.

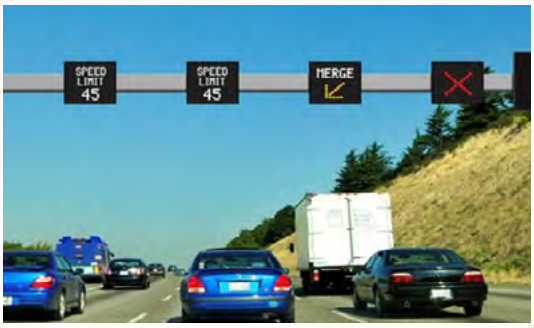
- **Active Traffic Management** – In addition to the freeway operation and control measures widely utilized within the Region's freeway system, VISION 2050 recommends that active traffic management (ATM) strategies not currently in use, or not in widespread use, on the Region's more heavily traveled freeways be considered for future implementation to improve their operating conditions. ATM strategies allow the dynamic operation of the freeway system based upon freeway system traffic volume, speeds, and congestion during peak hour traffic, traffic incidents, and inclement weather. ATM would include strategies for managing both the traffic traveling on the freeway and the traffic entering and exiting the freeway. ATM strategies include ramp meter control, lane control, speed limit control, part-time shoulder use, junction control, truck restrictions, queue control, and dynamic rerouting. These strategies can be employed concurrently, and operated through advanced traffic management software, to more effectively manage the most heavily traveled freeways. The following provides a description of each of these types of ATM strategies.

    - **Ramp Meter Control** – Ramp meter control strategies are implemented to control the release rates of vehicles onto a freeway segment. Release rates may be determined by a "pretimed" rate or, preferably, based upon adjacent freeway system traffic volume and congestion. A successful ramp meter control strategy minimizes total travel delay on the freeway

system, or along a particular freeway corridor, while providing equitable average and maximum delays at each ramp meter and avoiding the extension of vehicle queues onto surface streets. This may necessitate expanding freeway on-ramps to ensure sufficient storage space for queued vehicles, which should be considered and addressed during the reconstruction of the regional freeway system. Coordination with signals on arterial streets providing access to ramps with controlled meters may be necessary to avoid backups on the ramps and "flushing," or emptying, of the queues onto the freeway system.

A Ramp Meter
Credit: Caltrans

- **Lane Use Control** – Lane use control strategies utilize overhead variable message signs—such as the intelligent lane control signals (ILCS) shown in the adjacent photo—to inform motorists of lane closures, allowing them to safely merge into adjoining lanes. This strategy may also be used to close lanes in sections of freeway without an adequate shoulder to allow emergency vehicles to more quickly reach incident locations. Lane use control with an ILCS system could also be used in conjunction with the part-time shoulder use strategy (described below) by indicating when the shoulders would be available for use by through traffic. ILCS are typically spaced about one-half mile apart to allow at least one ILCS to be visible to motorists at all times. WisDOT has implemented a lane use control system at the entrance to the Mitchell Interchange tunnel for northbound IH 94 traffic traveling west on IH 894 to advise motorists of any incidents or lane closures in the tunnel that would not be visible to approaching drivers. Based on the cost to construct and maintain ILCS technology, the strategy may only be practical for implementation in the most heavily traveled freeway corridors or sections of freeways without adequate shoulders.



Lane Use Control Signals
Credit: WSP/Parsons Brinckerhoff

- **Speed Limit Control** – Speed limit control, or speed harmonization, strategies utilize ILCS—often in conjunction with lane use control strategies—to allow the adjustment of the speed limit based on current traffic volumes, operating speeds, roadway surface conditions, and/or weather conditions. The speed limits for the segments of freeway upstream of slower or congested traffic can be lowered to provide a more gradual deceleration between free-flowing traffic and congested traffic, which can reduce the number and severity of rear-end crashes. The adjusted speed limits can be either enforceable or advisory to motorists.

- **Part-Time Shoulder Use** – Part-time shoulder use is a quick and inexpensive way to address capacity issues on the regional freeway system by allowing motorists to travel on shoulder lanes in times of congestion and reduced travel speeds during peak periods or in instances of traffic incidents or special events. Implementation may be limited to transit use as bus-on-shoulder (BOS)—increasing the reliability of transit service in congested corridors and encouraging increased transit use by the public—or as an HOV

Bus-on-shoulder
Credit: Minnesota Department of Transportation

lane—encouraging motorists to carpool. It may be necessary to construct emergency refuge areas at frequent intervals along the portions of freeway shoulder where use as a through lane is permitted, as vehicles would not be able to use the shoulder for refuge purposes during its use as a through lane.

Dynamic Message Signs Show Junction Control Activated (bottom) and Not Activated (top)
Credit: Caltrans

- **Junction Control** – Junction control dynamically changes the lanes used by traffic approaching or departing from an interchange using signs and lighted pavement markers. This measure is useful at entrance ramps that experience high enough demand (at certain times of the day or prior to or following special events) and where traffic on the adjacent freeway segment does not provide sufficient gaps for merging vehicles. It is also useful for exit ramps where long queues back onto the mainline freeway. Junction control can be used to indicate the availability during peak times of part-time shoulder use, which can be utilized to provide additional ramp capacity.

- **Dynamic Truck Restrictions** – Dynamic truck restrictions limit truck traffic to a particular lane or set of lanes, typically the rightmost lanes, during peak travel periods. This strategy restricts the movement of trucks and enables passenger cars and light trucks to flow more freely without the disruption of a truck changing lanes or impeding traffic. Dynamic truck restrictions, which can also include buses and vehicles towing trailers, may increase left lane travel speeds and stabilize traffic flow during peak travel periods.

- **Queue Warning** – Queue warning is a strategy that involves alerting motorists of upcoming slower speeds and congestion utilizing variable message signs and flashing lights. This strategy is intended to allow motorists sufficient time to more gradually decelerate between free-flowing traffic and congested traffic, which can reduce the number and severity of rear-end crashes. A queue warning system could also use infrastructure-to-vehicle (I2V) or vehicle-to-vehicle (V2V) technology to detect existing queues and send the queue information directly to vehicles equipped with such technology.

- **Dynamic Rerouting** – This strategy involves providing motorists with appropriate alternate arterial routes—freeway or surface arterials—when a segment of freeway is experiencing extremely congested conditions. The alternate routes are determined based on current traffic conditions along nearby arterial routes. Information on the alternative routes could be provided through the 511 Wisconsin traveler information website and system, through variable message signs on the freeway, and via the media. Similar to the queue warning systems, dynamic rerouting could also use I2V technology to send rerouting information directly to vehicles equipped with such technology.

➤ Recommendation 4.2: Implement advisory information measures for the freeway system

VISION 2050 recommends expanding and enhancing advisory information measures that provide real-time advisory information on current travel conditions to motorists.

- **Variable Message Sign (VMS)** – A VMS is a permanent or portable device used by the TMC to display dynamic messages providing real-time information to motorists about downstream freeway traffic conditions such as current travel times, lane and ramp closures, and where travel delays begin and end. It is also used to display AMBER Alerts in the event of a child abduction, as well as other similar alerts. VMS is currently deployed at 32 locations along the freeway system, and at 32 locations on surface arterials that connect with the freeway system. VISION 2050 recommends that VMS be provided on the entire freeway system as it is reconstructed, and on surface arterials leading to the most heavily used freeway system on-ramps. As I2V technology becomes more advanced and has more widespread use, perhaps the use of VMS technology, which has a higher cost to employ, will no longer be necessary.

A Variable Message Sign
Credit: WisDOT

- **WisDOT Traveler Information Website** – The 511 Wisconsin traveler information website (www.511Wi.gov) provides up-to-date information about traffic conditions using data collected from freeway system traffic detectors. The information provided on the website includes color-coded maps depicting the level of freeway traffic congestion, travel times and delays, locations of confirmed incidents, trucker information, winter road conditions, and views of traffic from a closed-circuit television (CCTV) camera network. In addition, the website includes information on current and upcoming construction projects. In 2015, WisDOT also launched a free 511 Wisconsin smart phone app, which allows users to receive instant notifications of traffic alerts. In addition, WisDOT provides traffic and construction-related announcements through social media sites, such as Twitter and Facebook. In conjunction with its website, WisDOT has deployed a statewide 511 traveler information system, which allows the public to dial "511" and receive automated messages about current travel conditions along their desired route through a series of predetermined automated menus. VISION 2050 recommends that WisDOT continue to improve its website and "511" system for providing advisory information to motorists. Some of these improvements could include development of a hands-free mobile phone app and addition of roundabout, park-ride, rest area, and more truck information, such as inclusion of a truck parking information system.

The 511 Wisconsin traveler information website and smartphone application are ready sources of up-to-date information about traffic conditions.

- **Highway Advisory Radio (HAR)** – HAR is a system of low-power radio transmitters licensed for State use that transmit prerecorded messages concerning ongoing highway construction projects, traffic conditions during special events, and AMBER Alerts. HAR systems are generally very localized and directed to motorists at a specific location along a specific route. Currently, there are 14 HAR site locations with 18 flashing signs located on IH 94 in Kenosha, Milwaukee, Racine, and Waukesha Counties; on IH 43 in Ozaukee and Milwaukee Counties; and on IH 41/USH 45 in Milwaukee and Washington Counties. VISION 2050 recommends that WisDOT continue to utilize the HAR system as deemed necessary.

- **Dynamic Route Planning** – Emerging technologies continue to make traffic data readily available to the public, allowing motorists to access real-time traffic information via computer, mobile device,

and in-car navigation systems. There is also an increasing number of private crowd-sourced traffic information providers, such as Waze, which rely on users providing current traffic conditions. WisDOT entered an agreement in late 2016 to share real-time freeway operation and advisory information with Waze and Google Maps to notify users about lane closures, major traffic events, or other incidents. In turn, the TMC receives real-time crowdsourced information from these apps to confirm and, if necessary, respond to user-reported incidents such as disabled vehicles, hazards in the roadway, or unexpected congestion. This technology provides an additional information-sharing platform that allows motorists to know when and how to modify their routes, and provides more information to traffic management professionals, allowing them to better monitor and respond to incidents, potentially decreasing incident response time and reducing traffic congestion. VISION 2050 recommends that WisDOT continue this partnership and that WisDOT and local governments consider future partnerships to enable the exchange of traffic information and data. It is expected that such opportunities will increase as connected vehicle technology and wireless data communication continues to advance.

WisDOT's Traffic Incident Management Enhancement (TIME) Program is critical to incident management.

➤ Recommendation 4.3: Implement incident management measures for the freeway system

VISION 2050 recommends expanding and enhancing incident management measures that detect, confirm, and remove as quickly as possible incidents on the freeway system, and on freeway system shoulders, including accidents, debris, and stopped vehicles. Measures that enhance incident management include freeway service patrols, CCTV, freeway location reference markers, crash investigation sites, ramp closure devices, and alternate route designations. Critical to incident management is the Traffic Incident Management Enhancement (TIME) Program sponsored by WisDOT, which brings together and coordinates transportation engineering, law enforcement, emergency responders, tow and recovery, and other freeway system operational interests at monthly meetings to improve and enhance freeway incident management and safety. Incident management of the freeway system could also be enhanced by expanding the TMC to include on-site safety, media, and maintenance personnel. As well, WisDOT could expand the development and use of predetermined strategies, referred to as Integrated Corridor Management (ICM), to manage traffic on the freeway and adjacent arterial highways, particularly during incidents. These strategies were deployed as part of the Zoo Interchange reconstruction project.

- **Closed-Circuit Television (CCTV) Cameras** – CCTV cameras provide live video images to WisDOT and the Milwaukee County Sheriff's Department, which allow for the rapid confirmation of congested areas and the presence of an incident, and the determination of the appropriate response to the incident. Currently, there are 168 CCTV cameras covering most of the Region's heavily traveled freeways, along with 56 CCTV cameras on surface arterials parallel and connecting with the freeway system primarily located in Milwaukee and Waukesha Counties. VISION 2050 recommends that the CCTV camera network be provided on the entire regional freeway system as it is reconstructed, with the possible exception of the freeway segments identified previously that carry existing and future traffic volumes well below their design capacity.

- **Enhanced Reference Markers** – Enhanced reference markers assist motorists in identifying specific locations along a freeway segment when reporting incidents. These markers are typically small signs provided at one-tenth or two-tenths of a mile intervals along the freeway system that typically display the highway shield and mile marker. Enhanced reference markers are currently provided along much of the freeway system in the Region at each one-tenth or two-tenths of a mile. VISION 2050 recommends that freeway location reference markers be provided on the entire regional freeway system, including the following segments that do not currently have markers: IH 894 in Milwaukee County, IH 43 in Milwaukee County between Silver Spring Drive and North Avenue, IH 43 in Ozaukee County north of STH 60, IH 43 and USH 12 in Walworth County, USH 45 in Washington County, and STH 16 in Waukesha County.

- **Freeway Service Patrols** – Freeway service patrols consist of specially equipped vehicles designed to assist disabled motorists and assist in clearance of incidents. Freeway service patrol vehicles may be equipped to provide limited towing assistance, as well as minor services such as fuel, oil, water, and minor mechanical repairs. Freeway service patrols are currently operating in Milwaukee County and as part of freeway construction projects. VISION 2050 recommends expanding freeway service patrols to serve the entire regional freeway system, and providing greater coverage, including all-day weekday and weekend service and increased vehicle coverage to achieve one vehicle per 12 to 15 miles of freeway. An exception would be the freeway segments identified previously that carry existing and future traffic volumes well below their design capacity.

A Freeway Service Patrol Vehicle
Credit: WisDOT

- **Ramp Closure Devices** – Ramp closure devices allow for the closure of freeway on-ramps during major traffic incidents, inclement weather, or special events. They allow law enforcement and public works vehicles to be deployed to incident locations as needed, without requiring the use of these vehicles to block access to freeway ramps. Ramp closure devices are currently deployed at interchanges on IH 94 in Kenosha, Milwaukee, Racine, and Waukesha Counties; on IH 43 in Milwaukee, Walworth, and Waukesha Counties; and on IH 794 and IH 894 in Milwaukee County. VISION 2050 recommends that WisDOT expand implementation of ramp closure devices throughout Southeastern Wisconsin.

A Ramp Closure Device
Credit: WisDOT

- **Crash Investigation Sites** – Crash investigation sites are designated safe zones for distressed motorists to relocate to if they are involved in an incident on the freeway. Currently, there are 33 crash investigation sites on the Region's freeway system with 25 of the 33 sites in Milwaukee County. VISION 2050 recommends that WisDOT evaluate the extent of use and associated benefits of existing crash investigation sites, and consider expansion as needed to serve the entire regional freeway system.

- **Alternative Routes** – Alternate route designations are clearly marked and signed surface arterial streets and highways that provide a secondary route to be used by motorists during major

freeway incidents, ramp closures, or during times of extreme congestion. VISION 2050 recommends that WisDOT and the Regional Planning Commission, together with the concerned and affected local governments, continue to examine potential designation of alternate routes.

- **Law Enforcement Freeway Refuge Site** – A law enforcement freeway refuge site is a location along the freeway mainline where law enforcement vehicles can park to monitor traffic and respond to traffic incidents. These sites are particularly desirable along segments of freeway without an adequate shoulder, which require law enforcement vehicles to continuously circulate on these segments. VISION 2050 recommends that WisDOT consider installing law enforcement freeway refuge sites at appropriate locations along the freeway system.

Surface Arterial Street and Highway Traffic Management

Surface arterial street and highway traffic management strategies are measures that improve the operation and management of the regional surface arterial street and highway network. Some of these measures are currently in use in the Region and are recommended to be expanded and enhanced. Surface arterial street and highway traffic management measures are described below, along with recommendations related to specific measures, including advisory information, traffic signal coordination, intersection traffic engineering improvements, curb-lane parking restrictions, and access management.

➤ **Recommendation 4.4: Improve and expand coordinated traffic signal systems**

Coordinated traffic signal systems provide efficient progression of traffic along arterial streets and highways, reducing travel time delay and increasing reliability, and allowing motorists to travel through multiple signalized intersections without stopping. There are several coordination system types, including:

- Time-based coordination relies on devices within each traffic signal controller to accurately keep time, with signal coordination based on a prescribed signal timing plan programmed into each individual traffic signal controller.

- Interconnected pre-timed coordination is based on the remote communication (i.e., hard wiring or radio connection) between each individual traffic signal controller and a master traffic signal controller.

- Traffic responsive system are interconnected systems of traffic signals that respond to information provided by traffic detectors over several cycles—or minutes—to determine appropriate traffic signal cycle lengths and phasing.

- Real-time adaptive systems use technology that allows the adjustment of green times and signal cycle lengths on a real-time basis as data are gathered and evaluated along the corridor.

- Central computer control systems are based on a central computer facility that receives and analyzes traffic information provided by traffic detectors, and develops appropriate signal cycle lengths, offsets, and phasing. The system then communicates this information to the individual traffic signal controllers.

In the Region, coordinated traffic signal systems currently range from systems comprising two traffic signals to systems comprising 100 traffic signals. Approximately 1,200 of the 1,700 traffic signals in the Region, or about 71 percent, are currently part of a coordinated signal system. VISION 2050 recommends that Commission staff work with State and local governments to document existing and planned arterial street and highway system traffic signals and traffic signal systems, and develop recommendations (including prioritization) for improvement and expansion of coordinated signal systems. The intent is to identify signal coordination corridors that should receive high priority for Federal and State funding, such as FHWA Congestion Mitigation and Air Quality (CMAQ) Improvement Program funds. VISION 2050 also recommends the preparation and implementation of coordinated traffic signal plans along all surface arterial street and highway routes in the Region that have traffic signals located at one-half mile or less spacing. This measure also recommends that agencies coordinate their efforts so that motorists do not experience unnecessary stops or delays due to changes in individual traffic signal jurisdiction authority.

VISION 2050 recommends conducting a study to document existing and planned traffic signals and make recommendations for improving and expanding coordinated signal systems.

➤ Recommendation 4.5: Improve arterial street and highway traffic flow at intersections

Intersection improvements increase travel efficiency and improve safety along arterial streets and highways through improvements such as improving the type of traffic control deployed at the intersection (two- or four-way stop control, roundabouts, or signalization); improving signal timing at individual signalized intersections; adding right- and/or left-turn lanes; or improving bicycle and pedestrian accommodation through an intersection (e.g., pavement markings and leading pedestrian intervals at signalized intersections). VISION 2050 recommends that State and local governments aggressively consider and implement individual arterial street and highway intersection improvements. VISION 2050 also recommends that State, county, and local governments each prepare a prioritized short-range (two- to six-year) program of arterial street and highway intersection improvements under their jurisdiction, and review and update the programs every two to five years. VISION 2050 further recommends that Commission staff work with State, county, and local governments, at their request, to prepare such programs for arterial street and highway intersections, which would identify the intersections in need of improvement and recommend improvements.

➤ Recommendation 4.6: Expand curb-lane parking restrictions

Curb-lane parking restrictions improve traffic flow and operation by restricting on-street parking during peak traffic periods and operating the curb parking lanes as through traffic lanes. This measure provides an alternative to the expansion of highway capacity through roadway widenings and new construction. VISION 2050 recommends that State and local governments consider implementation of curb-lane parking restrictions as needed during peak traffic periods in the peak traffic direction along segments of roadway expected by the year 2050 to operate under congested conditions and where there may be the ability to utilize the existing parking lane as a traffic lane. It is recognized that curb-lane parking restrictions may not be feasible in commercial areas where parking is essential to the businesses, such as along Greenfield Avenue in the City of West Allis and North Avenue in the City of Wauwatosa. It may also not be possible to restrict parking for use as a traffic lane along roadway corridors identified for enhanced bicycle accommodations. In such corridors, the level of bicycle accommodation and the ability to

prohibit parking for use as a traffic lane, would be determined as part of the preliminary engineering for the reconstruction of the roadway. In addition, it may not be possible to restrict parking for use as a traffic lane along segments of roadway where rapid transit service is recommended to operate in a dedicated lane. Map 1.13 shows the potential curb-lane parking restrictions that could be considered as needed during peak traffic periods along segments of roadway expected by the year 2050 to operate under congested conditions and where there may be the ability to utilize the existing parking lane as a traffic lane.

➤ Recommendation 4.7: Develop and adopt access management standards

Developing access management standards for the location, spacing, and operation of driveways (residential and commercial), median openings, and street connections improves transportation systems operations by providing full use of the roadway capacity and reducing the number of conflicts that can result in crashes. VISION 2050 recommends that State and local governments continue to adopt and employ access management standards as development takes place along arterials under their jurisdiction and prepare and implement access management plans along arterials that currently are developed and violate these access management standards.

➤ Recommendation 4.8: Enhance advisory information for surface arterial streets and highways

One way to enhance advisory information would be to include surface arterial data on the 511 Wisconsin website in addition to freeway data.

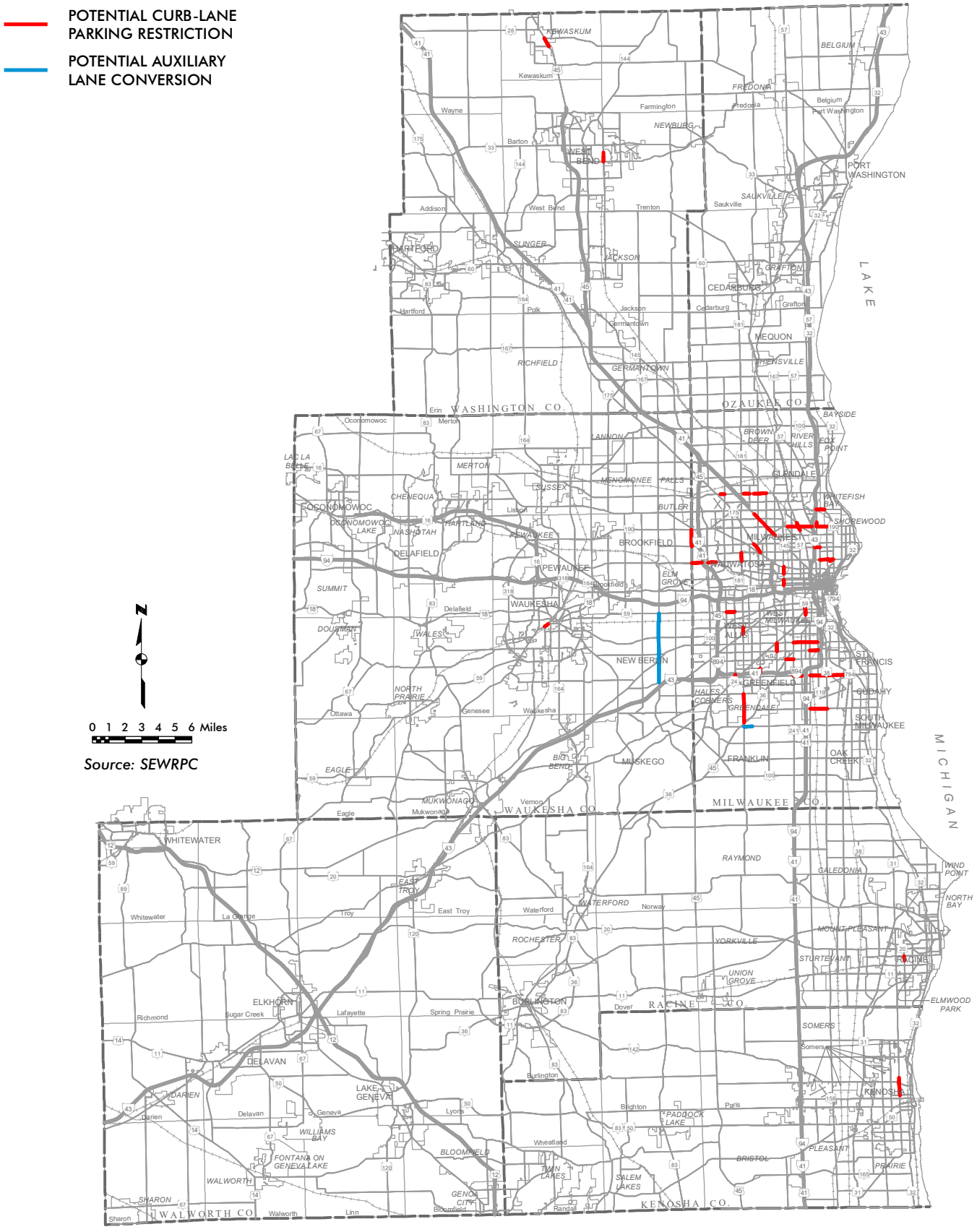
Similar to advisory information measures for the regional freeway system, advisory information measures for surface arterials involve providing real-time information on existing conditions, particularly delays and major incidents, to encourage more informed travel decisions and more efficient use of the transportation system. VISION 2050 recommends improving and expanding advisory information measures, including expanding data provided on the 511 Wisconsin website to include surface arterials in addition to freeways, and implementing VMS, including hybrid variable/static travel time signs (as shown in the photo). Hybrid travel time signs provide motorists with travel times for alternate parallel routes to the same destination, with the times updated in real-time. The availability of travel time information allows motorists to choose the quickest route to their destination. The travel time provided can be based on data collected by traffic detectors installed along the routes. In addition, Bluetooth sensors can be installed that detect any device emitting a Bluetooth signal to estimate travel speeds along the alternative route. Hybrid travel time signs were implemented as part of the Zoo Interchange reconstruction project, with data being provided to the signs by Bluetooth sensors installed along the surface arterial routes. The signs and Bluetooth sensors are installed along portions of Bluemound Road (USH 18), Greenfield Avenue (STH 59), and Mayfair Road/108th Street (STH 100).

A Hybrid Variable/Static Travel Time Sign
Credit: SEWRPC

➤ Recommendation 4.9: Expand the use of emergency vehicle preemption

Emergency vehicle preemption allows emergency vehicles to intervene in the normal operation of traffic signals to either change the traffic signal to the green phase or to hold the green phase for the approach from which the emergency vehicle is oriented. Some governmental units in the Region have implemented emergency vehicle preemption on some or all of the traffic signals under their jurisdictional authority. VISION 2050 recommends expanding the use of emergency vehicle preemption at traffic signals in Southeastern Wisconsin.

Map 1.13
Location of Potential Curb-Lane Parking Restrictions and Auxiliary Lane Conversions on Arterial Streets and Highways: VISION 2050



Source: SEWRPC

Major Activity Center Parking

VISION 2050 recommends strategies to improve parking around major activity centers, allowing motorists to find available parking quickly, and reducing traffic volume and congestion and associated air pollutant emissions and fuel consumption. Measures to improve parking around major activity centers include a parking management and guidance system and demand-responsive pricing.

➤ Recommendation 4.10: Implement parking management and guidance systems in major activity centers

A Parking Guidance Sign
Credit: City of Milwaukee

VISION 2050 recommends reducing the traffic circulation of motorists seeking parking in major activity centers through the implementation of parking management and guidance systems. An initiative supporting this recommendation is the City of Milwaukee Advance Parking Guidance System, for which the City completed the first phase in late June 2014. This system provides motorists with real-time parking information around downtown Milwaukee using variable and static message signs located at various locations on major freeway ramps and arterial roadways. The message signs display the address of a participating parking structure, the travel direction of the parking structure, and the number of parking spots that are available in the parking structure. These data could also be made accessible to the public via smartphone by the local municipalities or a third party provider.

➤ Recommendation 4.11: Implement demand-responsive pricing for parking in major activity centers

Demand-responsive parking would improve parking availability and reduce traffic congestion in major activity centers by adjusting the price for parking throughout the day based on demand.

Demand-responsive pricing for parking adjusts the price for on-street parking, parking lots, and parking garages in major activity centers. The price for parking can be adjusted throughout the day based on the parking demand in the area so that at least one parking space is available most of the time. Motorists find demand-responsive pricing information online and through smartphone apps that help drivers find parking easier and faster. This strategy can improve parking availability and reduce traffic congestion. VISION 2050 recommends that demand-responsive pricing for parking be considered for future implementation in major activity centers. In October 2018, the City of Milwaukee finalized a plan that would allow demand-responsive parking in the City's central business district, adjusting prices anywhere from $0.25 to $5.00 per hour, including special pricing for events; however, demand-responsive pricing has not yet been implemented.

Regional Transportation Operations Plan

The current regional transportation operations plan (RTOP), completed in 2012, is a five-year program identifying candidate corridor and intersection TSM projects prioritized for implementation and funding, particularly with respect to FHWA CMAQ Program funding.

➤ Recommendation 4.12: Review and update the regional transportation operations plan

VISION 2050 recommends that Commission staff work with State, county, and local governments to review and update the RTOP every four years, with the next update to occur following adoption of VISION 2050. The purpose of the update to the RTOP is to identify additional candidate corridor and intersection TSM projects, and to identify the projects that would have priority for Federal and State funding, such as Federal CMAQ Program funds. During the development of VISION 2050, counties

and local governments identified roadway corridors and intersections potentially having traffic flow issues, as shown in Table 1.11. VISION 2050 recommends that these corridors and intersections be considered as part of the next review and update to the RTOP, programmed to be completed in 2020.

Description of Travel Demand Management Element

Travel demand management (TDM) refers to a series of measures or strategies intended to reduce the total and peak period demand for roadway travel, allowing for more efficient use of the existing capacity of the transportation system. TDM strategies encourage and incentivize people to consider alternatives to single-occupancy vehicle (SOV) trips, such as public transit, ridesharing, walking, biking, and working remotely. The general intent of such measures is to reduce traffic volume and congestion, and the associated air pollutant emissions and fuel consumption. To be effective, TDM measures should be technically and politically feasible; integrated with public transit, bicycle and pedestrian, and arterial street and highway improvements; and combined into coherent packages so that a variety of measures are implemented. VISION 2050 recommends TDM measures, including HOV preferential treatment, park-ride lots, personal vehicle pricing, TDM promotion, and detailed site-specific neighborhood and major activity center land use plans. It should be noted that there is an inherent overlap between the TDM, public transit, and bicycle and pedestrian elements of VISION 2050. The transit and bicycle and pedestrian elements recommend a number of additional measures that would reduce SOV travel beyond those included in the TDM element.

Travel demand management involves executing a series of strategies to encourage the use of alternative methods or times of travel, with the goal of reducing traffic congestion and vehicle emissions.

➤ **Recommendation 5.1: Enhance the preferential treatment for high-occupancy vehicles**

VISION 2050 recommends continuing and enhancing the preferential treatment for transit vehicles, vanpools, and carpools on the existing arterial street and highway system. Providing preferential treatment for transit vehicles reduces transit travel times and improves transit travel time reliability, making public transportation more competitive with personal vehicle use. Measures to improve preferential treatment for HOV include the provision of HOV queue bypass lanes at metered freeway on-ramps, and preferential carpool and vanpool parking. Additional measures include transit signal priority systems and reserved bus lanes along congested surface arterial streets and highways, which are discussed further in Recommendation 2.6 of the transit element.

- **HOV Queue Bypass Lanes** – HOV queue bypass lanes allow transit vehicles or vehicles with multiple passengers to bypass single-occupancy vehicle queues at metered freeway on-ramps, providing reduced travel time incentives to carpools, vanpools, and transit vehicles. The provision of HOV queue bypass lanes at metered freeway on-ramps exists at 55 of the 120 metered freeway on-ramp locations on the Region's freeway system. VISION 2050 recommends providing HOV bypass lanes at metered freeway on-ramps within the Region, particularly at on-ramps near park-ride facilities and at on-ramps that would be used by existing and planned public transit, dependent on right-of-way and on-ramp geometric design constraints.

- **Preferential Carpool and Vanpool Parking** – Preferential carpool and vanpool parking involves employers providing free/subsidized parking or preferential parking for employees who carpool or

Table 1.11
Isolated Intersections and Roadway Corridors Identified as Having Potential Traffic Flow Issues by County and Local Governments: VISION 2050

County	Location
Milwaukee	E. Layton Avenue (CTH Y) between S. 27th Street (STH 241) and S. Pennsylvania Avenue
Ozaukee	Intersection of STH 57 and CTH A/CTH H
	Intersection of STH 33 and CTH I
	Intersection of STH 57 and Jay Road
	Intersection of CTH W and STH 167
	Intersection of N. Port Washington Road (CTH W) and W. Mequon Road (STH 167)
	Intersection of N. Port Washington Road (CTH W) and Highland Road
Walworth	Intersection of USH 12 and CTH ES
	Intersection of USH 12 and CTH A
	Intersection of STH 89 and CTH A
	Intersection of STH 50 at IH 43
	Intersection of South Road and USH 12[a]
Washington	Intersection of Division Road (CTH G) and Fond du Lac Avenue (STH 145)
	Intersection of IH 41 southbound off ramp and STH 60
	Intersection of IH 41 southbound off ramp and STH 33
Waukesha	Intersection of E. Ottawa Avenue (CTH Z) and Summit Avenue (STH 67)
	Intersection of Summit Avenue (STH 67) and CTH D
	Intersection of S. Moorland Road (CTH O) and W. Cleveland Avenue (CTH D)
	Intersection of S. Moorland Road (CTH O) and W. National Avenue (CTH ES)
	Intersection of S. Moorland Road (CTH O) and W. Beloit Avenue (CTH I)
	Intersection of S. Moorland Road (CTH O) and W. Grange Avenue
	Intersection of Pilgrim Road (CTH YY) and Silver Spring Drive (CTH VV)
	Intersection of Pilgrim Road (CTH YY) and W. Good Hope Road (CTH W)
	Intersection of Lynndale Road (CTH JK) and Ryan Road (CTH KF)
	Intersection of Pewaukee Road (STH 164) and Capitol Drive (STH 190)
	Intersections of Redford Boulevard (CTH F) with IH 94 ramps
	Intersection of Redford Boulevard (CTH F) and Watertown Road (CTH M)
	Intersection of Watertown Road (CTH M) and North Avenue (CTH M)
	Intersection of Plain View Road and Town Line Road (CTH V)
	Intersection of Waukesha Avenue (STH 74) and Silver Spring Drive (CTH VV)
	Intersection of Lisbon Road (CTH K) and Duplainville Road
	Intersection of Lisbon Road (CTH K) and Redford Boulevard (STH 74)

[a] *Identified based on a proposed development near the intersection anticipated to generate traffic that would potentially require improvement to the intersection.*

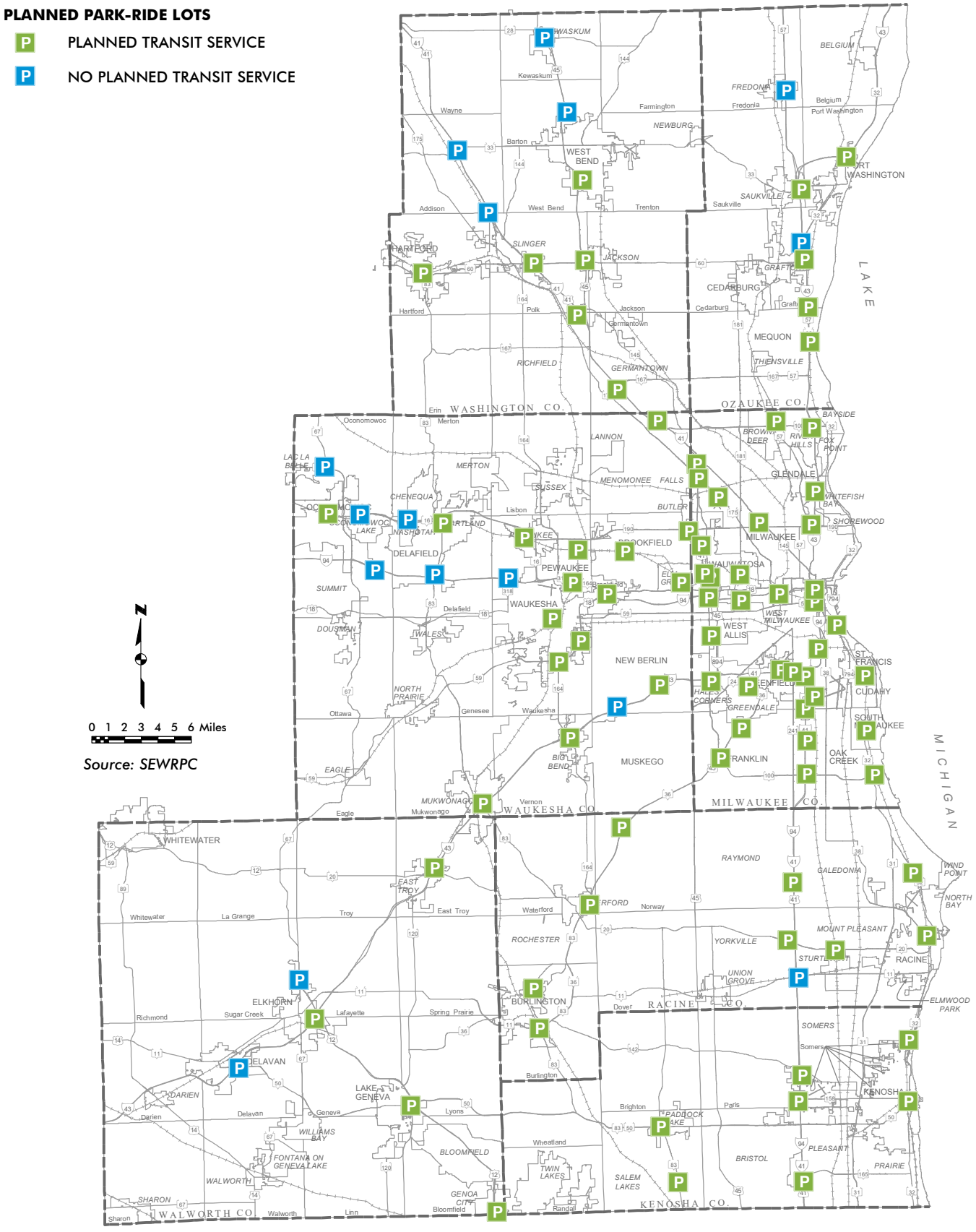
Source: SEWRPC

vanpool to their employment site. This measure can reduce vehicle trips by encouraging ridesharing among employees. VISION 2050 encourages employers to provide free/subsidized parking or preferential parking for employees who carpool or vanpool to the employment site.

➤ Recommendation 5.2: Expand the network of park-ride lots

To promote carpooling and the resultant more efficient use of the Region's transportation system, VISION 2050 recommends expanding the network of park-ride lots. Park-ride lots should be located along all major routes at their major intersections and interchanges where sufficient demand may warrant provision of an off-street parking facility. Map 1.14 shows the recommended system of park-ride lots, including existing park-ride lots and those recommended to be served by transit.

Map 1.14
Park-Ride Lots: VISION 2050



Recommendation 5.3 aims to shift more of the costs associated with roadways and parking from property taxpayers to the actual users of these facilities.

➤ Recommendation 5.3: Price personal vehicle travel at its true cost

VISION 2050 recommends that a larger percentage of the full costs of construction, maintenance, and operation of street and highway facilities and services and parking facilities and services be borne by the users of the system, with strategies including cash-out of employer-paid parking, road pricing, and parking pricing. These measures can result in a reduction in total vehicle-miles of travel (VMT).

- **Cash-out of Employee-Paid Parking** – Cash-out employee-paid parking encourages employers currently providing free/subsidized parking to charge their employees the market value of parking. Employers could offset the additional cost of parking through cash payment or salary increases to employees. This measure would potentially reduce vehicle-trips and VMT through the increased use of transit, ridesharing, walking, and bicycling, as some employees may "pocket" the cash payment or salary increase. Employers could also subsidize all, or a portion of, the parking costs for employees who carpool or vanpool to the employment site to further encourage ride-sharing. VISION 2050 supports employers implementing cash-out of employee-paid parking and subsidizing all, or a portion of, the parking costs for employees who carpool or vanpool to the employment site.

- **Road Pricing Strategies** – Road pricing involves charging user fees to pay the costs of construction, maintenance, and operation of street and highway facilities and services. Current user fees primarily include Federal and State motor fuel taxes and vehicle registration fees. Federal and State motor fuel taxes have not been increased within the last decade, and there is substantial opposition at the Federal and State level to increasing the current motor fuel tax rates. Additionally, technological advances, such as increased fuel efficiency and alternative fuels, have the potential to reduce the ability of the current motor fuel tax system to equitably pay for the costs of constructing, maintaining, and operating the arterial street and highway facilities. Currently, the cost of building and maintaining freeways and State highways in Wisconsin is largely paid for through motor fuel taxes and vehicle registration fees. In contrast, the construction and maintenance of county and local arterial streets and highways are generally paid for through local property taxes, with 25 percent or less paid through user fees. There is merit in having the users of the transportation system pay the actual costs of the transportation system, and as travel behavior is affected by the cost of travel, user fees can encourage the use of alternative modes of travel, lessening the number of vehicles, and potentially the amount of congestion, on the arterial street and highway network. VISION 2050 supports the user fee concept, including potential increases in motor fuel taxes and consideration of alternative user fees that either supplement or replace the motor fuel tax system. Alternative user fees that should be considered include a VMT fee, tolling, and/or congestion pricing.

    - **Vehicle-Miles of Travel (VMT) Fee** – A VMT fee is a road pricing measure that imposes a fee on a motorist based on the total distance they drive over a specified period of time. A distance-based fee would encourage residents to drive less, potentially reducing total VMT, traffic volumes, and congestion. This strategy also provides a more equitable means of paying

for the costs of the construction, maintenance, and operation of the transportation system as motorists would pay for their actual use of the transportation system, as opposed to paying based on the amount of fuel purchased, which is affected by the fuel efficiency of their vehicle, as a proxy for the amount their vehicle uses the transportation system. Studies and pilot projects across the country suggest that VMT fees could potentially replace or supplement Federal and State motor fuel taxes. Implementing a VMT fee utilizing technologies such as a GPS unit or an in-vehicle device that would collect mileage data has faced obstacles due to technology uncertainty, privacy concerns, and cost implementation issues. However, low-technology options, such as incorporating odometer readings during the annual vehicle registration process, are also possible. In 2019, during the development of the 2019-2021 State budget, further study of VMT fees was discussed by the State Legislature, although the adopted budget did not include a requirement to conduct further study.

- **Tolling** – Tolling requires a motorist to pay a fee to use a particular highway facility. Requiring motorists to pay for the facilities they use would provide additional funds to cover the costs of construction, maintenance, and operation of those facilities, and may result in residents choosing alternative modes of transportation. Federal law currently prohibits the implementation of tolls on Federal-aid highways, with exceptions in specific circumstances. WisDOT conducted a study in 2016 on the feasibility of tolling as a potential user fee model to fund transportation. Similar to VMT fees, further study of tolling was discussed in 2019 by the State Legislature, but the adopted budget did not include a requirement to conduct further study.

- **Congestion Pricing** – Congestion pricing is a user fee for an express lane or highway facility that adjusts based on the time of day and level of congestion. Applying economic supply and demand methodology, the user fee for the express lane or highway facility increases during times of high traffic volume and congestion, and decreases during times of low traffic volume and no congestion. Effective express lane congestion pricing ensures free flowing traffic in the toll lanes, efficiently moving vehicles through a congested corridor as well as providing additional revenue for the construction, maintenance, and operation of the transportation system. Effective highway facility congestion pricing encourages travelers to shift to alternative modes of transportation particularly during peak travel times, or encourages motorists to seek alternative routes or change the time of their travel, potentially reducing congestion on the highway facility.

Congestion Pricing Example
Credit: Minnesota Department of Transportation

- **Parking Pricing Strategies** – Parking pricing strategies involve charging user fees for commercial and residential parking facilities. The availability of free parking encourages driving while the cost associated with maintaining parking facilities is paid by everyone, including those who do not drive, through higher prices on merchandise, food, and rent. Imposing a user fee on parking encourages individuals to use alternatives to the automobile to travel to entertainment and retail establishments and also encourages

residents to reduce the number of vehicles they own. A user fee for parking also places more of the costs associated with maintaining parking facilities onto those who use them. VISION 2050 supports the implementation and expansion of parking pricing strategies.

➤ Recommendation 5.4: Promote travel demand management

VISION 2050 recommends a regionwide program to aggressively promote transit use, bicycle use, ridesharing, pedestrian travel, working remotely, and work-time rescheduling, including compressed work weeks. The program would include education, marketing, and promotion elements aimed at encouraging alternatives to drive-alone personal vehicle travel. VISION 2050 further recommends expanding programs and services that provide residents in Southeastern Wisconsin the opportunity to reduce personal vehicle ownership and vehicular travel, which include car sharing services and a live near your work program.

A Car Sharing Service
Credit: City of Milwaukee

- **Car Sharing Services** – Car sharing services provide an option for travelers who primarily rely on public transit and non-motorized transportation, but at times need a vehicle for special trips such as grocery shopping or trips to rural areas. Typically, a privately owned vehicle entails fixed costs—such as insurance or a car loan—that an owner must pay regardless of the amount they drive, while car sharing services allow drivers to pay per trip. Car sharing services reduce the need for households to own a personal vehicle and reduce a household's VMT because users would only drive when necessary, rather than out of convenience. Local governments can enhance car sharing services by providing dedicated on-street parking spots exclusively for car sharing vehicles at strategic locations. Zipcar, an existing car sharing service in the City of Milwaukee, has several stations located across downtown, the Lower East Side, and the campuses of the University of Wisconsin-Milwaukee and Marquette University. VISION 2050 recommends expanding car sharing services where appropriate in Southeastern Wisconsin.

- **Live Near Your Work Program** – Live near your work programs provide down payment assistance, location efficient mortgages, and rent subsidies for people who buy or rent a home near their employer. Encouraging residents to live near their work reduces VMT and increases transit use. Several Milwaukee area companies participate in an employer-assisted housing program that provides assistance to employees who seek home ownership. These types of programs can be designed to encourage homeownership close to work. VISION 2050 recommends expanding programs similar to the employer-assisted housing program to encourage employees to live near their work.

➤ Recommendation 5.5: Facilitate transit, bicycle, and pedestrian movement in local land use plans and zoning

VISION 2050 recommends that local governments facilitate transit, bicycle, and pedestrian movement as they prepare and implement detailed, site-specific neighborhood and major activity center land use plans. The design and layout of neighborhoods and major activity centers heavily influence residents' transportation choices. Land use strategies recommended under the land use component of VISION 2050 promote transit, bicycle, and pedestrian movement and involve mixed-use and high-density development and changes in parking regulations.

- **Neighborhood Plans** – Mixed-use and higher density neighborhoods can facilitate bicycling and walking by reducing vehicle dependency. Neighborhoods with employment, shopping, parks, and entertainment options nearby provide the opportunity for residents to reach their destinations without a vehicle. Many local governments in Southeastern Wisconsin have recognized, in their planning and land use regulations, the need for improved internal circulation and transit access in addition to the desirability of mixed land uses and higher development densities. Neighborhood plans that incorporate these aspects, which encourage using alternative modes of transportation, can be achieved through zoning, official mapping, subdivision control, site plan review, and site permitting measures. Transit-oriented development (TOD), as described under the land use component of VISION 2050, involves the development of multifamily buildings and buildings with mixed-use development surrounding rapid transit and commuter rail stations. Neighborhood development around transit stations increases the transit accessibility to a number of destinations such as jobs and entertainment, increasing the desirability and attractiveness of transit and reducing vehicle dependency. TOD also provides convenient and safe access for walking and bicycling.

- **Limit Parking Availability** – A strategy that can encourage using alternative modes of transportation in urban areas is to limit the availability of parking in mixed-use and high-density developments. Limiting parking availability while providing the necessary amenities and services that promote transit use, bicycling, and walking would decrease the likelihood that people will drive and increase the likelihood that people will use public transportation, bike, or walk to and from an area. Many local governments have zoning ordinances that require the provision of a minimum number of parking spaces for residential developments (e.g., based on the number of apartment units) and for commercial developments (e.g., based on store square footage), which tends to encourage personal vehicle use. VISION 2050 recommends local governments in urban areas consider removing minimum parking requirements from their zoning ordinances.

➤ Recommendation 5.6: Partner with private-sector mobility service providers

Partnerships should be developed with private-sector mobility service providers to advance an equitable, affordable, and efficient transportation system in the Region.

Emerging trends in shared-use transportation are rapidly evolving, with private-sector mobility providers that offer new services such as shared micromobility (e.g., bike and scooter share programs), app-based ride hailing (e.g., Uber and Lyft), on-demand carpooling, and other app-based mobility options. These new services have the potential to have both positive and negative impacts on the Region. For example, shared-use transportation services could reduce personal vehicle ownership and drive-alone personal vehicle travel, particularly when they are used to complement regular public transit use. However, these services also have the potential to pose safety hazards, increase VMT, and reduce public transit use. VISION 2050 recommends that local, county, and State agencies and units of governments develop partnerships with private-sector mobility service providers to advance an equitable, affordable, and efficient transportation system in the Region. When necessary, local and county governments should also adapt plans and ordinances to:

- Prioritize safety for all users of the transportation system

- Accommodate people with disabilities

- Provide affordable options
- Encourage active and shared-use travel when appropriate
- Develop data-sharing agreements that allow all mobility service providers to better serve transportation needs
- Support the use of public transit as the primary mode of shared mobility by partnering with private-sector mobility services to provide first-mile/last-mile accessibility to transit and to supplement transit service during off-peak service times or in areas with lower-density development patterns

Description of Arterial Streets and Highways Element

Arterial streets and highways are those portions of the total street and highway system principally intended to provide travel mobility, serving the through movement of traffic and providing transportation service between major subareas of a region and also through the region. Though access to abutting property may be a secondary function of some types of arterial streets and highways, the primary function of arterial streets and highways is traffic movement. Together, the arterial streets and highways should form an integrated, areawide system. Arterials are typically spaced about one-half mile apart in Mixed-Use City Center areas and Mixed-Use Traditional Neighborhood areas, one-half mile to one mile apart in Small Lot Traditional Neighborhood areas (depending on area density), one mile apart in Medium Lot Neighborhood areas, two miles apart in Large Lot Neighborhood areas, and more than two miles apart in Large Lot Exurban and Rural Estate areas.

The arterial street and highway system under VISION 2050 totals 3,669.1 route-miles. Approximately 92 percent, or 3,371.2 of these route-miles, are recommended to be resurfaced and reconstructed to their existing traffic carrying capacity. Approximately 233.1 route-miles, or about 6 percent of the year 2050 arterial street and highway system, are recommended to be widened to provide additional through traffic lanes. Approximately 64.8 route-miles, or about 2 percent of the total arterial street mileage, are recommended new arterial facilities to be constructed. Table 1.12 and Maps 1.15 through 1.21 display the arterial streets and highways element of VISION 2050.

VISION 2050 does not make any recommendation with respect to whether the remaining 10.0 route-miles of IH 43 between Howard Avenue and Silver Spring Drive, when reconstructed, should be reconstructed with or without additional traffic lanes. VISION 2050 recommends that preliminary engineering conducted for the reconstruction of this segment of IH 43 should include the consideration of alternatives for rebuilding the freeway with additional lanes and rebuilding it with the existing number of lanes. The decision regarding how this segment of IH 43 would be reconstructed would be made as part of preliminary engineering and an environmental impact study conducted by WisDOT. During preliminary engineering, WisDOT would consider and evaluate a number of alternatives, including rebuilding as is, various options of rebuilding to modern design standards, compromises to rebuilding to modern design standards, rebuilding with additional lanes, and rebuilding with the existing number of lanes. Only at the conclusion of preliminary engineering would a determination be made as to how this segment of IH 43 freeway would be reconstructed. Following the conclusion of the preliminary engineering for the reconstruction, VISION 2050 would be amended to reflect the decision made as to how IH 43 between Howard

Table 1.12
Arterial Street and Highway System Preservation, Improvement, and Expansion by Arterial Facility Type by County: VISION 2050

County	Arterial Facility Type	System Preservation (miles)	System Improvement (miles)	System Expansion (miles)	Total Miles
Kenosha	Freeway	12.0	--	--	12.0
	Surface Arterial	322.2	27.4	3.9	353.5
	Subtotal	334.2	27.4	3.9	365.5
Milwaukee	Freeway	44.6[a]	23.4	--	68.0
	Surface Arterial	719.0	9.3	6.5	734.8
	Subtotal	763.6	32.7	6.5	802.8
Ozaukee	Freeway	13.3	14.1	--	27.4
	Surface Arterial	262.4	18.5	3.1	284.0
	Subtotal	275.7	32.6	3.1	311.4
Racine	Freeway	12.0	--	--	12.0
	Surface Arterial	416.1	15.8	8.8	440.7
	Subtotal	428.1	15.8	8.8	452.7
Walworth	Freeway	49.8	4.8[b]	12.4	67.0[b]
	Surface Arterial	408.8	4.4	10.3	423.5
	Subtotal	458.6	9.2	22.7	490.5
Washington	Freeway	35.8	6.4	--	42.2
	Surface Arterial	389.8	8.8	15.5	414.0
	Subtotal	425.6	15.2	15.5	456.4
Waukesha	Freeway	34.4	24.4	--	58.8
	Surface Arterial	650.9	75.8	4.3	731.0
	Subtotal	685.3	100.2	4.3	789.8
Region	Freeway	201.9	73.1[c]	12.4	287.4[c]
	Surface Arterial	3,169.3	160.0	52.4	3,381.7
	Total	3,371.2	233.1	64.8	3,669.1

[a] *Includes the 10.0 miles of IH 43 between Howard Avenue and Silver Spring Drive. VISION 2050 does not make a recommendation regarding whether this section should be reconstructed with or without additional traffic lanes.*

[b] *Represents the conversion of approximately 4.8 miles of the USH 12 Whitewater bypass, currently a two-traffic-lane surface arterial, to a four-traffic-lane freeway.*

[c] *Includes the widening of approximately 63.6 miles of the existing regional freeway system, and the conversion of about 4.8 miles of the USH 12 Whitewater bypass, currently a two-traffic-lane surface arterial, to a four-traffic-lane freeway.*

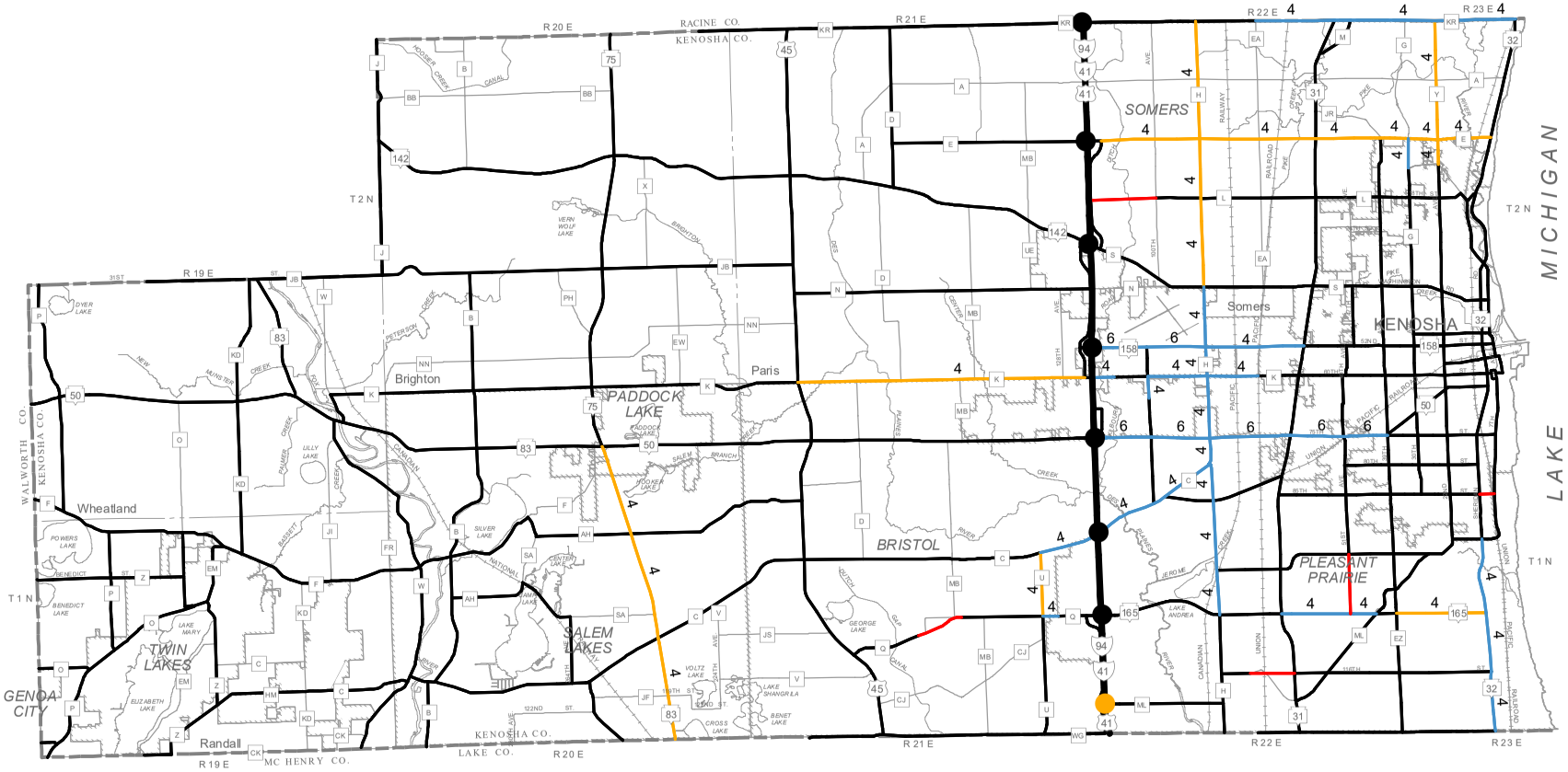
Source: SEWRPC

Avenue and Silver Spring Drive would be reconstructed. Any construction along this segment of IH 43 prior to preliminary engineering—such as bridge reconstruction—should fully preserve and accommodate the future option of rebuilding the freeway with additional lanes.

The arterial system capacity expansion recommended in VISION 2050 represents about an 8 percent expansion in arterial system lane-miles over the next 30 years. The year 2050 arterial street and highway system is designed to serve the expected increase in VMT in the Region of 20 percent by the year 2050 (even with a more than doubling of transit and a more compact development pattern recommended under VISION 2050). The system is designed to address the forecast year 2050 congestion that may be expected, even if all the other elements of VISION 2050 are fully implemented, including land use, public transit, travel demand management, transportation systems management, and bicycle and pedestrian facilities. Implementation of the year 2050 arterial system would be expected to result in overall traffic congestion, travel time delay, and average trip times to be essentially maintained at, or modestly improved from, current levels.

The VISION 2050 arterial street and highway system is designed to serve an expected 20% increase in VMT by the year 2050, with an 8% increase in arterial system lane-miles.

Map 1.15
Functional Improvements to the Arterial Street and Highway System in Kenosha County: VISION 2050



ARTERIAL STREET OR HIGHWAY

- NEW
- WIDENING AND/OR OTHER IMPROVEMENT TO PROVIDE SIGNIFICANT ADDITIONAL CAPACITY
- RESERVE RIGHT-OF-WAY TO ACCOMMODATE POTENTIAL FUTURE IMPROVEMENT BEYOND 2050 (ADDITIONAL LANES OR NEW FACILITY)
- RESURFACING OR RECONSTRUCTION TO PROVIDE ESSENTIALLY THE SAME CAPACITY
- 4 NUMBER OF TRAFFIC LANES FOR NEW OR IMPROVED FACILITY, INCLUDING RIGHT-OF-WAY RESERVATIONS (2 LANES WHERE UNNUMBERED)

FREEWAY INTERCHANGE

- EXISTING
- RESERVE RIGHT-OF-WAY TO ACCOMMODATE FUTURE IMPROVEMENT (POTENTIAL NEW INTERCHANGE)

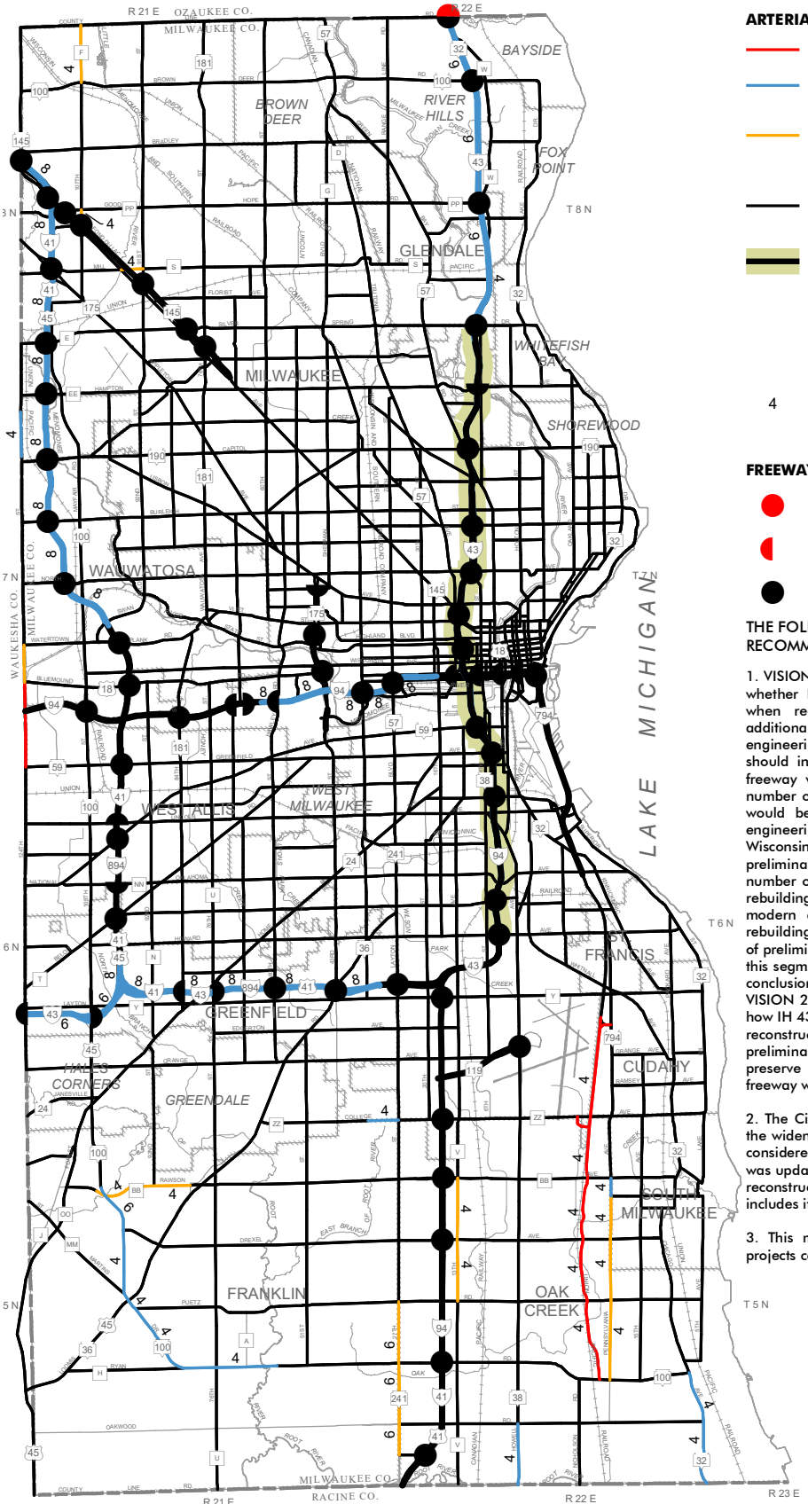
Note: This map has been updated to not show capacity expansion projects completed through the end of 2020.

N

0 1 2 3 Miles

Source: SEWRPC

Map 1.16
Functional Improvements to the Arterial Street and Highway System in Milwaukee County: VISION 2050



ARTERIAL STREET OR HIGHWAY

- NEW
- WIDENING AND/OR OTHER IMPROVEMENT TO PROVIDE SIGNIFICANT ADDITIONAL CAPACITY
- RESERVE RIGHT-OF-WAY TO ACCOMMODATE POTENTIAL FUTURE IMPROVEMENT BEYOND 2050 (ADDITIONAL LANES OR NEW FACILITY)
- RESURFACING OR RECONSTRUCTION TO PROVIDE ESSENTIALLY THE SAME CAPACITY
- NO RECOMMENDATION WITH RESPECT TO WHETHER THIS SEGMENT OF IH 43 SHOULD BE RECONSTRUCTED WITH OR WITHOUT ADDITIONAL LANES. DETERMINATION AS TO WHETHER IT WOULD BE RECONSTRUCTED WITH OR WITHOUT ADDITIONAL LANES TO BE MADE DURING PRELIMINARY ENGINEERING. (SEE NOTE 1 BELOW)
- 4 NUMBER OF TRAFFIC LANES FOR NEW OR IMPROVED FACILITY, INCLUDING RIGHT-OF-WAY RESERVATIONS (2 LANES WHERE UNNUMBERED)

FREEWAY INTERCHANGE

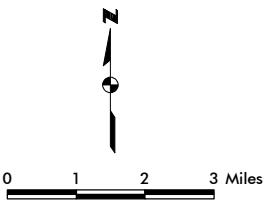
- NEW
- HALF NEW
- EXISTING

THE FOLLOWING NOTES SUPPLEMENT THE RECOMMENDATIONS PORTRAYED ON THIS MAP:

1. VISION 2050 does not make any recommendation with respect to whether IH 43 between Howard Avenue and Silver Spring Drive, when reconstructed, should be reconstructed with or without additional traffic lanes. VISION 2050 recommends that preliminary engineering conducted for the reconstruction of this segment of IH 43 should include the consideration of alternatives for rebuilding the freeway with additional lanes and rebuilding it with the existing number of lanes. The decision regarding how this segment of IH 43 would be reconstructed would be made as part of preliminary engineering and an environmental impact study conducted by the Wisconsin Department of Transportation (WisDOT). During preliminary engineering, WisDOT would consider and evaluate a number of alternatives, including rebuilding as is, various options of rebuilding to modern design standards, compromises to rebuilding to modern design standards, rebuilding with additional lanes, and rebuilding with the existing number of lanes. Only at the conclusion of preliminary engineering would a determination be made as to how this segment of IH 43 freeway would be reconstructed. Following the conclusion of the preliminary engineering for the reconstruction, VISION 2050 would be amended to reflect the decision made as to how IH 43 between Howard Avenue and Silver Spring Drive would be reconstructed. Any construction along this segment of IH 43 prior to preliminary engineering—such as bridge reconstruction—should fully preserve and accommodate the future option of rebuilding the freeway with additional lanes.

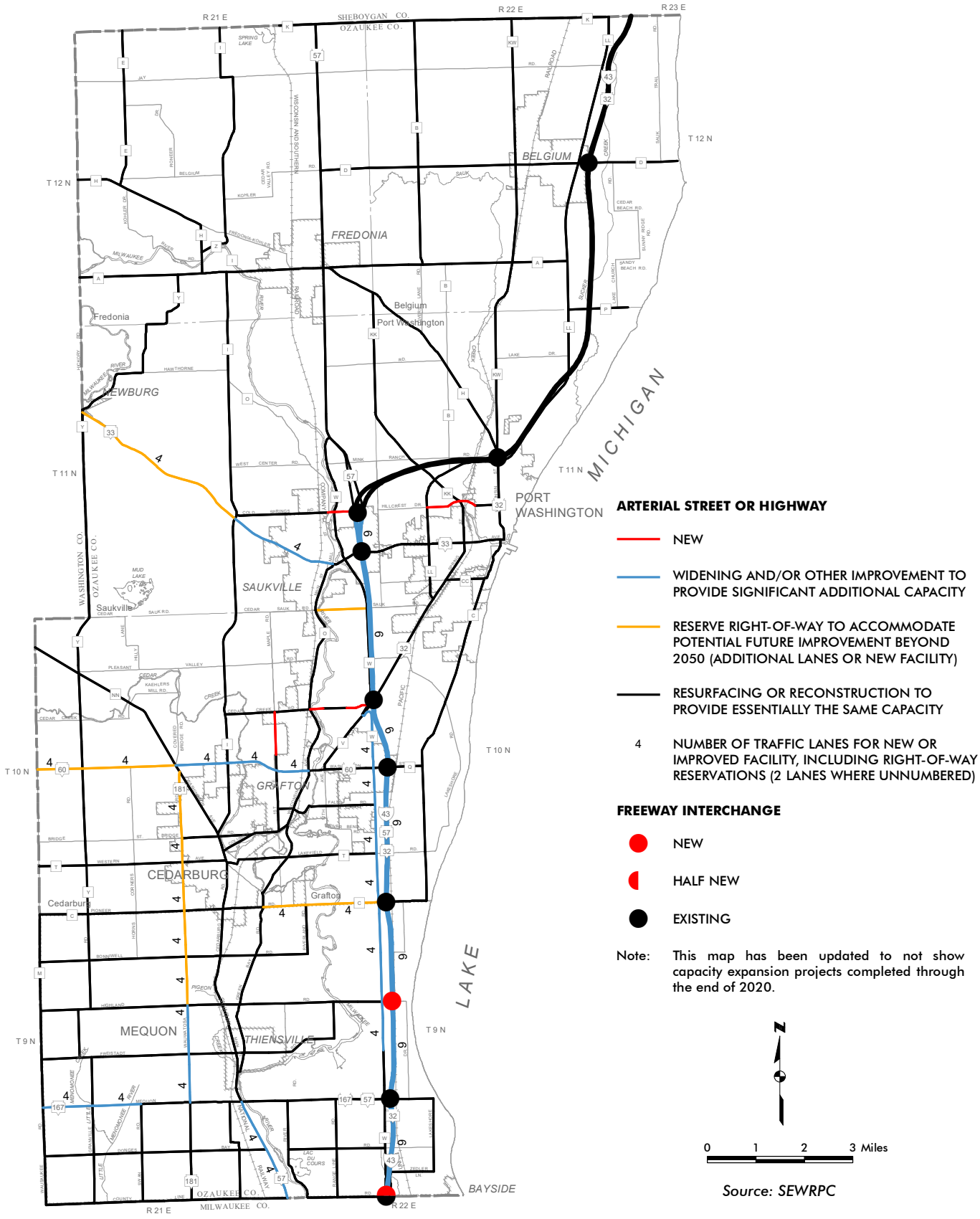
2. The Cities of Milwaukee and Wauwatosa expressed opposition to the widening of IH 94 between 70th Street and 16th Street, which is considered a committed project as WisDOT, at the time VISION 2050 was updated in 2020, had completed preliminary engineering for the reconstruction of this segment of IH 94 and their preferred alternative includes its widening.

3. This map has been updated to not show capacity expansion projects completed through the end of 2020.



Source: SEWRPC

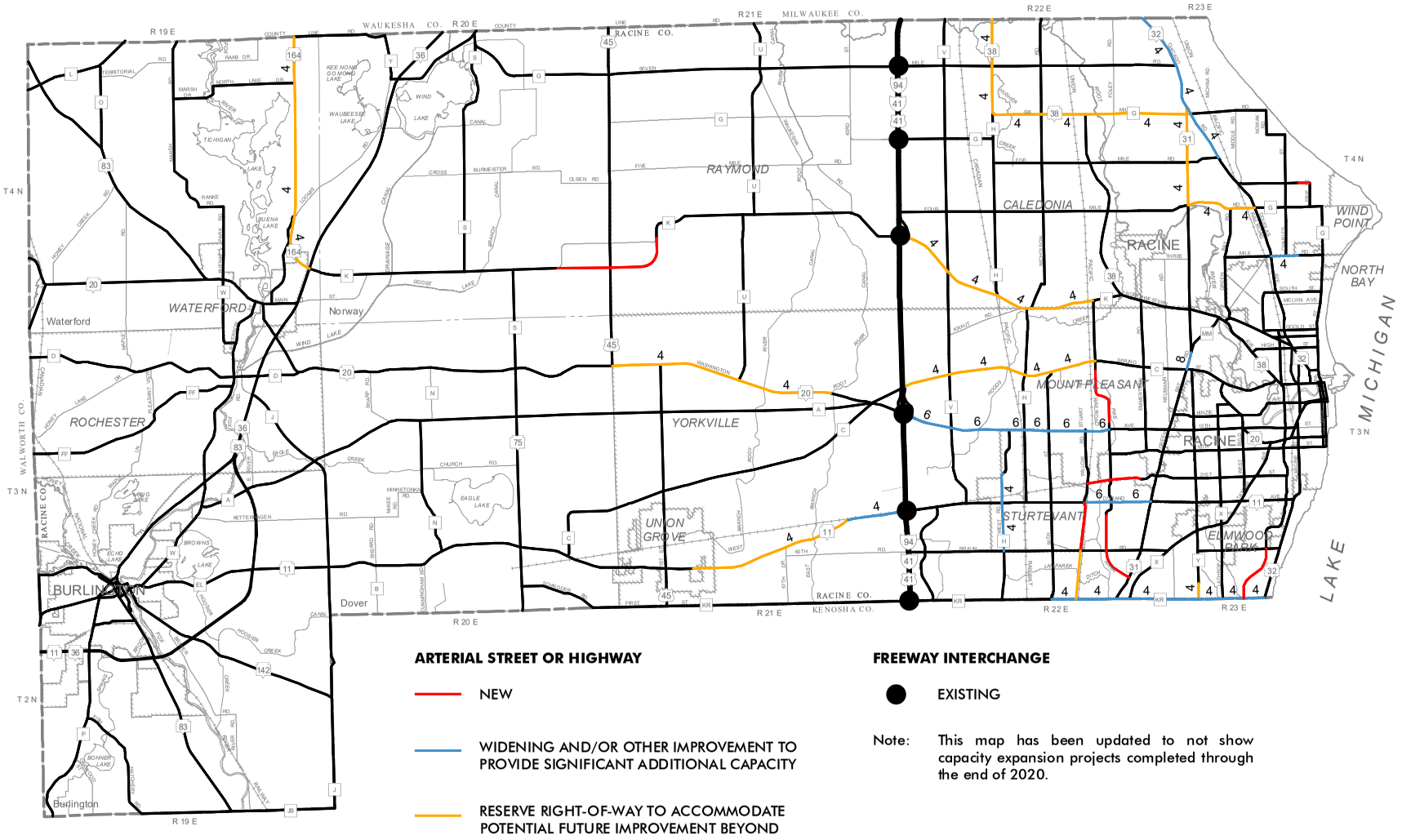
Map 1.17
Functional Improvements to the Arterial Street and Highway System in Ozaukee County: VISION 2050



Note: This map has been updated to not show capacity expansion projects completed through the end of 2020.

Source: SEWRPC

Map 1.18
Functional Improvements to the Arterial Street and Highway System in Racine County: VISION 2050



Source: SEWRPC

ARTERIAL STREET OR HIGHWAY

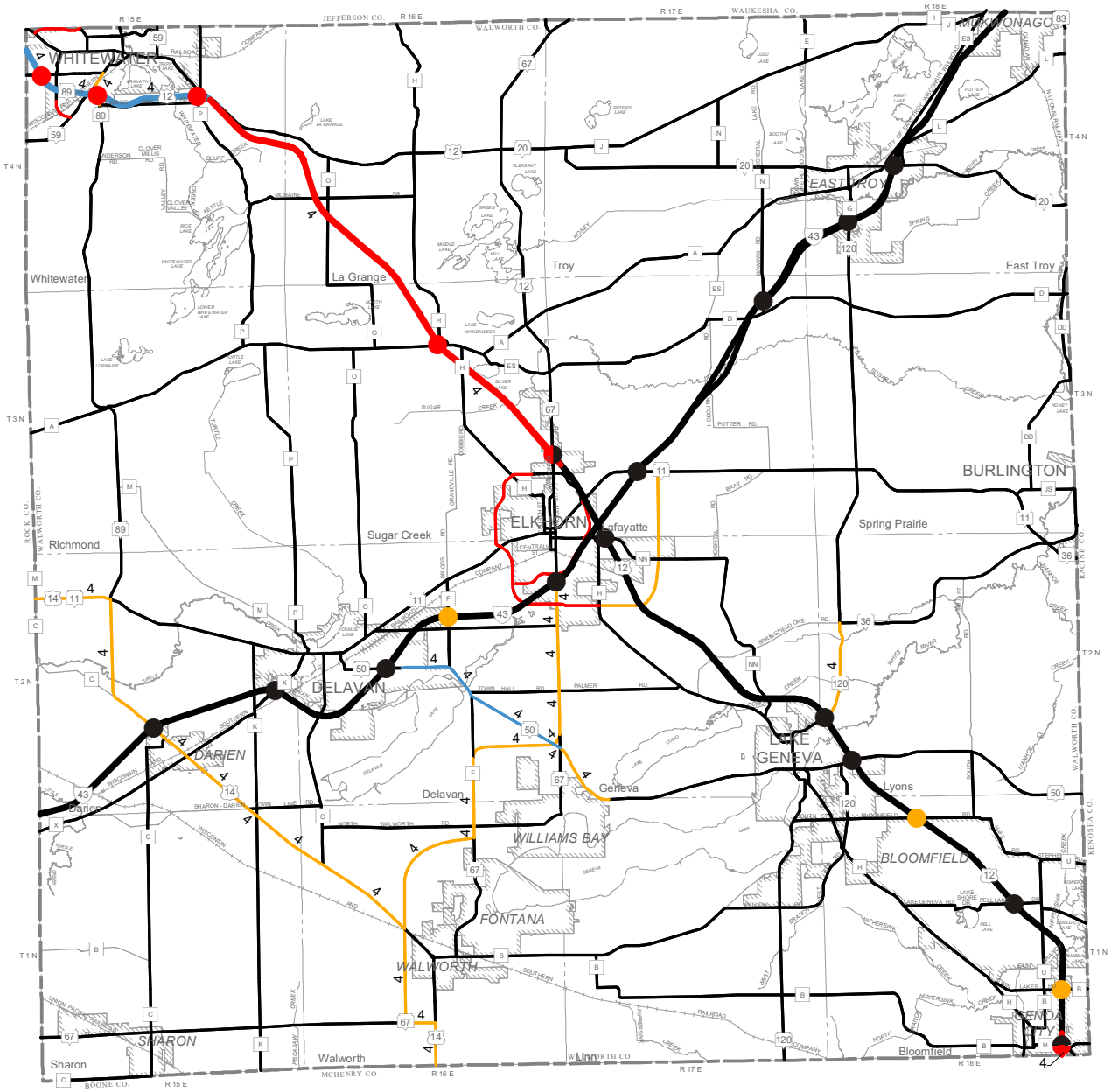
- NEW
- WIDENING AND/OR OTHER IMPROVEMENT TO PROVIDE SIGNIFICANT ADDITIONAL CAPACITY
- RESERVE RIGHT-OF-WAY TO ACCOMMODATE POTENTIAL FUTURE IMPROVEMENT BEYOND 2050 (ADDITIONAL LANES OR NEW FACILITY)
- RESURFACING OR RECONSTRUCTION TO PROVIDE ESSENTIALLY THE SAME CAPACITY
- 4 NUMBER OF TRAFFIC LANES FOR NEW OR IMPROVED FACILITY, INCLUDING RIGHT-OF-WAY RESERVATIONS (2 LANES WHERE UNNUMBERED)

FREEWAY INTERCHANGE

- EXISTING

Note: This map has been updated to not show capacity expansion projects completed through the end of 2020.

Map 1.19
Functional Improvements to the Arterial Street and Highway System in Walworth: VISION 2050



ARTERIAL STREET OR HIGHWAY

- NEW
- WIDENING AND/OR OTHER IMPROVEMENT TO PROVIDE SIGNIFICANT ADDITIONAL CAPACITY
- RESERVE RIGHT-OF-WAY TO ACCOMMODATE POTENTIAL FUTURE IMPROVEMENT BEYOND 2050 (ADDITIONAL LANES OR NEW FACILITY)
- RESURFACING OR RECONSTRUCTION TO PROVIDE ESSENTIALLY THE SAME CAPACITY
- 4 NUMBER OF TRAFFIC LANES FOR NEW OR IMPROVED FACILITY, INCLUDING RIGHT-OF-WAY RESERVATIONS (2 LANES WHERE UNNUMBERED)

FREEWAY INTERCHANGE

- NEW
- HALF NEW
- EXISTING
- RESERVE RIGHT-OF-WAY TO ACCOMMODATE FUTURE IMPROVEMENT (POTENTIAL NEW INTERCHANGE)

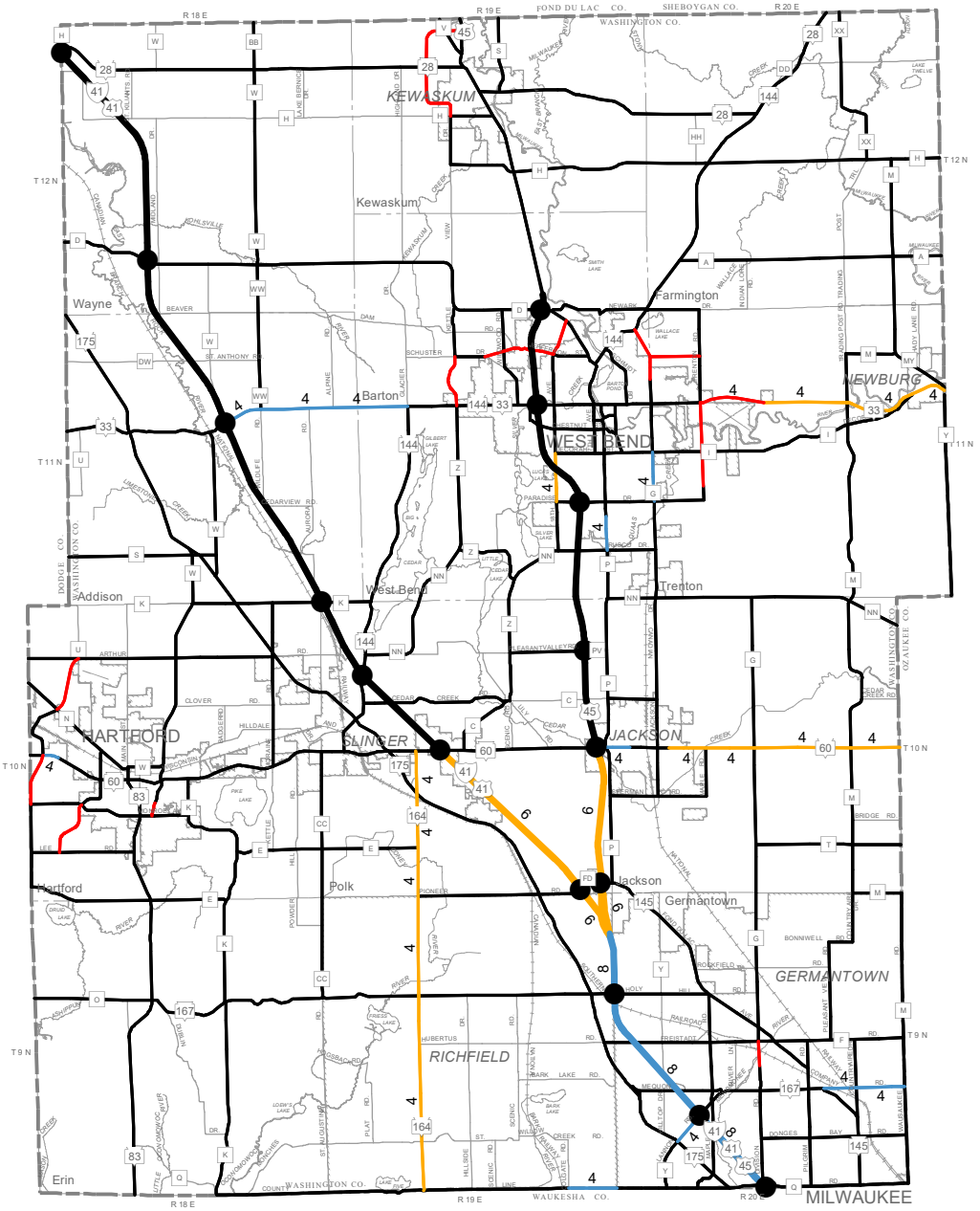
Note: This map has been updated to not show capacity expansion projects completed through the end of 2020.

N

0 1 2 3 Miles

Source: SEWRPC

Map 1.20
Functional Improvements to the Arterial Street and Highway System in Washington County: VISION 2050



ARTERIAL STREET OR HIGHWAY

- NEW
- WIDENING AND/OR OTHER IMPROVEMENT TO PROVIDE SIGNIFICANT ADDITIONAL CAPACITY
- RESERVE RIGHT-OF-WAY TO ACCOMMODATE POTENTIAL FUTURE IMPROVEMENT BEYOND 2050 (ADDITIONAL LANES OR NEW FACILITY)
- RESURFACING OR RECONSTRUCTION TO PROVIDE ESSENTIALLY THE SAME CAPACITY
- 4 NUMBER OF TRAFFIC LANES FOR NEW OR IMPROVED FACILITY, INCLUDING RIGHT-OF-WAY RESERVATIONS (2 LANES WHERE UNNUMBERED)

FREEWAY INTERCHANGE

- EXISTING

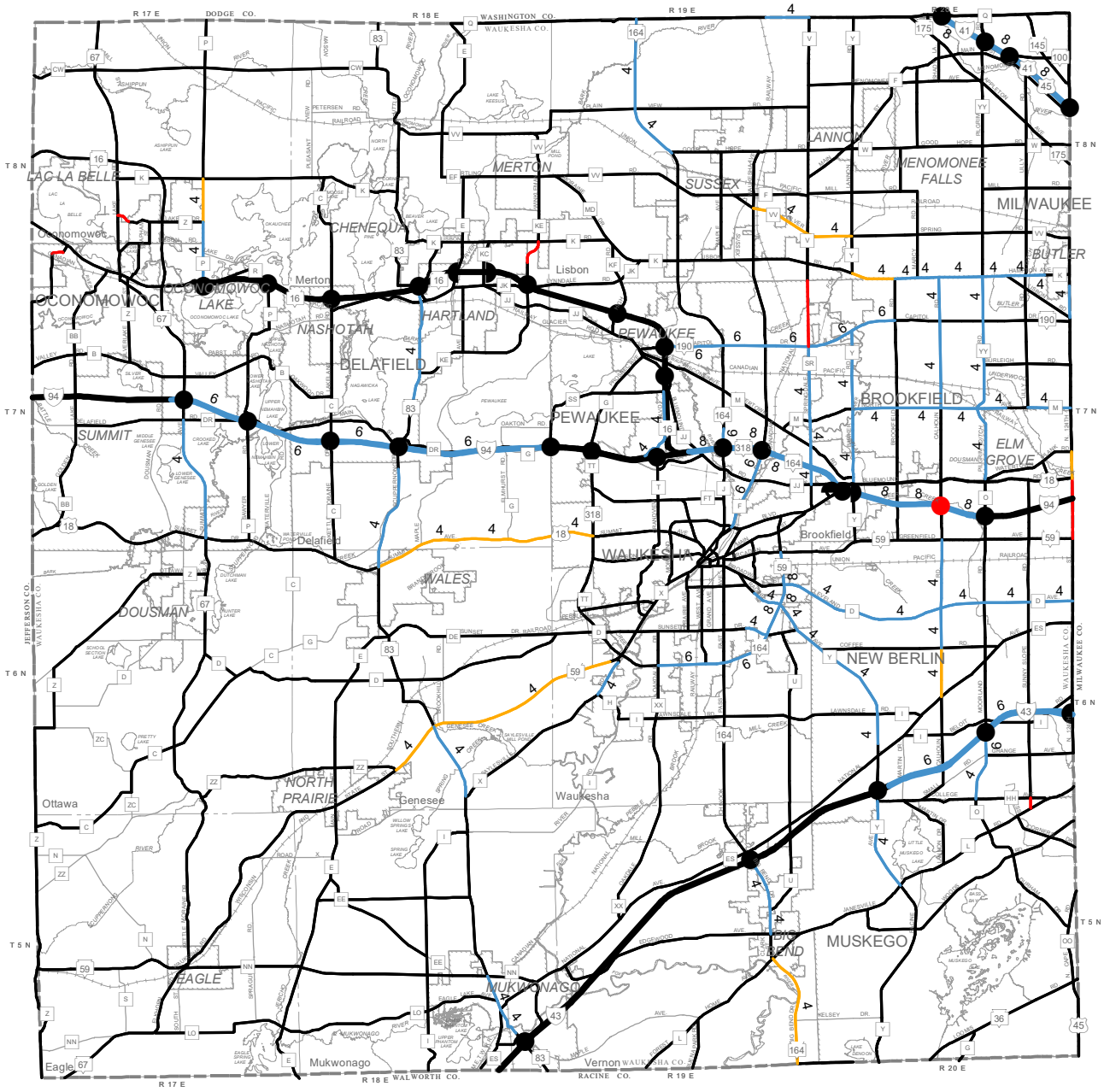
Note: This map has been updated to not show capacity expansion projects completed through the end of 2020.

N

0 1 2 3 Miles

Source: SEWRPC

Map 1.21
Functional Improvements to the Arterial Street and Highway System in Waukesha County: VISION 2050



ARTERIAL STREET OR HIGHWAY

- NEW
- WIDENING AND/OR OTHER IMPROVEMENT TO PROVIDE SIGNIFICANT ADDITIONAL CAPACITY
- RESERVE RIGHT-OF-WAY TO ACCOMMODATE POTENTIAL FUTURE IMPROVEMENT BEYOND 2050 (ADDITIONAL LANES OR NEW FACILITY)
- RESURFACING OR RECONSTRUCTION TO PROVIDE ESSENTIALLY THE SAME CAPACITY
- 4 NUMBER OF TRAFFIC LANES FOR NEW OR IMPROVED FACILITY, INCLUDING RIGHT-OF-WAY RESERVATIONS (2 LANES WHERE UNNUMBERED)

FREEWAY INTERCHANGE

- NEW
- EXISTING

Note: This map has been updated to not show capacity expansion projects completed through the end of 2020.

N

0 1 2 3 Miles

Source: SEWRPC

In addition, access by automobile to major activity centers (such as retail centers, major parks, universities, and health care providers) and regional destinations (such as Milwaukee Mitchell International Airport and the Milwaukee Regional Medical Center) would be expected to remain about the same by the year 2050 for the Region's population. Implementation of the year 2050 arterial street and highway system would be expected to improve overall safety and maintain the condition of the pavement and bridges along the planned arterial system.

➤ Recommendation 6.1: Keep the Region's arterial street and highway system in a state of good repair

VISION 2050 recommends that the condition of all 3,600 miles of the roadways that are part of the Region's existing arterial street and highway system be preserved to maintain their ability to effectively carry higher levels of people and goods. Preserving the condition of the Region's arterial streets and highways—including pavement, bridges, and all other infrastructure in the roadway right-of-way[20]—is critical to provide for safe and efficient travel throughout the Region. As they carry a higher level of people and goods each day, preserving the condition of the arterial streets and highways is important for achieving a high standard of living for the Region's residents and giving the Region a competitive edge in terms of retaining and attracting businesses.

Roadways and bridges have a long life before they need to be replaced or reconstructed (typically 50 to 60 years for highways and 50 to 75 years for bridges). However, because of vehicular use (particularly by trucks) and changing weather conditions (freeze/thaw cycle in winters and hot summers), roadways and bridges deteriorate over time. As the comfort and safety of drivers can be affected when these facilities reach a critical point of deterioration, it is necessary to improve the condition of roadways and bridges, along with other highway infrastructure, through routine maintenance, periodic rehabilitation, and reconstruction.[21] VISION 2050 recommends that the condition of roadway pavements and bridges be maintained at least to its current level through the year 2050. Specifically, it recommends maintaining or increasing the baseline proportion of pavement that is in "good" condition (about 55 percent in 2013), and maintaining or reducing the baseline proportion of pavement in "bad" condition (about 11 percent in 2013), during the life of the plan. Similarly, it recommends maintaining or increasing the baseline proportion of bridges that have a sufficiency rating of 80 or more (about 71 percent in 2013), and maintaining or reducing the baseline proportion of bridges with a sufficiency rating less than 50 (about 5 percent in 2013), during the life of the plan.

- **Asset Management Plans** – As available Federal, State, and local funding is limited, it is important that the timing and choice of rehabilitation and timing of reconstruction/replacement of various roadway features (pavement, bridges, and other roadway infrastructure) be done consistent with their life cycle in order to utilize the available funding effectively. Thus, sound asset

[20] *Other highway infrastructure within the roadway right-of-way would include traffic signals, lighting, signs, culverts, storm sewers, and tunnels.*

[21] *Rehabilitation for highways typically includes resurfacing (removing and overlaying a layer of the pavement) and reconditioning (resurfacing plus spot base repairs). The first rehabilitation typically occurs 20 to 30 years following a roadway's construction or reconstruction, with two subsequent rehabilitations occurring every 8 to 18 years.*

management practices are necessary to effectively utilize the limited funding resources. With respect to pavement, this means focusing more on less costly maintenance work and rehabilitations as needed to maximize pavement life, and thus avoiding substantial pavement deterioration and costly premature pavement reconstruction. To assist in managing the condition of their roadways, many states and local governments have developed asset management plans that include strategies for monitoring the condition of the roadway features and for implementing cost-effective maintenance and rehabilitation activities. In 2019, WisDOT developed and implemented an asset management plan for the pavement and bridges for the highways under the State's jurisdiction. VISION 2050 recommends that local governments within the Region also develop and implement asset management plans for the arterial and nonarterial roadways under their jurisdiction. This would be particularly important for local governments that maintain a large system of arterial and nonarterial roadways.

Complete streets involves designing roadways to provide for the safe and convenient travel of all roadway users traveling by various modes.

➤ Recommendation 6.2: Incorporate "complete streets" concepts for arterial streets and highways

Complete streets is a roadway design concept focused on providing for the safe and convenient travel of all roadway users (of all ages and abilities) traveling by various modes (walking, bicycling, transit, or automobile) within the roadway right-of-way. Complete street features can be implemented to encourage walking and bicycling and the use of transit as alternatives to travel by automobile. VISION 2050 recommends that complete street concepts be considered as part of the reconstruction of existing surface arterial roadways and the construction of new surface arterial roadways. In the interim, VISION 2050 recommends that, at the time of resurfacing of suitable existing arterial roadways with sufficient roadway surface width, consideration be given to providing a partial implementation of complete streets, such as adding bicycle lanes or widened travel shoulders. Reducing the number of travel lanes on multi-lane roadways that have existing and future traffic volumes that do not require the current number of travel lanes—called road diets—is an effective means of implementing complete streets. Road diets have been found to improve safety through reducing travel speeds, allowing the implementation of bicycle accommodations, and shortening the in-traffic crossing distances for pedestrians at intersections and mid-block crossings.

While the purpose of complete streets is to provide for the safe and convenient travel for all users on the roadway, the level of complete street features implemented for a particular roadway would be dependent on the types of land use adjacent to the roadway (urban, suburban, or rural), the prevalence of each type of user, and the preferences of the community in which the roadway is located. In urban areas, complete street features can be added to support and enhance adjacent mixed-use developments. Along arterials where transit service is provided, complete street features can include providing safe and accessible transit stops for transit users within the roadway right-of-way, as described under Recommendations 2.6 and 2.7. Accommodations, such as sidewalks and bicycle lanes, can also be implemented to enhance bicycle and pedestrian safety. In addition, complete street elements can be provided within the roadway right-of-way of lower speed arterial roadways that enhance the adjacent mixed-use developments. This can include providing aesthetic features, like plantings and trees, and more practical features, like bike racks, benches, and tables and chairs. Where sidewalk space is limited, such

features can be temporarily provided by utilizing some of the existing parking stalls, or sections of unused or underused roadway. With respect to rural areas, providing a complete street can involve the provision of wide paved shoulders or a separate multi-use path. More details about the provision of bicycle and pedestrian accommodations can be found under Recommendations 3.1, 3.3, and 3.5.

VISION 2050 also recommends that curbside management practices be considered in urban areas to utilize the curbside space to better accommodate all users. Curbside space can be utilized to implement many of the previously indicated complete street measures—such as improved bus stops, bicycle accommodations, and pedestrian crossings. However, in recent years, there has been increased demand for curbside space to accommodate emerging trends and other uses. For example, expansion of ride hailing, carsharing, and online shopping and associated deliveries has increased pick-ups, drop-offs, and idling in some areas of the Region—with such vehicles often blocking travel and bike lanes for periods of time. To address this, communities can utilize curbside space for flex loading zones in high-demand areas that provide designated areas for such uses either all day or during parts of the day, such as during peak usage times. In communities that permit personal mobility services (bikes, e-bikes, and scooters), designated parking areas for these devices can be provided within the curbside space to assist in avoiding interaction with pedestrians. The curbside space can also be utilized to provide designated areas for mobile businesses (such as food trucks), and to provide charging stations for electric vehicles. As well, the curbside area can be utilized in highly developed areas for stormwater treatment and infiltration to improve water quality and reduce the quantity of runoff entering the storm sewer system.

Given all the potential uses of a roadway, VISION 2050 also recommends that local governments develop neighborhood- or corridor-level complete streets plans that provide recommendations on the most beneficial uses of the roadway right-of-way space. Such plans should include a comprehensive evaluation that considers all potential users, adjacent land uses, and the goals of the community. As part of development of the plans, the complete streets/curb use priorities can be established for the entire community or for particular land uses or zoning districts. In addition, the implementation of complete streets and curbside management can be added to local zoning codes and design standards to guide their implementation as part of future roadway projects or land development and redevelopment. As well, curbside regulations can be established or expanded to ensure that the true value of that space is charged for its use, whether it be for parking or other uses.

➤ Recommendation 6.3: Expand arterial capacity to address residual congestion

VISION 2050 recommends approximately 233.1 route-miles be widened to provide additional through traffic lanes, representing about 6 percent of the total VISION 2050 arterial street and highway system mileage, including 68.3 miles of existing freeways. These recommended widenings are shown as blue lines on Maps 1.15 through 1.21. In addition, VISION 2050 recommends 64.8 route-miles of new arterial facilities, representing about 2 percent of the total year 2050 arterial street mileage. These highway improvements are recommended to address the residual congestion that may not be alleviated by recommended land use, systems management, demand management, bicycle and pedestrian facilities,

Highway improvements are recommended to address the residual congestion that may not be alleviated by other measures recommended under VISION 2050.

and public transit measures. In addition, many of the recommended new arterial facilities are recommended to provide a grid of arterial streets and highways at the appropriate spacing as the planned urban areas of the Region develop to the year 2050.

Each arterial street and highway project would need to undergo preliminary engineering and environmental studies by the responsible State, county, or local government prior to implementation. The preliminary engineering and environmental studies will consider alternative alignments and impacts, including a no-build option, and final decisions as to whether and how a planned project will proceed to implementation will be made by the responsible State, county, or local government at the conclusion of preliminary engineering.

- **Freeways** – VISION 2050 recommends the widening of 68.3 miles of existing freeways with an additional lane in each direction at the time of their reconstruction and the conversion of the 4.8-mile USH 12 bypass of Whitewater to a four-lane freeway.

  VISION 2050 does not make any recommendation with respect to whether the reconstruction of 10.0 miles of IH 43 between Howard Avenue and Silver Spring Drive should include additional traffic lanes. VISION 2050 recommends that preliminary engineering conducted for the reconstruction of this segment of IH 43 should include the consideration of alternatives for rebuilding the freeway with additional lanes and rebuilding it with the existing number of lanes. The decision regarding how this segment of IH 43 would be reconstructed would be made by WisDOT as part of preliminary engineering and an environmental impact study. Any construction along this segment of IH 43 prior to preliminary engineering—such as bridge reconstruction—should fully preserve and accommodate the future option of rebuilding the freeway with additional lanes.

  Currently, the preliminary engineering and environmental impact studies have been completed or nearly completed for 17.2 miles of freeway reconstruction including widening as part of the reconstruction of IH 94 between 70th Street and 16th Street in Milwaukee County and IH 43 between Silver Spring Drive and STH 60. Thus, about 25 percent of the recommended 68.4 miles of freeway capacity expansion that include an additional lane in each direction may be considered as committed projects. The remaining 51.2 miles of recommended freeway widening, as well as the 10.0 miles of IH 43 in Milwaukee County between Howard Avenue and Silver Spring Drive, will undergo preliminary engineering and environmental impact study by WisDOT. During preliminary engineering for the reconstruction of these segments of freeway, alternatives will be considered, including rebuilding as is, various options of rebuilding to modern design standards, compromises to rebuilding to modern design standards, rebuilding with additional lanes, and rebuilding with the existing number of lanes. Only at the conclusion of the preliminary engineering would a determination be made as to how these freeways would be reconstructed.

- **Freeway Interchanges** – On the existing freeway system, VISION 2050 recommends two new freeway interchanges (IH 94 with Calhoun Road and IH 43 with Highland Road). VISION 2050 also recommends the conversion of a half interchange to a full interchange (IH 43 with County Line Road) and the conversion of a

full interchange to a half interchange (IH 94 with Hawley Road). The conversions of these interchanges were part of WisDOT's preferred alternatives for the reconstruction of IH 43 between Silver Spring Drive and STH 60 and IH 94 between 70th Street and 16th Street, respectively. In addition, VISION 2050 identifies four potential new future interchanges for consideration (CTH ML with IH 94, CTH B with USH 12, Bloomfield Road with USH 12, and CTH F with IH 43) and recommends that action be taken by local governments to preserve the potential necessary right-of-way to assure that the future development of these interchanges is not precluded. Should the concerned local governments take the next step of participating with WisDOT in the conduct of a preliminary engineering study of the interchange, and should the preliminary engineering conclude with a recommendation to construct the interchange, the Commission, upon the request of the concerned local governments and WisDOT, would take action to amend VISION 2050 to recommend the construction of the interchange.

➤ Recommendation 6.4: Avoid, minimize, or mitigate environmental impacts of arterial capacity expansion

Transportation system improvements should first avoid or minimize any adverse impacts on environmentally sensitive resources, then mitigate only where impacts are unavoidable.

VISION 2050 recommends that transportation system improvement impacts to natural resource areas (such as primary environmental corridor and wetland) be avoided. Should impacts to these areas be found to be unavoidable through preliminary engineering and environmental impact study, VISION 2050 recommends that impacts to such areas be minimized and, if required, mitigated. Arterial street and highway capacity expansion has been developed through the VISION 2050 planning process to avoid, if possible, impacts to environmentally sensitive resources. The regional transportation planning process first considers land use and transportation alternatives other than arterial street and highway improvements. Arterial street and highway capacity expansion is considered only to address the residual traffic volume and congestion that would not be addressed by these other land use and transportation measures, such as expanded public transit. The Commission has also developed and maintains extensive databases of the location and quality of environmentally sensitive resources in the Region. During the plan development process, efforts were made by the Commission staff to consider arterial improvements and conceptual alignments that avoid, to the extent possible, impacts on environmentally sensitive resources.

- **Avoidance and Minimization of Environmental Impacts** – During the preliminary engineering and environmental studies of arterial street and highway projects with potential impacts to environmentally sensitive resources, it is expected that all feasible efforts will be made to avoid or minimize adverse impacts through consideration of design alternatives. During preliminary engineering and environmental studies, consideration should be given to alternate alignments and cross-sections designed specifically to minimize unavoidable impacts to environmentally sensitive resources. To further minimize impacts, consideration should be given to the use of alternative design features, such as construction of a bridge over wetlands rather than a roadway on fill, even if they significantly increase project costs. Another technique that should be considered to minimize impacts would be to seek exceptions to design standards that would reduce the roadway cross-section through the impacted area, or to include sustainable stormwater management practices such as bioswales and retention systems when possible.

- **Mitigation of Environmental Impacts** – Where environmentally sensitive resources will be unavoidably impacted, and for which compensatory mitigation is required, efforts should focus on the preferred means of mitigation as identified by the appropriate regulatory agencies.[22] Types of mitigation typically considered include enhancement of the remaining adjacent environmentally sensitive resources that will not be impacted as part of the arterial street and highway project, re-creation of the impacted environmentally sensitive resources, creation of new environmentally sensitive resources, or the acquisition and utilization of mitigation bank credits. Potential mitigation sites could include areas within or adjacent to primary environmental corridors, secondary environmental corridors, and isolated natural resource areas; mitigation bank sites; and areas identified in SEWRPC Planning Report No. 42, *A Regional Natural Areas and Critical Species Habitat Protection and Management Plan for Southeastern Wisconsin*.

Vehicular crashes take a heavy toll in life, property damage, and human suffering, and should be minimized through a variety of measures.

➤ Recommendation 6.5: Address safety needs on the arterial street and highway network

The occurrence of crashes can have a negative effect on the Region as they contribute to overall transportation costs; increase public costs for police, emergency medical, and other social services; and cause nonrecurring congestion on the highway system. In addition, vehicular crashes take a heavy toll in life, property damage, and human suffering. Vehicular crashes occur due to one or a combination of the following factors: human error, vehicle failure, and roadway/environmental conditions. VISION 2050 recommends that Federal, State, and local governments, and the Commission, work to:

- **Minimize total traffic crashes on the arterial street and highway system** – Implementing each element of VISION 2050 should minimize the number of total traffic crashes on the arterial street and highway system. For example, the recommended improvement and expansion of public transit and bicycle and pedestrian facilities and implementation of the recommended TDM measures should reduce the growth in vehicle travel, conflicts, and crashes and encourage increased travel on safer facilities and services. Also, the recommended reconstruction of the freeway system with additional traffic lanes should reduce traffic congestion and related traffic crashes. While VMT may be expected to increase by 20 percent by the year 2050, total vehicular crashes are estimated to increase by only 16 to 22 percent with full implementation of all elements of VISION 2050.

[22] *Established Federal and/or State policy and guidelines exist with respect to compensatory mitigation of certain environmentally sensitive resources. With respect to wetlands, all wetland compensatory mitigation efforts must meet the requirements of Section 404 of the Clean Water Act including the U.S. Environmental Protection Agency 404(b)(1) Guidelines (40 CFR Part 230) and the Federal Mitigation Rule (33 CFR Part 332), Section 10 of the Rivers and Harbors Act, Section 281.36 of the* Wisconsin Statutes, *Chapter NR 350 of the* Wisconsin Administrative Code, *2011 State of Wisconsin Act 118, and, for Wisconsin Department of Transportation projects, compensatory mitigation efforts must meet the requirements of the cooperative agreement between the Wisconsin Departments of Natural Resources and Transportation. The Wisconsin Department of Natural Resources, U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, and U.S. Fish and Wildlife Service have jointly developed specific guidelines for required compensatory mitigation for permitted wetland loss in Wisconsin. The document, dated August 2013, is entitled, Guidelines for Wetland Compensatory Mitigation in Wisconsin.*

With respect to highways, strategies that can reduce the number of crashes should be considered for roadways identified as having excessive crashes as part of a safety assessment or during preliminary engineering for their reconstruction or rehabilitation. These strategies can include modifying roadway and roadside elements (such as increasing lane width, adding/widening paved shoulders, installing side barricades, and removing fixed objects along the roadside), improving horizontal and vertical grades, modifying intersections (such as improving signal timing and adding turn lanes), adding/modifying signage and pavement markings, and controlling access. In some cases, the rate of crashes may be reduced by adding capacity along a surface arterial, such as reconstructing an urban two-lane arterial that exceeds its design capacity as a divided roadway. With respect to freeways, strategies to reduce the number of crashes could also include removing ramp entrances and exits on the left side of the freeway, increasing the distance between ramp terminals, and increasing entrance ramp length. Adding capacity on heavily congested freeways can also be expected to reduce crash rates.

- **Minimize total traffic crashes, along with crashes involving fatalities and serious injuries, on the arterial street and highway system** – There are many factors that can affect the severity of a crash, including human factors (age and vulnerability of drivers/passengers, seat belt/helmet use, speed of vehicle, sobriety of driver), vehicle factors (safety features), and roadway/environmental factors (weather conditions, pavement condition, grade, presence of roadside features). Implementing the recommendations of the State's Strategic Highway Safety Plan (SHSP) by the State and local governments would assist in the reduction of crashes involving fatalities and serious injuries.[23] While implementing the SHSP would be expected to reduce overall crashes, addressing the types of crashes emphasized in the SHSP would also be expected to reduce fatalities and serious injuries, which occur at a higher proportion for such crashes. The types of crashes prioritized in the SHSP include intersection crashes, speed-related crashes, head-on and roadway departure crashes, crashes involving pedestrians and bicyclists, alcohol/drug-related crashes, and crashes involving the driver or passengers not wearing a seatbelt.

- **Minimize crashes due to reckless driving** – Reckless driving typically involves operating vehicles with disregard for traffic laws and the safety of others, including driving at excessive speeds. Driving recklessly can greatly increase the opportunity for crashes and the severity of those crashes. For example, nearly 40 percent of vehicular-related fatalities that occurred in the Region in 2018 could be attributed, among other factors, to drivers travelling at excessive speed or too fast for conditions. As such, VISION 2050 recommends that measures effective in addressing reckless driving should be considered, including infrastructure improvements, public education, and increased accountability and enforcement.

    - **Infrastructure Improvements** – Narrowing travel lanes, providing protected or separated bicycle accommodations,

[23] *At the time VISION 2050 was updated, the most recent SHSP was completed in November 2017 for the years 2017-2020 and can be found at wisconsindot.gov/Pages/safety/education/frms-pubs.*

reducing unnecessary travel lanes (road diets), providing pedestrian curb bump-outs, visually narrowing the roadway using streetscaping (such as street trees), ensuring speed limits are appropriate for surrounding land uses, and incorporating other complete street concepts have all been found to lower travel speeds and assist in reducing reckless driving.

- **Public Education** – Campaigns that provide information about the consequences of reckless driving and excessive speeding can be implemented through traditional drivers' education courses, web-based media campaigns, youth programs and activities, community outreach events, and traditional public service announcements.

- **Enforcement and Accountability** – Increased enforcement in known problem areas, mandated safe-driving classes for offenders, and increased data sharing among all agencies are strategies that have been found to reduce reckless driving. While currently not permitted in Wisconsin, automated traffic enforcement (red-light and speed cameras) have also been found to be effective in increasing the obeyance of traffic laws and in reducing reckless driving and crashes. Since 2017, members of the State Legislature have been working on legislation to permit a pilot automated traffic enforcement program in the City of Milwaukee.

VISION 2050 further recommends that these measures and others should be reviewed and implemented in a coordinated effort through State and local transportation departments, law enforcement agencies, and local stakeholders. In some cases, action by the State Legislature may be required.

- **Minimize bicycle and pedestrian-related crashes** – While the number of reported vehicular crashes involving either a bicycle or a pedestrian accounted for only 2 percent of all vehicular crashes in the Region, they were involved in about 18 percent of vehicular crashes resulting in a fatality or serious injury. VISION 2050 promotes the improvement of bicycle and pedestrian safety by recommending implementation of safe and convenient accommodations for bicycle and pedestrian traffic. Specifically, VISION 2050 recommends that as arterial roadways in the Region are reconstructed and resurfaced, bicycle accommodation be considered and implemented, as described in Recommendation 3.1. In addition, VISION 2050 recommends, under Recommendation 3.2, expanding a system of off-street bicycle paths largely constructed in natural resource and utility corridors. VISION 2050 also recommends a network of enhanced bicycle facility corridors through the Kenosha, Milwaukee, and Racine urbanized areas, as described under Recommendation 3.3. These corridors, in particular, would be expected to reduce bicycle-related crashes on higher-speed, higher-volume arterial streets and highways within the three urbanized areas by separating bicyclists from automobiles (either through accommodations along the roadway or through bike boulevards on parallel nonarterials). With respect to pedestrian safety, VISION 2050 recommends providing sidewalks in areas of existing or planned urban development, and encourages making efforts to maximize pedestrian safety at street crossings in these locations, as described in Recommendation 3.5.

- **Reduce conflicts between automobiles and public transit vehicles** – VISION 2050 recommends expanding the use of dedicated transit lanes along rapid, express, and major local transit routes, as described in Recommendation 2.6. The dedicated transit lanes could be provided via auxiliary lanes, or where right-of-way is constrained through peak-period, peak-direction curb-lane parking restrictions. These lanes are intended to reduce travel times and improve transit travel time reliability during times of congestion, but can also reduce the conflicts between automobiles and public transit vehicles by allowing transit vehicles to stop without interrupting the flow of traffic.

- **Reduce vehicle traffic conflicts** – VISION 2050 recommends that traffic engineering measures and access management standards be considered to reduce vehicle traffic conflicts, including freeway modernization, congestion mitigation, and implementation of alternative intersection types.

    - **Freeway Modernization** – It is anticipated that the segment-by-segment reconstruction of the regional freeway system would continue during the time period of VISION 2050. The regional freeway system was originally built in the 1950s, 1960s, and 1970s, and is approaching the end of its useful life. Over the last few decades, there have been significant advances in freeway design, as a result of research and experience in freeway operations. The existing freeway system has many deficiencies in design—left-hand exits and entrances, lack of shoulders, service interchanges spaced too close to freeway-to-freeway interchanges, and multi-point exits. VISION 2050 recommends reconstructing the freeway system to modern design standards, addressing the design deficiencies of the existing freeway system and improving travel safety.

    - **Congestion Mitigation** – Portions of the freeway system in the Region, particularly in Milwaukee and Waukesha Counties, currently experience severe congestion and are projected to experience substantially increased congestion for periods of the day, even if all the VISION 2050 recommendations that do not involve highway capacity expansion are implemented, including improved land use, travel demand and systems management, and improved and expanded public transit. The rate of overall crashes is greater on the segments of congested freeway (typically 2 to 7 times higher). In particular, rear-end crash rates (which make up about 40 percent of total freeway crashes) are 5 to 20 times higher on congested freeway segments, with the highest rates on the most severely congested freeway segments. While it would be expected that freeway modernization would reduce sideswipe crashes, it would not be expected to significantly reduce the number of rear-end crashes, which appear to be more of a result of freeway congestion. Thus, the freeway widenings recommended under Recommendation 6.3 would be expected to improve travel safety by reducing congestion and associated rear-end crashes.

    - **Alternative Intersections** – VISION 2050 recommends that alternative intersection types that reduce the number of vehicle-to-vehicle conflicts be considered, particularly for high-volume intersections. While VISION 2050 does not identify the specific treatment that should be implemented at each

intersection, it recommends that alternative intersection types be considered during the preliminary engineering conducted for the reconstruction of the intersection. Roundabouts are one example of an alternative intersection type increasingly being implemented throughout the Region. While a roundabout is not ideal for every intersection location, when properly designed and located, roundabouts have been found to be effective in reducing the number of crashes, and particularly the severity of crashes. Other intersection types utilized around the country that could be considered on the Region's arterial system include displaced left-turns, median U-turns, restricted crossing U-turns (including J-turn intersections), and quadrant roadways.

  - **Access Management** – Developing and implementing access management standards, as recommended in Recommendation 4.7, along arterial streets and highways would be expected to reduce the number of conflicts that can result in vehicular crashes.

- **Regional Safety Implementation Plan** – VISION 2050 recommends that the Commission, working with WisDOT and local governments, develop a Regional Safety Implementation Plan (RSIP) that will identify a list of intersections and corridors along the Region's arterial streets and highways with the most severe crash rates in each county. These intersections and corridors would be prioritized based on the nature of the crashes and frequency of the crashes resulting in fatalities and serious injuries. This prioritization could be used by the State and local governments to identify intersections and corridors for further, more detailed safety studies and identifying and prioritizing projects for Federal and State Highway Safety Improvement (HSIP) funds. The study would also identify a list of corrective measures to reduce the number and severity of crashes.

Security planning involves preventing and responding to attacks affecting the arterial street and highway system.

➤ Recommendation 6.6: Address security needs related to the arterial street and highway system

Ongoing efforts to prevent and respond to attacks affecting the arterial street and highway system encompass a wide range of Federal, State, and local programs, measures, and initiatives. It is expected that Federal and State agencies will continue to refine transportation security measures over the upcoming years, and work toward closer cooperation, coordination, and integration of tasks at all levels of government in an effort to provide secure transportation networks and facilities throughout the United States. Although the Commission does not currently have a direct role in Federal and State Transportation Security policy decisions and implementation, in the future, the Commission will continue to maintain a supportive regional role for transportation security planning. As the Region's metropolitan planning organization, the Commission will work to coordinate activities with local, State, and Federal agencies and officials to provide a regional forum on security issues, and will continue to provide a high level of support for existing and ongoing transportation security measures.

The Commission will also monitor and assist WisDOT in implementing the security recommendations in its long-range transportation plan entitled *Connections 2030*.[24] The action items in that plan that involve Commission efforts include coordinating border county evacuation plans with Illinois,

[24] *The Wisconsin Department of Transportation,* Connections 2030 Long-Range Multimodal Transportation Plan*, October 2009*.

supporting the development of the transportation element of the National Response Framework, coordinating evacuation plans for Wisconsin's 12 largest communities, studying the needs of essential freight movement, developing the Wisconsin Airport Security Plan, offering security planning assistance to local transit agencies, and developing local plans that can be integrated into statewide emergency relief and disaster preparedness plans, strategies, and policies.

VISION 2050 recommends that the State and local governments in the Region continue to work with the Federal government and the Commission to address the security needs related to the arterial street and highway system:

- **Conduct periodic vulnerability assessments and monitor and strengthen vulnerable infrastructure** – The State has completed a vulnerability assessment of critical transportation infrastructure in Wisconsin, with guidance from the Federal government. The assessment, included in *Connections 2030*, identified transportation facilities in Wisconsin that have the potential to significantly disrupt the State's transportation system, should they lose functionality. Regularly updating this assessment, strengthening identified vulnerable transportation facilities, and regularly monitoring identified facilities would reduce the risk of disruptions to the Region's arterial street and highway system.

- **Develop and maintain county and local government all hazards mitigation plans** – The counties and local governments in the Region have prepared, or are in the process of preparing, all hazards mitigation plans. These plans fulfill requirements set forth by the Wisconsin Division of Emergency Management (WEM) and the Federal Emergency Management Agency (FEMA). The plans use an "All Hazards Approach" recommended by WEM and FEMA, giving appropriate consideration to such hazards as flooding; lakeshore bluff and dam failure episodes; severe weather conditions, including wind storms, tornadoes, periods of extreme heat or cold, and winter storms; terrorism; civil disorder; urban fire or mass casualty; and hazardous material situations. The Commission has prepared, and periodically updates, hazard mitigation plans for Kenosha County, Ozaukee County, Racine County, Washington County, and the City of Milwaukee. Milwaukee, Walworth, and Waukesha Counties have also prepared hazard mitigation plans. Including all of Southeastern Wisconsin in an up-to-date all hazards mitigation plan will help reduce the risk of disruptions to the Region's arterial street and highway system.

- **Maintain a resilient regional arterial street and highway network** – Implementing the capacity expansion improvements recommended in the arterial streets and highways element of VISION 2050 would result in a more resilient regional arterial street and highway network that would more effectively move people and goods on alternative routes should a portion of the network be disrupted.

- **Increase transportation system resiliency to flooding** – Identifying streets, highways, and other transportation facilities (e.g., bus stops and park-ride lots) that are susceptible to flooding, and identifying adjacent roadway facilities that could serve as alternative routes when flooding occurs, would help the Region's transportation

VISION 2050 recommends a study to identify improvements that would make the regional transportation system more resilient to flooding.

system become more resilient with respect to the projected increase in frequency of large storm events. VISION 2050 recommends that the Commission staff conduct a study to identify transportation facilities in low-lying areas (e.g., within 100-year and 500-year floodplains) and identify potential improvements that would help the regional transportation system become more resilient to flooding.

- **Plan evacuation routes** – The Commission recognizes WisDOT security-related transportation policies and planning efforts in Southeastern Wisconsin, including the Emergency Transportation Operations Plan, downtown Milwaukee evacuation routes, and emergency alternate routes to IH 94 in Waukesha County. The Commission will work with WisDOT to ensure that these policies are adhered to and continually updated to achieve proper implementation in the Region.

➤ **Recommendation 6.7: Monitor growth and development of automated vehicles**

In recent years, automated features have been introduced to the mainstream automobile market. Although several regulatory and technological hurdles remain before fully autonomous vehicles become common place, automated vehicle technology continues to advance. VISION 2050 recommends that Commission staff work with Federal, State, and local governments to monitor the growth and development of automated vehicles to determine their effect on VISION 2050. Specifically, Commission staff will monitor changes in policies and infrastructure under the following topics as automated vehicle technology advances: (1) vehicle ownership; (2) operator requirements and liability laws; (3) land use implications; (4) interaction with other users of the roadway, particularly pedestrians and bicyclists; (5) connected vehicle infrastructure; and (6) implications for public transit and freight movement. Staff will review such changes in the context of potential changes to VISION 2050 as part of future updates to the plan.

VISION 2050 recommends improvements to achieve a safe, efficient, and multimodal freight transportation system.

Description of Freight Transportation Element

The movement of freight is essential for maintaining and growing Southeastern Wisconsin's economy. Truck, rail, water, and air modes of transportation bring raw materials to the Region's manufacturers, and they carry finished goods to domestic and international markets. The Region's freight transportation system is used by the U.S. Postal Service and express parcel service providers, and it supports commerce in the Region by providing for the movement of goods that stock the Region's retail stores. The Region's freight transportation system also supports the movement of building materials needed to construct and maintain the Region's homes and businesses as well as the transportation system itself. In 2018, approximately 144 million tons of domestic and international cargo valued at about $202 billion were shipped to, from, and within the Milwaukee-Racine-Waukesha Combined Statistical Area (CSA).[25] This cargo was transported using a variety of modes, including: truck (83 percent of all shipments by weight and 79 percent by value); rail (12 percent by weight and 3 percent by value); water (2 percent by weight and 1 percent by value); air (less than 1 percent by weight and 2 percent by value); multiple modes and mail (2 percent by weight and 15 percent by value); pipeline

[25] *Office of Freight Management and Operations, Federal Highway Administration, Freight Analysis Framework (FAF) Version 4.5.1. The Milwaukee-Racine-Waukesha Combined Statistical Area consists of Dodge, Jefferson, Milwaukee, Ozaukee, Racine, Walworth, Washington, and Waukesha Counties.*

(1 percent by weight and less than 1 percent by value); and other/unknown (less than 1 percent by weight and less than 1 percent by value).[26]

VISION 2050 recommends a multimodal freight transportation system designed to provide for the efficient and safe movement of raw materials and finished products to, from, and within Southeastern Wisconsin. To achieve this goal, VISION 2050 recommends improvements to the Region's transportation infrastructure as well as intergovernmental cooperation and other actions to preserve key transportation corridors, address regulatory inefficiencies, meet trucking industry workforce needs, and increase transportation safety and security. Many of these recommendations serve to implement or support the State's Freight Plan completed in 2018.[27]

- **Recommendation 7.1: Accommodate truck traffic on the regional highway freight network**

  Freight shipments in Southeastern Wisconsin—including shipments involving ships, airplanes, and trains—rely heavily on trucks using the Region's arterial street and highway system. In particular, the movement of freight depends in large part on trucks using the regional highway freight network—arterial streets and highways in the Region intended to carry a higher percentage of truck traffic. The regional highway freight network is based on the National Highway System, the State's designated routes for long trucks, and Critical Urban Freight Corridors (CUFCs) and Critical Rural Freight Corridors (CRFCs) designated by the Commission and WisDOT (see Map 1.22).[28] Higher levels of congestion and the presence of bottlenecks on the regional highway freight network can result in increased shipping delays and higher shipping costs, negatively impacting businesses and manufacturers in the Region. VISION 2050 recommends implementing the capacity expansion improvements recommended in the arterial streets and highways element, which would address existing and forecast future traffic congestion on the regional highway freight network.

- **Recommendation 7.2: Accommodate oversize/overweight shipments to, from, and within Southeastern Wisconsin**

  Unusually large or heavy goods shipped within or through the Region require that specific oversize/overweight (OSOW) truck routes be used. These routes may consist of streets and highways under State, county, or local jurisdiction. In some cases the movement of OSOW shipments may require temporarily changing infrastructure along the shipment's route—such as raising utility wires or moving traffic signals—or following a circuitous route to avoid physical restrictions such as low bridges. While OSOW shipments constitute only a small percentage of all truck shipments in the Region, they include high-value goods—including exports of locally manufactured products to other countries—that are important to the Region's economy. VISION 2050 recommends that State and local governments work with the Commission and local manufacturers, shippers, and utilities to improve the accommodation of OSOW shipments on the Region's arterial street

While oversize/overweight shipments constitute a small percentage of truck shipments, they include high-value goods important to the Region's economy.

[26] *Ibid.*

[27] *The Wisconsin Department of Transportation,* Wisconsin State Freight Plan*, April 2018.*

[28] *In accordance with the Fixing America's Surface Transportation (FAST) Act, the Commission, in consultation with WisDOT, is responsible for designating CUFCs for the Milwaukee urbanized area. Similarly, WisDOT, in consultation with the Commission, is responsible for designating CUFCs and CRFCs in the Region's other urbanized and non-urbanized areas.*

Map 1.22
Regional Highway Freight Network: 2020

MAJOR FREIGHT INTERMODAL FACILITY

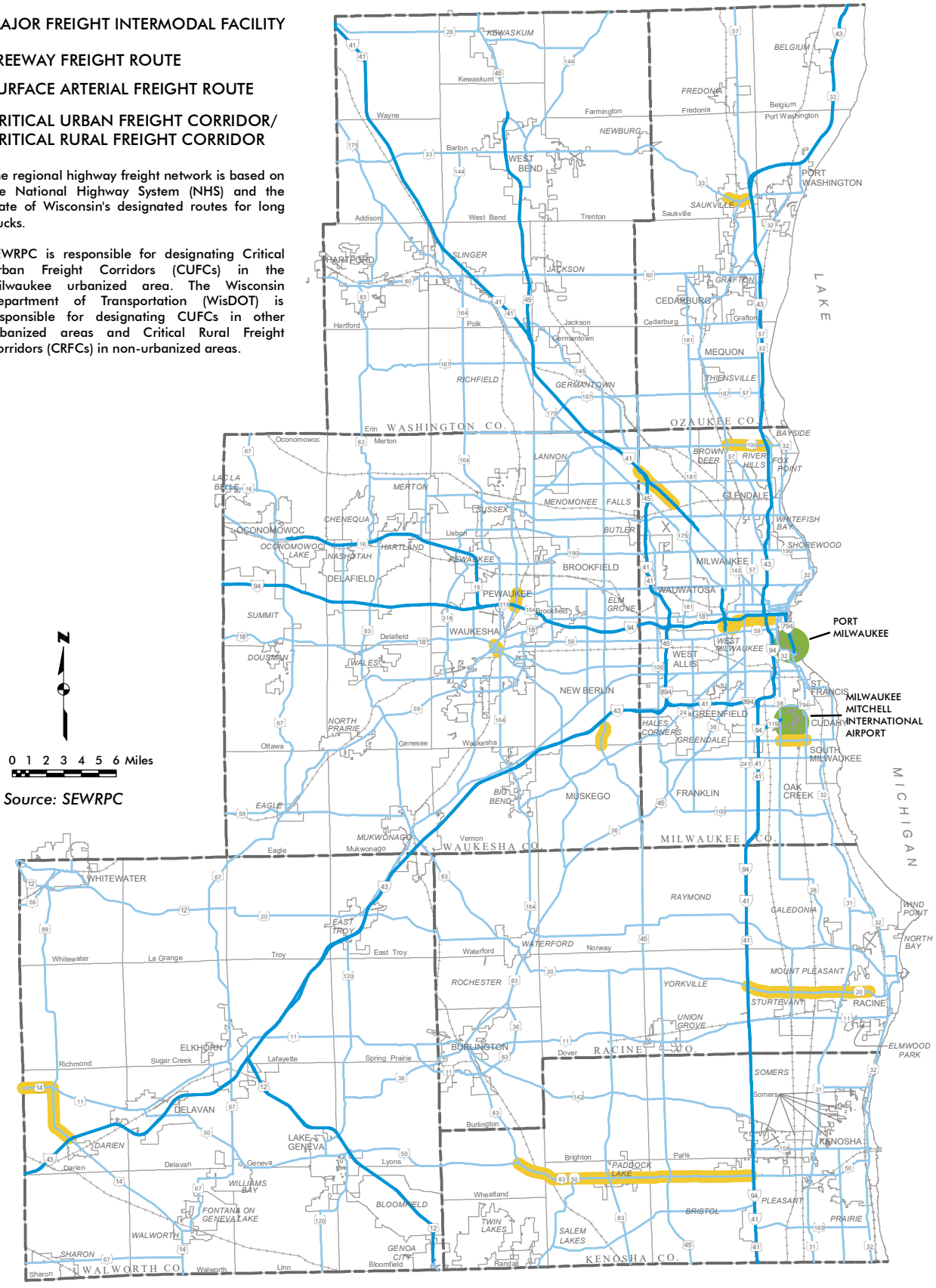
FREEWAY FREIGHT ROUTE

SURFACE ARTERIAL FREIGHT ROUTE

CRITICAL URBAN FREIGHT CORRIDOR/
CRITICAL RURAL FREIGHT CORRIDOR

Note: The regional highway freight network is based on the National Highway System (NHS) and the State of Wisconsin's designated routes for long trucks.

SEWRPC is responsible for designating Critical Urban Freight Corridors (CUFCs) in the Milwaukee urbanized area. The Wisconsin Department of Transportation (WisDOT) is responsible for designating CUFCs in other urbanized areas and Critical Rural Freight Corridors (CRFCs) in non-urbanized areas.



Source: SEWRPC

and highway network. The following are specific actions recommended to improve the accommodation of OSOW shipments:

- **Analyze OSOW truck shipments in the Region** – Document and analyze the types of goods that are shipped, the origins and destinations of the shipments, the dimensions (height, width, and length) and weights of the shipments, the OSOW routes used, and the geometric envelopes (height and width) of the OSOW routes.

- **Maintain a regional OSOW truck route network** – Monitor and refine, as needed, the State's network of designated OSOW truck routes—including routes serving Port Milwaukee and routes serving origins and destinations outside the Region—to ensure their associated geometric envelopes and weight restrictions meet the needs of manufacturers and shippers in the Region.

An Oversize/Overweight Shipment
Credit: Port of Milwaukee

- **Identify OSOW truck route infrastructure needs** – Document existing physical impediments to OSOW shipments on the delineated regional OSOW truck route network (e.g., low bridge clearances, low-hanging utility wires, or median barriers) and identify the infrastructure improvements to address the impediments. As an example, WisDOT has established a goal of providing a minimum 20-foot clearance for new and replacement bridges and sign structures along designated OSOW high-clearance routes.

- **Preserve OSOW truck routes** – Identify potential intergovernmental agreements or changes to *Wisconsin Statutes*, *Wisconsin Administrative Code*, or municipal ordinances that would aid in the preservation of the geometric envelopes and weight restrictions on the delineated OSOW truck route network.

➤ Recommendation 7.3: Pursue development of a new truck-rail intermodal facility in or near Southeastern Wisconsin

In many cases freight shipments between Southeastern Wisconsin and other states or countries are most effectively transported using more than one mode of transportation. These intermodal shipments often use trucks for the shorter portion of the trip and rail for the longer portion of the trip. Currently, the truck-rail intermodal facilities—where containerized shipments are interchanged between trucks and freight trains—closest to Southeastern Wisconsin are located in the Chicago area, where intermodal shipments sometimes experience significant congestion-related delays. Locating such a facility in or near Southeastern Wisconsin could provide transportation benefits to the Region's manufacturers and shippers, including lower shipping costs. VISION 2050 recommends that local governments, the Commission, local manufacturers and shippers, freight railroads, and the State work together to pursue development of a new truck-rail intermodal facility in or near Southeastern Wisconsin.

The Region's intermodal shipments can experience significant congestion-related delays as they need to travel to truck-rail intermodal facilities in the Chicago area.

A Truck-Rail Intermodal Facility
Credit: Canadian Pacific Railway

- **Assess the feasibility of developing a new truck-rail intermodal facility** – Conduct a study on the feasibility of developing a new truck-rail intermodal facility in or near Southeastern Wisconsin. Such a study could include identifying potential locations for developing a new facility, surveying local manufacturers and shippers

regarding their interest in using a new facility, and working with the freight railroads to determine their interest and needs related to developing an intermodal facility.

- **Support private sector efforts to develop a new truck-rail intermodal facility** – Work with businesses seeking to develop a new truck-rail intermodal facility in or near Southeastern Wisconsin. Support could include identifying and implementing functional improvements to the Region's arterial street and highway system to provide adequate access to the facility.

➤ Recommendation 7.4: Develop truck size and weight regulations in Wisconsin consistent with neighboring states

Inefficient movement of goods by truck between the Region and neighboring states can result from differences in truck size and weight regulations between Wisconsin and neighboring states (e.g., a truck may not be able to be fully loaded due to a neighboring state's lower weight restrictions). VISION 2050 recommends that the State work with neighboring states and FHWA to develop truck size and weight regulations that are consistent across state lines.

➤ Recommendation 7.5: Construct the Muskego Yard bypass

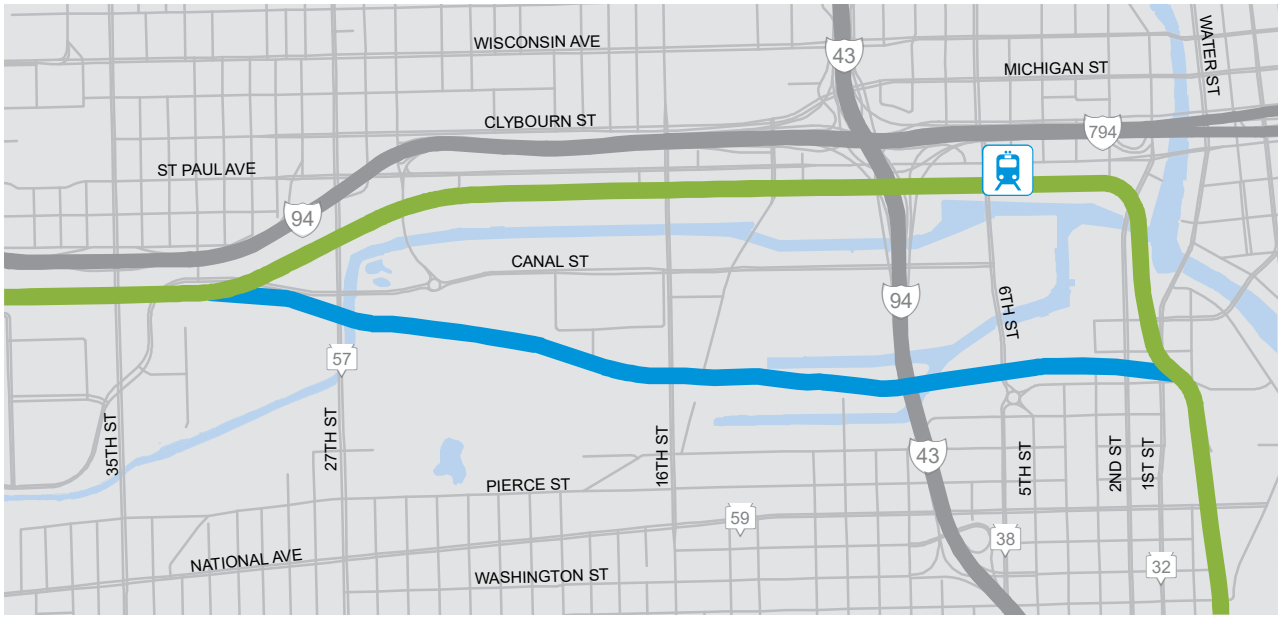
Canadian Pacific Railway (CP) freight trains traveling through downtown Milwaukee currently pass through the Milwaukee Intermodal Station (MIS). The station is a stop for Amtrak's Hiawatha Service and Empire Builder intercity passenger trains. It would also be a stop for commuter rail service under VISION 2050 and for expanded intercity passenger rail service under the State's long-range state rail plan.[29] Upgrading track and signaling through CP's Muskego Yard, which passes through the Menomonee Valley south of MIS, would allow freight trains traveling through downtown Milwaukee to bypass the station. This would benefit the station's ability to accommodate additional commuter rail and intercity passenger rail service, and it would improve safety and reduce delays to both freight and passenger trains traveling through Milwaukee. As such, VISION 2050 recommends that the City and County of Milwaukee, the Commission, and the State work with CP to construct the Muskego Yard bypass. Map 1.23 shows the general location of the Muskego Yard bypass.

➤ Recommendation 7.6: Address the potential need for truck drivers in Southeastern Wisconsin

The trucking industry expects to experience a nationwide, significant shortage of qualified truck drivers in the near future, primarily due to increasing demand for shipping goods by truck in conjunction with the impending retirement of a large number of current truck drivers. VISION 2050 recommends that workforce development agencies and technical colleges in Southeastern Wisconsin monitor the trucking industry's need for qualified drivers in the Region and work with the trucking industry to help address potential driver shortages. This could be done through raising the awareness of truck driving as a career opportunity and through the development of truck driver training opportunities.

[29] *The Wisconsin Department of Transportation,* Wisconsin Rail Plan 2030, *March 2014.*

Map 1.23
Location of Proposed Muskego Yard Bypass



Source: SEWRPC

➤ Recommendation 7.7: Address safety needs related to freight transportation

Crashes involving freight transportation negatively impact the wellbeing of Southeastern Wisconsin's residents as well as its economy. VISION 2050 recommends that Federal, State and local governments, the Commission, and private freight carriers continue to work to:

- **Minimize total traffic crashes on the regional highway freight network** – Implementing the capacity expansion improvements recommended in the arterial streets and highways element would address existing and forecast future traffic congestion and reduce total crashes on the regional highway freight network.

- **Implement Positive Train Control (PTC) systems** – Completing installation of PTC systems on major rail lines in the Region, as required by Federal law, would reduce the risk of train derailments and train-to-train collisions.

- **Reduce conflicts involving trucks** – Implementing the recommendations in the public transit element of VISION 2050 has the potential to reduce conflicts between trucks and automobiles by reducing the number of trips made by automobiles and by providing exclusive right-of-way for certain rapid transit routes. Implementing the recommendations in the bicycle and pedestrian element has the potential to reduce conflicts between trucks and bicycles and

pedestrians by providing additional off-street bicycle and pedestrian facilities (including bicycle/pedestrian paths and sidewalks) and expanded and enhanced on-street bicycle facilities.

- **Reduce conflicts involving freight trains** – Improving rail crossing infrastructure in the Region would reduce the risk of collisions between freight trains and motor vehicles, bicycles, and pedestrians. Improvements could include upgrading rail crossings to include visual and audible warning devices and/or gates, installing separate visual and audible warning devices and/or gates for bicyclists and pedestrians, reconstructing roads to improve crossing geometrics (e.g., to improve sight lines), or closing rail crossings and consolidating traffic on adjacent roads. Implementing the recommendations in the public transit element of VISION 2050 has the potential to reduce conflicts between freight trains and automobiles by reducing the number of trips made by automobiles. This would include implementing infrastructure improvements necessary for commuter trains to operate on existing freight rail lines without negatively affecting freight train operations.

➤ Recommendation 7.8: Address security needs related to freight transportation

Ongoing efforts to prevent and respond to attacks affecting freight shipped by truck, train, ship, and airplane encompass a wide range of Federal, State, and local programs, measures, or initiatives. VISION 2050 recommends that the State and local governments continue to work with the Federal government, the Commission, and private freight carriers and businesses to address security needs related to freight transportation, including:

- **Conduct periodic vulnerability assessments and monitor and strengthen vulnerable infrastructure** – The State has completed a vulnerability assessment of critical transportation infrastructure in Wisconsin, with guidance from the Federal government. The assessment identified transportation facilities in Wisconsin that have the potential to significantly disrupt the State's transportation system, should they lose functionality.[30] Regularly updating this assessment, strengthening identified vulnerable transportation facilities, and regularly monitoring identified facilities would reduce the risk of disruptions to the Region's freight transportation system.

- **Develop and maintain county and/or local government all hazards mitigation plans** – Several counties and local governments in the Region have prepared, or are in the process of preparing, all hazards mitigation plans. These plans identify potential hazards—which can include terrorism and civil disorder—and strategies for preventing and responding to incidents. Ensuring that all of Southeastern Wisconsin is included in an up-to-date all hazards mitigation plan would help reduce the risk of disruptions to the Region's freight transportation system.

- **Maintain a resilient regional highway freight network** – Implementing the capacity expansion improvements recommended in the arterial streets and highways element would result in a more resilient regional highway freight network that would more

[30] *The Wisconsin Department of Transportation,* Connections 2030 Long-Range Multimodal Transportation Plan*, October 2009*.

effectively accommodate truck movements on alternative routes should a portion of the network be disrupted.

- **Study the needs of essential freight movement** – Studying and recommending strategies for ensuring that shipments of essential freight—such as food and fuel—can travel to, from, and within the Region during prolonged security incidents, as recommended by the State's long-range transportation plan,[31] would help the Region recover from incidents as well as support efforts to respond to incidents in other parts of the country.

➤ **Recommendation 7.9: Support efforts in areas outside the Region that improve freight movement to and from the Region**

Freight transportation issues in neighboring metro areas and states—such as highway and rail congestion in the Chicago area—can negatively impact the Region's manufacturers and shippers. In some cases neighboring metro areas, states, the Federal government, and/or private sector freight transportation providers have initiated efforts to address these issues. For example, a partnership between the U.S. Department of Transportation (U.S. DOT), the State of Illinois, the City of Chicago, freight railroads, Metra, and Amtrak developed the Chicago Region Environmental and Transportation Efficiency Program (CREATE). CREATE has identified specific infrastructure improvements that would reduce freight rail congestion and truck and automobile delays at grade crossings in the Chicago area. VISION 2050 recommends that the State, the Commission, and local manufacturers and shippers participate in and support efforts outside Southeastern Wisconsin that address issues affecting freight movement to and from the Region.

Targets Established for the National Performance Measures

The Commission has established a series of transit and highway targets for performance measures that help to monitor the effectiveness of Federal transportation investments.

The Moving Ahead for Progress in the 21st Century Act (MAP-21), enacted in 2012, created a national performance management framework that established uniform performance measures and target setting to, in part, create a consistent nationwide process for monitoring the effectiveness of Federal transportation investments. As part of implementing the national performance management framework, metropolitan planning organizations (MPOs), like the Commission, are to establish transit and highway targets for performance measures under the following categories:

- Transit Asset Management (TAM)
- Transit Safety
- Highway Safety
- National Highway System (NHS) Bridge and Pavement Condition
- NHS and Freight Reliability
- Congestion Mitigation and Air Quality Improvement (CMAQ)

In implementing the national performance management framework in Southeastern Wisconsin, the Commission has established performance

[31] *Ibid.*

targets for all but the transit safety performance measures.[32] In developing the targets, it was determined that, since the required short-range targets were to be incorporated into VISION 2050, a long-range plan, long-term regional targets should be established, as appropriate, for the TAM, highway safety, NHS, freight, and CMAQ performance measures. As such, the short-term targets that were established for either the Metropolitan Planning Area or the Milwaukee urbanized area, as required as part of the national performance measure framework,[33] are based on these long-term regional targets. Highway safety-related targets were formally amended into VISION 2050 in June 2018, and the TAM, NHS, freight, and CMAQ-related targets were formally amended into VISION 2050 in June 2019.

Appendix P summarizes the established short-term and year 2050 regional targets, along with the process for developing the targets, for the TAM, highway safety, NHS, freight, and CMAQ performance measures. Appendix P also includes a summary of the progress in achieving the targets in the brief period of time since they were established.

The financial analysis for the VISION 2050 transportation system is guided by Federal requirements that the system only include projects that can be funded with reasonably expected revenues.

Financial Analysis for VISION 2050 Transportation System

Implementing the transportation system recommended in VISION 2050 will require adequate funding for the public transit system, bicycle and pedestrian network, and arterial street and highway system. The financial analysis in this section examines the expected costs of the transportation system recommended in VISION 2050 and compares those costs to reasonably expected revenues that would be available to fund the transportation system. Comparing cost and revenue forecasts illustrates potential funding gaps that would need to be addressed to fully implement VISION 2050. To address the funding gaps, VISION 2050 identifies additional revenue sources that should be explored. The transportation component of VISION 2050 is required by the Federal government to be funded with reasonably expected revenues. If funding gaps exist for the desired improvements of a particular element, those improvements would not meet Federal requirements for fiscal constraint, necessitating identification of a "Fiscally Constrained Transportation System" for Southeastern Wisconsin, which is presented in Chapter 2 of this volume.[34]

The financial analysis prepared for VISION 2050 indicates existing funding sources are not adequate to construct, operate, and maintain the entire VISION 2050 transportation system.

When VISION 2050 was initially prepared, the financial analysis identified a gap between the funds needed to construct, operate, and maintain the recommended regional transportation system and the available revenues, with expected funds being insufficient to support a large portion of the recommended expansion of the Region's transit element. In December 2018, an updated financial analysis included in the second amendment to the plan showed that the funding gap remained for public transit and also that

[32] *The transit safety targets are to be set within 180 days following the development of safety plans and transit safety target setting by all of the transit operators in Southeastern Wisconsin, which is due to be completed in late 2020.*

[33] *Under the national performance management framework, the Commission is required to establish performance targets for the Region's Metropolitan Planning Area for all but two of the performance measures, and the Milwaukee urbanized area for two of the CMAQ-related measures. In addition, the TAM and highway safety targets are to be established annually, and the NHS, freight, and CMAQ targets are to be established every four years.*

[34] *Federal regulations regarding fiscal constraint of a regional transportation plan can be found in 23 CFR 450.324(f)(11), most recently published in the Federal Register on May 27, 2016. Additional information on fiscal constraint can be found at: www.fhwa.dot.gov/planning/guidfinconstr_qa.cfm and www.transit.dot.gov/regulations-and-guidance/transportation-planning/financial-planning-fiscal-constraint.*

Table 1.13
Estimated Gap Between VISION 2050 Costs and Existing and Reasonably Expected Revenues

Constant Year 2019 Dollars (Average Annual Through Year 2050)	
Highway	
Capital	$367 million
Operating	$19 million
Public Transit	
Capital	$113 million
Operating	$140 million

Year of Expenditure Dollars (Average Annual Through Year 2050)	
Highway	
Capital	$683 million
Operating	$49 million
Public Transit	
Capital	$144 million
Operating	$194 million

Source: SEWRPC

expected funding levels would be insufficient to support the recommended reconstruction of several portions of the Region's arterial street and highway system. The Commission staff subsequently prepared another updated financial analysis as part of the 2020 Review and Update of VISION 2050. This updated financial analysis is presented in this section.

Funding Gap Identification

Though the 2019-2021 State budget increased transportation funding over previous years, increases in vehicle fuel efficiency are expected to continue to limit growth in State funding. As such, State revenues are expected to be constant in nominal dollars through the year 2050, resulting in continuing declines in purchasing power due to inflationary pressures on construction and operating costs. This dynamic, combined with State-imposed limitations on the ability of local governments to generate revenue, results in the funding gaps shown in Table 1.13. These funding gaps mean that without additional revenue the Region will still be unable to achieve the public transit system recommended in VISION 2050 or complete the recommended reconstruction of several portions of the Region's arterial street and highway system by 2050. No funding gap was identified for other transportation elements as a part of this financial analysis.

Without additional funding, the Region will be unable to achieve the recommended public transit system or complete the recommended reconstruction of several portions of the arterial street and highway system.

Expected Costs and Revenues

The financial analysis relies on a detailed analysis of existing and reasonably expected revenues for the Region's transportation system, which is shown in Figure 1.5 for the arterial streets and highways element and Table 1.14 for the public transit element. A comparison of the estimated costs to implement the VISION 2050 transportation system and the available revenues, which illustrates how the funding gaps were identified, is presented in 2019 constant dollars in Table 1.15 and year of expenditure dollars in Table 1.16.

A significant portion of the arterial street and highway system expenses is related to the construction and reconstruction of significant arterial segments. Table 1.17 shows the estimated cost and potential schedule of significant arterial construction and reconstruction projects through 2050. This table is provided to give more insight into the costs associated with specific projects contained within the arterial streets and highways element.

Figure 1.5
Estimate of Existing and Reasonably Expected Arterial Street and Highway Revenues

Federal and State Capital and Operating Funding Assessment of Historical Statewide Funding (millions of nominal dollars)

Program	Averaging Timeframe	Bonds: Transportation Revenue	Bonds: General Obligation	Federal	State	Total	Annual Growth (Percent)
Major Highway Development	2020-2021 Budget	$71	$--	$169	$26	$266	
	20-Year	132	13	91	55	291	1.55
	10-Year	115	21	109	74	319	-1.92
	5-Year	65	6	128	58	257	-4.08
State Highway Rehabilitation	2020-2021 Budget	$--	$--	$448	$520	$968	
	20-Year	--	70	383	261	714	1.98
	10-Year	--	61	417	335	813	-0.75
	5-Year	--	30	438	357	825	0.05
Southeastern Wisconsin Freeway Megaproject	2020-2021 Budget	$--	$43	$34	$32	$109	
	18-Year	--	91	86	33	210	-1.37
	10-Year	--	126	79	29	235	-14.85
	5-Year	--	150	48	13	211	-32.26
Operations and Maintenance	2020-2021 Budget	$--	$--	$1	$299	$300	
	20-Year	--	--	3	218	221	-0.50
	10-Year	--	--	3	254	257	0.04
	5-Year	--	--	2	283	285	0.00
Local Roads and Bridges	2020-2021 Budget	$--	$--	$--	$203	$203	
	20-Year	--	--	--	195	195	0.62
	10-Year	--	--	--	190	190	1.17
	5-Year	--	--	--	199	199	2.36
General Transportation Assistance	2020-2021 Budget	$--	$--		$495	$495	
	20-Year	--	--	--	395	395	1.56
	10-Year	--	--	--	422	422	1.01
	5-Year	--	--	--	429	429	2.28
Total	2020-2021 Budget	$71	$43	$652	$1,575	$2,341	
	20-Year	132	174	563	1,158	2,027	
	10-Year	115	208	609	1,304	2,235	
	5-Year	65	187	615	1,339	2,205	

Reasonably Available/Expected Federal and State Annual Funding Levels: Statewide

Program	Bonding	Federal	State	Total
Major Highway Development	$71	$169	$26	$266
State Highway Rehabilitation	--	448	520	968
Southeastern Wisconsin Freeway Megaproject	43	34	32	109
Operations and Maintenance	--	1	299	300
Local Roads and Bridges	--	--	203	203
General Transportation Aids	--	--	495	495
Total	$114	$652	$1,575	$2,341

Though the 2019-2021 State budget increased transportation funding over previous years, increases in vehicle fuel efficiency are expected to continue to limit growth in State funding. As such, State funding levels are expected to be constant in nominal dollars through the year 2050.

Based on the FAST Act, Federal funding levels are expected to increase by 2.0 percent annually.

Capital Funding Assumptions

Southeastern Wisconsin represents approximately 35 percent of the State in population, employment, income, and assessed value, and about 30 percent of vehicle-miles of travel. In the years after freeway system construction, and before freeway system reconstruction, Southeastern Wisconsin received about 25 to 30 percent of State highway system revenues.

State Highway System

To estimate Southeastern Wisconsin's share of State revenues, Option 1 allocates all Southeast Freeway Rehabilitation funds to Southeast Wisconsin and 25 percent of all other funds to Southeastern Wisconsin. Option 2 allocates 30 percent of all funds to Southeastern Wisconsin.

Option 1

$109 + 0.25($1,234) = $418 million

Option 2

$1,343 x 0.30 = $403 million

Conclusion

$418 million Federal and State annual highway revenue in nominal dollars

Figure continued on next page.

Figure 1.5 (Continued)

Local and County Trunk Highway System

Local Roads and Bridges
$203 x 0.30 = $61 million

General Transportation Aids (Capital)
Southeastern Wisconsin has historically received approximately 20 percent of Statewide General Transportation Aids. Capital expenses have typically represented approximately 40 percent of all General Transportation Aids expenditures, with approximately 25 percent of those expenditures being on arterial streets and highways.

$495 x 0.20 x 0.40 x 0.25 = $10 million

Local Capital Transportation Funding
Assessment of Historical Funding
$48 million annually
Conclusion – 2050 Plan
$48 million

Operating and Maintenance Funding Assumptions

State Highway System

State highway operations and maintenance expenditures have historically represented approximately 20 percent of statewide operations and maintenance expenditures

$300 x 0.20 = $60 million

Local and County Trunk Highway System

General Transportation Aids (O&M)
Southeastern Wisconsin has historically received approximately 20 percent of Statewide General Transportation Aids. Operating expenses have typically represented approximately 30 percent of all General Transportation Aids expenditures attributed to highway operations and maintenance, with approximately 25 percent of those expenditures being on local arterial streets and highways.

$495 x 0.20 x 0.30 x 0.25 = $7 million

Local Transportation Funding
Assessment of Historical Funding
$34 million annually
Conclusion – 2050 Plan
$34 million

Reasonably Available/Expected Annual Funding Levels: Southeastern Wisconsin

Program	Bonding	Federal	State	Local	Total
State					
Capital	$61	$188	$169	$--	$418
Operating & Maintenance	--	--	60	--	60
Subtotal	$61	$188	$229	$--	$478
County & Local Municipalities					
Capital	$--	$--	$71	$48	$119
Operating & Maintenance	--	--	7	34	41
Subtotal	$--	$--	$78	$82	$160
Total	$61	$188	$307	$82	$638

Source: 2018-2019 Transportation Budget Trends (Wisconsin Department of Transportation) and SEWRPC

The amount of transit service varies significantly by county and is directly related to the number of jobs and residents that are located within a specific area. Due to these variations, the costs of constructing, operating, and maintaining the public transit element also vary significantly by county. Table 1.18 shows these costs and is provided to further inform the discussion of determining the most appropriate method of funding the public transit element (see the next section of this chapter).

VISION 2050 identifies a number of potential ways to address the funding gap and achieve the recommended transportation system, most of which would require State action.

Potential Revenue Sources to Fund the Recommended Transportation System

VISION 2050 makes recommendations for significantly improving and expanding the Region's transportation system, but implementing this system will require adequate funding. State legislation to create local dedicated transit funding would likely be necessary to achieve the transit

Table 1.14
Estimate of Existing and Reasonably Expected Transit Revenues

Regional Capital and Operating Funding Assessment (millions of nominal dollars)

Program	Averaging Timeframe (1998-2017)	Federal	State	Local	Total	Annual Growth (Percent)
Operating	20-Year	$26	$74	$24	$124	2.23
	10-Year	31	81	26	138	0.91
	5-Year	29	80	27	136	3.17
Capital	20-Year	$15	$--	$4	$19	1.98
	10-Year	17	--	5	22	-0.75
	5-Year	14	--	6	20	0.05

Additional Federal Revenue (From Committed Projects)

City of Milwaukee Streetcar
- Capital
  - FTA 5337 – $263,800 beginning in 2025, 2026, and 2027 ($191,100 average annual)
- Operating
  - FTA 5307 – $547,300 beginning in 2020, 2021, and 2022 ($474,600 average annual)
  - $2.9 million average annual parking revenue

Milwaukee County Bus Rapid Transit
- Capital
  - FTA 5337 – $860,000 beginning in 2026 ($623,000 average annual)
- Operating
  - FTA 5307 – $1 million beginning in 2021 ($857,100 average annual)

Reasonably Available/Expected Funding Levels

Program	Federal	State	Local	Total
Operating	$31	$80	$30	$141
Capital	15	--	8	23
Total	$46	$80	$38	$164

Though the 2019-2021 State budget increased transportation funding over previous years, increases in vehicle fuel efficiency are expected to continue to limit growth in State funding. As such, State funding levels are expected to be constant in nominal dollars through the year 2050.

Transit service levels envisioned in VISION 2050 would be expected to generate an additional $54 million in Federal capital and operating funding annually on average.

Based on the FAST Act, Federal funding levels are expected to increase by 2.0 percent annually.

Source: SEWRPC

system improvement and expansion recommended under VISION 2050, although this funding could also be provided through additional State financial assistance to transit. Providing sufficient funding to complete the recommended reconstruction of the Region's arterial street and highway system would also require State action.

The 2019-2021 State budget provided increased revenues for transportation through an increase in annual vehicle registration fees, an increase in the vehicle title fee, and a structure for implementing a previously approved surcharge on hybrid electric vehicles, resulting in an estimated total statewide increase of approximately $188 million annually. This revenue increase added funding to the State's Transportation Fund, which supports the arterial street and highway system and public transit operations statewide. The State budget also provided a 2 percent increase in mass transit operating assistance in calendar year 2020, and funded a one-time, $75-million competitive grant program available to local governments for local transportation system projects, including roads, bridges, transit capital and facilities, bicycle and pedestrian accommodations, railroads, and harbors.

While these increases represent progress toward achieving the recommended plan, a more substantial revenue increase that provides sustainable, long-term

Table 1.15
Average Annual Costs and Revenues Associated with the VISION 2050 Transportation System in 2019 Constant Dollars: 2021-2050

Cost or Revenue Item		2019 Dollars (millions)
Transportation System Cost[a]		
Arterial Street and Highway System		
Capital		
Freeway		
Reconstruction, Modernization, and Committed Capacity Improvements		$284
Increment Associated with Recommended Capacity Improvements		38
Resurfacing and Rehabilitation		80
Surface Arterial Reconstruction/Resurfacing[b]		458
Operating & Maintenance		98
	Highway Subtotal	$958
Transit System		
Capital		$201
Operating[c]		285
	Transit Subtotal	$486
	Total	$1,444
Transportation System Revenues[a]		
Highway Capital		
Federal/State		$425
Local		68
	Subtotal	$493
Highway Operating & Maintenance		
State		$47
Local		32
	Subtotal	$79
	Highway Subtotal	$572
Transit Capital		
Federal		$82
Local		6
	Subtotal	$88
Transit Operating		
Federal		$54
State		63
Local		28
	Subtotal	$145
	Transit Subtotal	$233
	Total	$805

[a] *The estimated arterial street and highway system and transit system costs include all capital, operating, and maintenance costs. The estimated costs include the necessary costs to preserve the existing transportation system, such as arterial street and highway resurfacing and reconstruction and transit system bus replacement, and the estimated costs of the transportation system improvement and expansion recommended under VISION 2050. Costs for freeway and surface arterial resurfacing, reconstruction, widening, and new construction are based upon actual project costs over the past several years. Transit system capital costs include preservation, improvement, and expansion of the existing transit system, including bus replacement on a 12-year schedule.*

Highway system operating and maintenance costs are based on estimated actual State and local highway system operating costs and verified by application of estimated unit lane-mile costs. Planned highway system operating costs are increased from estimated existing costs based on the recommended increase in arterial highway system lane-miles under VISION 2050. Transit system operating and maintenance costs are based on existing estimated actual costs and unit costs based on service vehicle-miles and vehicle-hours.

Highway Federal, State, and local capital and operating revenues are based on estimated Federal, State, and local expenditures over the last several years. Transit Federal capital and operating revenues are based on historical expenditures over the last several years, and assessment of available Federal formula and program funds. State transit revenues are based on the State maintaining estimated average year 2020-2021 funding levels through the year 2050.

[b] *Includes the costs associated with the bicycle and pedestrian, TSM, and TDM elements of VISION 2050.*

[c] *Net operating cost (total operating costs less fare-box revenue).*

Source: SEWRPC

Table 1.16
Average Annual Costs and Revenues Associated with the VISION 2050 Transportation System Based on Year of Expenditure: 2021-2050

Cost or Revenue Item		YOE Dollars (millions)
Transportation System Cost[a]		
Arterial Street and Highway System		
Capital		
Freeway		
Reconstruction, Modernization, and Committed Capacity Improvements		$430
Increment Associated with Recommended Capacity Improvements		59
Resurfacing and Rehabilitation		122
Surface Arterial Reconstruction/Resurfacing[b]		705
Operating & Maintenance		150
	Highway Subtotal	$1,466
Transit System		
Capital		$257
Operating[c]		381
	Transit Subtotal	$638
	Total	$2,104
Transportation System Revenues[a]		
Highway Capital		
Federal/State		$545
Local		88
	Subtotal	$633
Highway Operating & Maintenance		
State		$60
Local		41
	Subtotal	$101
	Highway Subtotal	$734
Transit Capital		
Federal		$105
Local		8
	Subtotal	$113
Transit Operating		
Federal		$72
State		80
Local		35
	Subtotal	$187
	Transit Subtotal	$300
	Total	$1,034

[a] *The estimated arterial street and highway system and transit system costs include all capital, operating, and maintenance costs. The estimated costs include the necessary costs to preserve the existing transportation system, such as arterial street and highway resurfacing and reconstruction and transit system bus replacement, and the estimated costs of the transportation system improvement and expansion recommended under VISION 2050. Costs for freeway and surface arterial resurfacing, reconstruction, widening, and new construction are based upon actual project costs over the past several years. Transit system capital costs include preservation, improvement, and expansion of the existing transit system, including bus replacement on a 12-year schedule.*

Highway system operating and maintenance costs are based on estimated actual State and local highway system operating costs and verified by application of estimated unit lane-mile costs. Planned highway system operating costs are increased from estimated existing costs based on the recommended increase in arterial highway system lane-miles under VISION 2050. Transit system operating and maintenance costs are based on existing estimated actual costs and unit costs based on service vehicle-miles and vehicle-hours.

Highway Federal, State, and local capital and operating revenues are based on estimated Federal, State, and local expenditures over the last several years. Transit Federal capital and operating revenues are based on historical expenditures over the last several years, and assessment of available Federal formula and program funds. State transit revenues are based on the State maintaining estimated average year 2020-2021 funding levels through the year 2050.

[b] *Includes the costs associated with the bicycle and pedestrian, TSM, and TDM elements of VISION 2050.*

[c] *Net operating cost (total operating costs less fare-box revenue).*

Source: SEWRPC

Table 1.17
Estimated Cost and Potential Schedule of Significant Arterial Construction and Reconstruction Projects: 2021-2050[a,b]

Period Completed and Open to Traffic	County	Facility	Limits of Project	Cost (Millions 2019 Dollars)[c]	Cost (Millions YOE Dollars)	Mileage
2021 to 2025	Kenosha	CTH S (part)	E. Frontage Road to CTH H	$8.5	$9.3	1.9
	Kenosha	STH 50	IH 94 to 39th Avenue	68.6	75.2	4.8
	Milwaukee	Zoo Interchange	Completion of North Leg	188.6	211.3	1.7
	Racine	CTH KR	IH 94 to Old Green Bay Road	77.8	85.3	4.4
	Waukesha	CTH M (part)	CTH Y to CTH YY	25.1	27.5	2.9
			Subtotal	$368.6	$408.6	15.7
2026 to 2030	Kenosha	CTH H (Part)	CTH S to STH 50	$19.7	$24.2	2.6
	Milwaukee	IH 94	70th Street to 16th Street (Including Stadium Interchange)	871.0	1,069.4	3.5
	Milwaukee and Ozaukee	IH 43	Silver Spring Dr. to STH 60	551.6	639.5	12.6
	Milwaukee and Racine	STH 32	STH 100 to Five Mile Road	33.2	40.8	5.1
	Ozaukee	CTH W (part)	Highland Road to W. Glen Oaks Lane	7.6	9.3	1.0
	Racine	CTH KR	Old Green Bay Road to STH 32	21.7	26.6	2.8
	Walworth	STH 50	IH 43 to STH 67	26.2	32.2	4.3
	Waukesha	STH 83	USH 18 to Phylis Parkway	35.4	43.5	2.4
	Waukesha	STH 83	Mariner Drive to STH 16	35.4	43.5	3.6
	Waukesha	CTH D (part)	Milwaukee County line to Calhoun Road	13.4	16.5	3.0
	Waukesha	CTH Y (part)	Hickory Trail to Downing Drive	17.7	21.7	4.0
			Subtotal	$1,632.9	$1,967.2	44.9
2031 to 2035	Kenosha	CTH H (Part)	STH 50 to STH 165	$14.6	$20.1	3.0
	Racine	STH 20	IH 94 to Oaks Road	46.1	63.4	4.5
	Milwaukee	IH 794 Lake Interchange	Milwaukee River to Hoan Bridge	200.0	257.3	0.7
	Milwaukee	USH 45/STH 100	Rawson Avenue to 60th Street	24.7	34.0	4.8
	Waukesha	Pilgrim Road	USH 18 to Lisbon Road	36.4	50.1	4.8
	Waukesha	CTH SR/Town Line Road extension (part)	CTH JJ to STH 190	24.2	33.3	3.2
	Waukesha	CTH Y (part)	CTH L to College Avenue	12.8	17.6	2.1
			Subtotal	$358.8	$475.8	23.1
2036 to 2040	Ozaukee	CTH W (part)	CTH V to Lakeland Road	$23.5	$36.2	3.1
	Waukesha	STH 67 (part)	CTH DR to USH 18	14.9	23.0	2.9
	Waukesha	STH 190	STH 16 to Brookfield Road	55.1	84.9	5.4
	Waukesha	CTH D (part)	Calhoun Road to STH 59/164	17.1	26.4	3.8
			Subtotal	$110.6	$170.5	15.2
2041 to 2045	Ozaukee	CTH W (part)	Lakeland Road to Highland Road	$23.3	$40.2	3.1
	Waukesha	STH 59/164	CTH XX to Arcadian Avenue	58.1	100.3	4.8
	Waukesha	CTH SR/Town Line Road extension (part)	STH 190 to Weyer Road	8.2	14.2	1.5
			Subtotal	$89.6	$154.7	9.4
			Total	$2,560.5	$3,176.8	108.3

[a] *Significant projects include those projects involving new construction or widening with a cumulative length of four or more miles.*

[b] *The schedule shown in this table represents an estimate of the timing of construction and reconstruction for the purposes of comparison of costs and revenues, and is not a recommendation for the schedule of construction and reconstruction. Such a schedule can only be developed by the responsible implementing agency and will necessarily entail frequent updating, for example, due to pavement and structure condition.*

[c] *Cost of Construction does not include the cost of right-of-way required for the project.*

Source: SEWRPC

Table 1.18
Average Annual Costs by County Associated with the VISION 2050 Public Transit Element in 2019 Constant Dollars: 2021-2050

County	Operating Cost[a] (millions)	Capital Cost (millions)	Total (millions)
Kenosha	$28.7	$13.9	$42.6
Milwaukee	166.7	139.3	306.0
Ozaukee	6.5	1.6	8.1
Racine	30.1	14.4	44.5
Walworth	3.2	0.3	3.5
Washington	6.3	1.5	7.8
Waukesha	43.5	30.0	73.5
Region	$285.0	$201.0	$486.0

[a] *Net operating cost (total operating costs less fare-box revenue).*

Source: SEWRPC

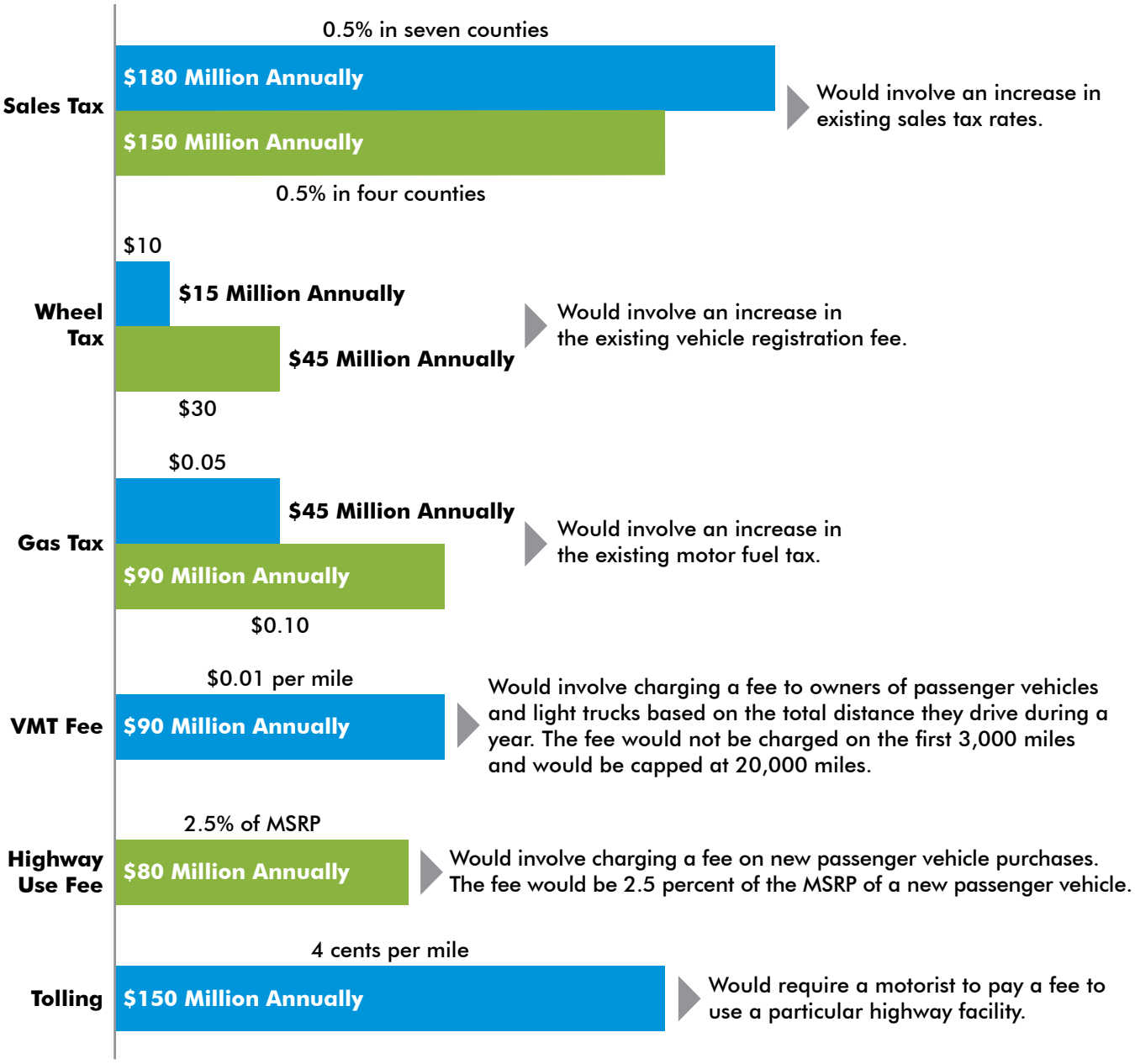
funding would be necessary to achieve VISION 2050. Numerous potential revenue sources that would allow improved and expanded transit services and provide stable funding for arterial street and highway reconstruction have been identified and proposed in recent years. These include an advisory referendum in 2008 in Milwaukee County that approved a 1.0 percent sales tax supporting public transit, county parks, and emergency medical services, and subsequent unsuccessful attempts at the State level to allow a sales tax for transit. In January 2013, the Wisconsin Transportation Finance and Policy Commission made recommendations to the Governor and State Legislature on "options to achieve a stable balance between transportation expenditures, revenues and debt service over the next decade." The WisDOT Secretary proposed including a number of the revenue sources recommended by that Commission in the subsequent 2015-2017 State budget, but the Governor did not include them in his proposed budget. In December 2016, WisDOT completed a report to the Legislature on the solvency of the State's Transportation Fund, including a review of current and projected transportation revenues and a Tolling Feasibility Study. In 2017, the Legislative Fiscal Bureau prepared a paper for the Joint Finance Committee that provided information on "possible revenue increases that could be enacted to improve the sustainability of the transportation fund." These efforts provide the basis for the revenue sources and estimates presented in this section.

This section focuses on six primary revenue sources likely to generate enough revenue to implement the recommended transit improvements and highway reconstruction.

This section presents potential revenue sources that could be considered to provide sufficient transportation funding, along with estimates of the revenue each source could potentially generate on an annual basis. It is important to note that staff prepared generalized revenue estimates to demonstrate each individual source's potential for providing the funding necessary to achieve the recommended transportation system. More detailed estimates would need to be prepared as decision makers determine whether to pursue a particular revenue source. It is also important that potential equity concerns be considered related to whether lower-income residents would pay a higher proportion of their incomes than higher-income residents if a particular revenue source were implemented.

While there are certainly more sources that could help address insufficient funding levels, this section focuses on a series of primary revenue sources that have been seriously considered and are likely to generate revenues on a scale sufficient to implement all or most of the transit improvements and highway reconstruction recommended under VISION 2050. Six primary revenue sources are discussed below and a generalized comparison of annual revenue estimates is presented in Figure 1.6.

Figure 1.6
Estimates for Potential Revenue Sources to Fund the Recommended Transportation System (2019 Dollars)



Note: All revenue estimates assume the source is levied regionwide, except the four-county sales tax (only in Kenosha, Milwaukee, Racine, and Waukesha Counties) and tolling (estimate is based on tolling these interstate facilities: IH 43 between Beloit and Muskego, IH 41/IH 43/IH 94/IH 794/IH 894 in metropolitan Milwaukee, and IH 94 between Seven Mile Road and the Illinois State Line).

Dedicated funding for transit could be levied only in certain parts of the Region, or the level of a particular tax/fee could vary by county or community, based on the recommended level of transit service.

- **Sales Tax** – Involves an increase in existing sales tax rates. A 0.5 percent sales tax could generate about $180 million annually in the Region. Transportation revenues from a sales tax could be obtained in two ways. The first way would involve the State increasing the statewide sales tax rate, with the revenues added to the State's Transportation Fund. These revenues could be used to increase State funding towards sufficiently funding both the highway and transit elements of VISION 2050. The second way, which has been more frequently discussed in Southeastern Wisconsin, would involve the State allowing municipalities or counties to enact a sales tax at their discretion. A sales tax is the most common dedicated local transit funding source in other areas of the country and has the potential to generate the needed revenue to implement the transit improvements recommended under VISION 2050. A 0.5 percent sales tax enacted in each county would likely generate significantly more revenue in some counties than the level of transit service recommended in those counties. In addition, the amount of transit funding envisioned under VISION 2050 in some counties may not require dedicated funding, particularly if State funding for transit is sufficiently increased. Alternatively, a sales tax could be levied only in the more urban areas of the Region that would be served by a majority of the recommended transit improvements and expansion. Enactment of a dedicated sales tax for transit would also permit counties and municipalities to eliminate or partially eliminate the use of property tax revenues to fund transit. In addition, a portion of sales tax revenues also comes from out-of-state visitors. It should be noted that sales tax revenues also tend to be impacted by downturns in the economy. Some alternative dedicated sources used by peer metro areas, although not as common as the sales tax, include the payroll tax, income tax, and dedicated property tax.

- **Vehicle Registration Fee ("Wheel Tax")** – Involves an increase in the existing vehicle registration fee. A $10 vehicle registration fee enacted in all counties in the Region could generate about $15 million annually. The vehicle registration fee is unaffected by, and unrelated to, how much the vehicle's owner actually uses the transportation system. The vehicle registration fee is essentially the only revenue source available to municipal and county governments to increase transportation funding without a change in State law. Milwaukee County ($30) and the City of Milwaukee ($20) currently levy a vehicle registration fee in addition to the statewide annual registration fee collected by WisDOT. A number of other municipalities and counties across the State also levy a vehicle registration fee, with fees ranging from $10 to $30. Alternatively, the State could further increase the statewide registration fee (now $85 for most automobiles, and ranging from $100 to $106 for light trucks and from $173 to $2,578 for heavy trucks), with the revenues being added to the State's Transportation Fund. In addition to the increased vehicle registration fees that went into effect in 2019, the State also began assessing a $75 surcharge on hybrid electric vehicles, which is collected with the regular annual registration fee. A $100 surcharge on electric vehicles went into effect in 2017. Additional revenue from the registration fee could be generated by indexing the fee based on inflation, charging an additional variable fee based on a vehicle's value or weight, or increasing the fees for heavy trucks.

- **Motor Fuel Tax ("Gas Tax")** – Involves an increase in the existing motor fuel tax rate levied by the State. A five cent increase could generate about $45 million annually in the Region, assuming current fuel consumption levels. However, unlike the other revenue sources discussed in this section, those revenues would likely decline long term as vehicles become more fuel efficient on average. In addition, the motor fuel tax is impacted by the level of use of alternative fuels. The State currently levies a 30.9 cents per gallon motor fuel tax, which has not increased since 2006 when the State eliminated automatic annual indexing of the motor fuel tax based on inflation. Additional revenue from this source could be generated by reinstating annual indexing based on inflation, adjusting the tax rate to reflect lost indexing, eliminating the exemption for farming, or charging a higher rate for diesel fuel. Another related revenue source would involve eliminating the existing sales tax exemption for motor fuel sales.

- **VMT/Mileage-Based Registration Fee ("VMT Fee")** – Involves charging a fee to owners of passenger vehicles and light trucks based on the total distance they are driven during a year. The fee would not be charged on the first 3,000 miles and would be capped at 20,000 miles. As an example, such a fee on a vehicle driven 13,000 miles during a year would be $100. Based on current travel levels, a one cent per mile fee could generate about $90 million annually in the Region. Unlike the motor fuel tax and vehicle registration fee, a distance-based fee provides a more equitable means of paying for the costs of the construction, maintenance, and operation of the transportation system as motorists would pay for their actual use of the transportation system. A VMT fee is unaffected by vehicle fuel efficiency or alternative fuels and can encourage residents to drive less, potentially reducing total VMT, traffic volumes, and congestion. Implementing a VMT fee utilizing technologies, such as a GPS unit or an in-vehicle device that would collect mileage data, has faced obstacles due to technology uncertainty, privacy concerns, and cost implementation issues. Low-technology options, such as incorporating odometer readings during the annual vehicle registration process, are also possible. Additional revenue from this source could be generated by indexing the fee to inflation.

- **Highway Use Fee** – Involves charging a fee on new passenger vehicle purchases. A fee of 2.5 percent of the manufacturer's suggested retail price (MSRP) of a new passenger vehicle could generate about $80 million annually in the Region. Given that the fee would only be collected at the time of a vehicle's initial purchase, it would not directly impact those selling or purchasing used vehicles. New vehicle purchasers could also incorporate the fee into the financing of the vehicle, spreading out payment of the fee over time. Revenue from this type of fee has the potential to naturally increase over time with increases in new vehicle values, although it would decline during economic downturns when new vehicle sales volumes are lower. Critiques of the fee include that it is essentially an extra sales tax on new vehicle purchases and that it targets only one subset of the users of the transportation system. Similar to the highway use fee, the vehicle title fee, which the State increased as part of the 2019-2021 State budget, involves charging a fee on passenger vehicle purchases. However, the title fee is charged whenever an owner applies for a Certificate of Title, regardless of whether the vehicle is new or used.

- **Tolling** – Would require a motorist to pay a fee to use a particular highway facility. Federal law has traditionally prohibited implementing tolls on highways that have received Federal funds. However, a number of exceptions have been added to Federal transportation law over the years. The State could also apply under the Federal Interstate System Reconstruction and Rehabilitation Pilot Program (ISRRPP) to collect tolls on one interstate facility for which funding reconstruction or rehabilitation would not otherwise be possible. In 2016, WisDOT completed a preliminary study of the feasibility of tolling Wisconsin's interstate highways, at the direction of the State Legislature. This Tolling Feasibility Study identified issues and challenges related to tolling in Wisconsin and included traffic and revenue estimates for all interstate corridors in the State. Based on the study's revenue estimates, a four cents per mile toll on interstate facilities could generate about $150 million annually in net revenues (accounting for operating and maintenance costs) in the Region.[35] Tolling would also involve upfront capital costs, which are not accounted for in the annual revenue estimate. Like a VMT fee, tolling involves paying for the costs of the construction, maintenance, and operation of the transportation system based on actual use and it is unaffected by vehicle fuel efficiency or alternative fuels. It also ensures that out-of-state motorists pay for their use of the interstate system. Tolling revenues would likely need to be used for improvements within the interstate corridor in which they are generated, although that could potentially free up revenues for improvements elsewhere in the Region. One challenge associated with tolling would be the potential for traffic to divert from tolled facilities to parallel non-tolled facilities. Related to tolling, congestion pricing can be employed on an express lane or highway facility, with the fee adjusted based on the time of day and level of congestion. Effective express lane congestion pricing ensures free flowing traffic in the toll lanes and provides additional revenue for the construction, maintenance, and operation of the transportation system.

Transit system improvement and expansion, as recommended under VISION 2050, would require State legislation to create local dedicated transit funding (as recommended in previous regional transportation plans) and a renewal of adequate annual State financial assistance to transit.

The recommended increases in transit service under VISION 2050 have the potential to increase the amount of Federal funding the Region receives.

In addition to the revenue generated by a dedicated local transit funding source, the recommended increases in transit service under VISION 2050 have the potential to increase the amount of Federal funding the Region receives. FTA Section 5307 Urbanized Area Formula Grant funding is partially allocated to urbanized areas based on transit service and ridership. If additional routes are implemented and services are provided, more FTA 5307 funding would be allocated to the Region's urbanized areas. In addition to FTA Section 5307, the Region could obtain additional funding from a number of other FTA funding programs due to the additional transit service recommended under VISION 2050. Based on the amount of additional transit service recommended in VISION 2050, the Region could expect to receive up

[35] *The annual revenue estimate is based on tolling these interstate facilities: IH 43 between Beloit and Muskego, IH 41/IH 43/IH 94/IH 794/IH 894 in metropolitan Milwaukee, and IH 94 between Seven Mile Road and the Illinois State Line. The annual revenue estimate may be somewhat low because it does not include these interstate facilities: IH 43 north of STH 57 in Ozaukee County, IH 41 north of CTH Q in Washington County, and IH 94 west of STH 67 in Waukesha County.*

to $54 million (average annual in 2019 constant dollars) in additional FTA funding if VISION 2050 is implemented.

To implement the public transit element, VISION 2050 recommends that the Governor and State Legislature consider granting local jurisdictions the authority to hold binding referendums approving dedicated funding for public transit because:

- The State already provides substantial transit funding, at a higher rate than nearly all other states, and the potential for a significant increase is extremely unlikely. In addition, while significant State funding has been provided, it has not increased reliably in the past 20 years.

- Currently, transit systems in Southeastern Wisconsin and throughout the State have been using Federal funds, which are intended for capital projects, to fill gaps in operating funding. Long-term, using Federal funding in this way is not viable.

- In addition, significant increases in local property taxes to fund transit are unlikely, whether or not caps on property tax levies continue.

VISION 2050 recommends that the Governor and State Legislature consider granting local jurisdictions the authority to hold binding referendums approving dedicated funding for public transit.

For a number of local governments that want to expand or even continue to provide their current level of transit service, the option to pursue a referendum for dedicated funding for transit service is needed.

In addition to providing adequate funding, implementation of the significant improvements and expansion of transit service would be bolstered through the creation of a regional transit authority (RTA) with the ability to collect dedicated funding, and construct, manage, and operate the recommended transit system. A number of the recommended transit services extend across city and county boundaries and a regional agency could assist in the implementation of these recommended services. Legislative efforts to create an RTA have not progressed since 2010.

Consequences of Not Sufficiently Funding the Transportation System

There are numerous benefits associated with significantly improving and expanding public transit and it is critical that the Region's arterial streets and highways be reconstructed in a timely manner. Not fully implementing the transportation system recommended under VISION 2050 due to the limitations of current and expected transportation revenues would result in significant negative consequences for Southeastern Wisconsin.

Improving public transit and reconstructing streets and highways in a timely manner will have numerous benefits, which will not be achieved without address the transportation funding gap.

Not improving and expanding transit service will likely result in the following negative impacts:

- Limited transit-oriented development and redevelopment

- Reduced traffic carrying capacity in the Region's heavily traveled corridors

- Reduced access to jobs, healthcare, education, and other daily needs, particularly for the 1 in 10 households in the Region without access to a car, which is more likely to affect people of color and low-income residents

- Smaller labor force available to employers
- Reduced ability to develop compact, walkable neighborhoods

Postponing reconstruction of freeways beyond their service life and not adding capacity on highly congested segments will have the following negative impacts:

- Costly emergency repairs and inefficient pavement maintenance due to unnecessary, and increasingly ineffective, repaving projects
- Increased traffic congestion and travel delays, along with decreased travel reliability
- Increased crashes due to traffic congestion, antiquated roadway design, and deteriorating roadway condition

FISCALLY CONSTRAINED TRANSPORTATION SYSTEM 2

Credit: Hugh J. Fuller, WSP/Parsons Brinckerhoff

2.1 THE FISCALLY CONSTRAINED TRANSPORTATION SYSTEM

The FCTS represents the portion of the VISION 2050 transportation system that can be implemented with reasonably expected revenues.

Federal regulations require VISION 2050 to only include transportation projects that can be funded with existing and reasonably expected revenues, given existing and reasonably expected restrictions on the use of those revenues for specific types of projects or services.[36] The financial analysis presented in Chapter 1 of this volume identified a funding gap for the recommended transportation system, along with potential revenue sources that should be explored to address the funding gap. This chapter presents the portion of the recommended system that can be implemented with reasonably expected revenues, which is referred to as the "Fiscally Constrained Transportation System (FCTS)." It is important to recognize that the FCTS does not represent a desired "plan;" rather, it represents the transportation system expected to occur without sufficient funding levels to maintain and improve transportation infrastructure and services as recommended in VISION 2050. Should funding become available for any transportation improvements recommended in VISION 2050, the FCTS would be amended to include those improvements.

Just like the transportation component of VISION 2050, the FCTS includes the following six elements: public transit, bicycle and pedestrian, transportation systems management, travel demand management, arterial streets and highways, and freight transportation. Each element is described in this chapter, including specific plan recommendations from VISION 2050 that can be carried over to the FCTS despite the identified funding gap.

[36] *Federal regulations regarding fiscal constraint of a regional transportation plan can be found in 23 CFR 450.324(f)(11), most recently published in the* Federal Register *on May 27, 2016. Additional information on fiscal constraint can be found at: www.fhwa.dot.gov/planning/guidfinconstr_qa.cfm and www.transit.dot.gov/regulations-and-guidance/transportation-planning/financial-planning-fiscal-constraint.*

Expected Costs and Revenues Under the FCTS

The financial analysis in Chapter 1 of this volume relied on a detailed analysis of existing and reasonably expected revenues for the Region's transportation system. It compared the estimated costs to implement the VISION 2050 transportation system to the available revenues, which illustrated how the funding gaps were identified. The estimated costs and revenues associated with the FCTS are compared in constant 2019 dollars in Table 2.1 and in year of expenditure dollars in Table 2.2, including the costs of constructing, maintaining, and operating the public transit and arterial streets and highways elements and the expected revenues that would be available to fund both elements.

The estimated arterial street and highway system and transit system costs shown in Tables 2.1 and 2.2 include all capital costs and operating and maintenance costs. The estimated costs include the necessary costs to preserve the existing transportation system, such as arterial street resurfacing and reconstruction and transit system bus replacement, and the estimated costs of the transportation system improvement and expansion included in the FCTS.

A significant portion of the arterial street and highway system expenses is related to the construction and reconstruction of significant arterial segments. Table 2.3 shows the estimated cost and potential schedule of significant arterial construction and reconstruction projects through 2050. This table is provided to give more insight into the costs associated with specific projects contained within the arterial streets and highways element.

Due to a lack of funding, transit service levels under the FCTS would decline by 35%, rather than more than doubling as VISION 2050 recommends.

Description of Public Transit Element

Due to insufficient current and reasonably expected future revenues, and limitations on how those funds can be used, transit service under the FCTS would be expected to decline rather than significantly improve as recommended under VISION 2050. The only notable service expansions from existing service levels would be the implementation of the recommended east-west rapid transit line between downtown Milwaukee and the Milwaukee Regional Medical Center and the lakefront and 4th Street extensions of the Milwaukee Streetcar, both of which have secured funding or have identified reasonably expected sources of funding. The transit system included in the FCTS is consistent with the trends of declining transit service levels over the last 20 years, which were a result of transit funding levels during that period of time. The FCTS cannot assume that funding for the arterial streets and highways element can be flexed to transit projects, as that is not permitted at this time by the State Legislature.

Although service levels would decline under the FCTS, some VISION 2050 transit recommendations could make the remaining services slightly faster and more attractive to residents without increasing net operating costs.

Under the FCTS, service levels on the regional transit system would decline from service levels existing in 2018 by about 35 percent measured in terms of revenue transit vehicle-hours of service provided, from about 4,870 vehicle-hours of service on an average weekday in the year 2018 to 3,190 vehicle-hours of service in the year 2050 (see Table 2.4). This represents an even greater decline than was predicted by the original financial analysis for VISION 2050. The included service decline would result in a smaller transit service area (see Map 2.1) and a decline in the frequency of service. Table 2.5 shows the span of service hours and frequencies under the FCTS.

Despite the decline in transit service included in the FCTS, there are some recommendations from VISION 2050 that could improve the experience of riding transit in the Region without increasing the net cost of operating the transit system, making the services that remain slightly faster and more

Table 2.1
Average Annual Costs and Revenues Associated with the Fiscally Constrained Transportation System in 2019 Constant Dollars: 2021-2050

Cost or Revenue Item		2019 Dollars (millions)
Transportation System Cost[a]		
Arterial Street and Highway System		
Capital		
Freeway		
Committed Projects		$60
Resurfacing and Rehabilitation		120
Surface Arterial Reconstruction/Resurfacing[b]		253
Operating & Maintenance		97
	Highway Subtotal	$530
Transit System		
Capital		$22
Operating[c]		126
	Transit Subtotal	$148
	Total	$678
Transportation System Revenues[a]		
Highway Capital		
Federal/State		$422
Local		68
	Subtotal	$490
Highway Operating & Maintenance		
State		$47
Local		32
	Subtotal	$79
	Highway Subtotal	$569
Transit Capital		
Federal		$16
Local		6
	Subtotal	$22
Transit Operating		
Federal		$31
State		63
Local		29
	Subtotal	$123
	Transit Subtotal	$145
	Total	$714

[a] *The estimated arterial street and highway system and transit system costs include all capital, operating, and maintenance costs. The estimated costs include the necessary costs to preserve the existing transportation system, such as arterial street and highway resurfacing and reconstruction and transit system bus replacement, and the estimated costs of the transportation system improvement and expansion expected under the FCTS. Costs for freeway and surface arterial resurfacing, reconstruction, widening, and new construction are based upon actual project costs over the past several years. Estimated preservation costs reflect a reduced frequency for surface arterial and freeway reconstruction, resurfacing, and reconditioning. Transit system capital costs include preservation of the existing transit system, including bus replacement on a 15-year schedule and replacement of fixed facilities, and costs associated with the initial phases of the Milwaukee Streetcar and Milwaukee County's BRT line between downtown Milwaukee and the Milwaukee Regional Medical Center, including needed additional vehicles and facilities.*

Highway system operating and maintenance costs are based on estimated actual State and local highway system operating costs and verified by application of estimated unit lane-mile costs. Estimated highway system operating costs are increased from estimated existing costs based on the expected increase in the FCTS in arterial highway system lane-miles. Transit system operating and maintenance costs are based on existing estimated actual costs and unit costs based on service vehicle-miles and vehicle-hours. Estimated transit system operating costs have been decreased from existing system operating costs based on the requisite decrease in transit service vehicle-miles and vehicle-hours to match reasonably expected revenues available.

Highway Federal, State, and local capital and operating revenues are based on estimated Federal, State, and local expenditures over the last several years. Transit Federal capital and operating revenues are based on historical expenditures over the last several years, and assessment of available Federal formula and program funds. State transit revenues are based on the State maintaining estimated average year 2020-2021 funding levels through the year 2050.

[b] *Includes the costs associated with the bicycle and pedestrian, TSM, and TDM elements of the FCTS.*

[c] *Net operating cost (total operating costs less fare-box revenue).*

Source: SEWRPC

Table 2.2
Average Annual Costs and Revenues Associated with the Fiscally Constrained Transportation System Based on Year of Expenditure: 2021-2050

Cost or Revenue Item		YOE Dollars (millions)
Transportation System Cost[a]		
Arterial Street and Highway System		
Capital		
Freeway		
Committed Projects		$73
Resurfacing and Rehabilitation		183
Surface Arterial Reconstruction/Resurfacing[b]		388
Operating & Maintenance		149
	Highway Subtotal	$793
Transit System		
Capital		$29
Operating[c]		161
	Transit Subtotal	$190
	Total	$983
Transportation System Revenues[a]		
Highway Capital		
Federal/State		$541
Local		88
	Subtotal	$629
Highway Operating & Maintenance		
State		$60
Local		41
	Subtotal	$101
	Highway Subtotal	$730
Transit Capital		
Federal		$21
Local		8
	Subtotal	$29
Transit Operating		
Federal		$40
State		80
Local		36
	Subtotal	$156
	Transit Subtotal	$185
	Total	$915

[a] *The estimated arterial street and highway system and transit system costs include all capital, operating, and maintenance costs. The estimated costs include the necessary costs to preserve the existing transportation system, such as arterial street and highway resurfacing and reconstruction and transit system bus replacement, and the estimated costs of the transportation system improvement and expansion expected under the FCTS. Costs for freeway and surface arterial resurfacing, reconstruction, widening, and new construction are based upon actual project costs over the past several years. Estimated preservation costs reflect a reduced frequency for surface arterial and freeway reconstruction, resurfacing, and reconditioning. Transit system capital costs include preservation of the existing transit system, including bus replacement on a 15-year schedule and replacement of fixed facilities, and costs associated with the initial phases of the Milwaukee Streetcar and Milwaukee County's BRT line between downtown Milwaukee and the Milwaukee Regional Medical Center, including needed additional vehicles and facilities.*

Highway system operating and maintenance costs are based on estimated actual State and local highway system operating costs and verified by application of estimated unit lane-mile costs. Estimated highway system operating costs are increased from estimated existing costs based on the expected increase in the FCTS in arterial highway system lane-miles. Transit system operating and maintenance costs are based on existing estimated actual costs and unit costs based on service vehicle-miles and vehicle-hours. Estimated transit system operating costs have been decreased from existing system operating costs based on the requisite decrease in transit service vehicle-miles and vehicle-hours to match reasonably expected revenues available.

Highway Federal, State, and local capital and operating revenues are based on estimated Federal, State, and local expenditures over the last several years. Transit Federal capital and operating revenues are based on historical expenditures over the last several years, and assessment of available Federal formula and program funds. State transit revenues are based on the State maintaining estimated average year 2020-2021 funding levels through the year 2050.

[b] *Includes the costs associated with the bicycle and pedestrian, TSM, and TDM elements of the FCTS.*

[c] *Net operating cost (total operating costs less fare-box revenue).*

Source: SEWRPC

Table 2.3
Estimated Cost and Potential Schedule of Significant Arterial Construction and Reconstruction Projects: 2021-2050[a,b]

Period Completed and Open to Traffic	County	Facility	Limits of Project	Cost (Millions 2019 Dollars)[c]	Cost (Millions YOE Dollars)	Mileage
2021 to 2025	Kenosha	CTH S (part)	E. Frontage Road to CTH H	$8.5	$9.3	1.9
	Kenosha	STH 50	IH 94 to 39th Avenue	68.6	75.2	4.8
	Milwaukee	Zoo Interchange	Completion of North Leg	188.6	211.3	1.7
	Racine	CTH KR	IH 94 to Old Green Bay Road	77.8	85.3	4.4
	Waukesha	CTH M (part)	CTH Y to CTH YY	25.1	27.5	2.9
			Subtotal	$368.6	$408.6	15.7
2026 to 2030	Kenosha	CTH H (Part)	CTH S to STH 50	$19.7	$24.2	2.6
	Milwaukee	IH 94	70th Street to 16th Street (Including Stadium Interchange)	871.0	1,069.4	3.5
	Milwaukee and Ozaukee	IH 43	Silver Spring Dr. to STH 60	551.6	639.5	12.6
	Milwaukee and Racine	STH 32	STH 100 to Five Mile Road	33.2	40.8	5.1
	Ozaukee	CTH W (part)	Highland Road to W. Glen Oaks Lane	7.6	9.3	1.0
	Racine	CTH KR	Old Green Bay Road to STH 32	21.7	26.6	2.8
	Walworth	STH 50	IH 43 to STH 67	26.2	32.2	4.3
	Waukesha	STH 83	USH 18 to Phylis Parkway	35.4	43.5	2.4
	Waukesha	STH 83	Mariner Drive to STH 16	35.4	43.5	3.6
	Waukesha	CTH D (part)	Milwaukee County line to Calhoun Road	13.4	16.5	3.0
	Waukesha	CTH Y (part)	Hickory Trail to Downing Drive	17.7	21.7	4.0
			Subtotal	$1,632.9	$1,967.2	44.9
2031 to 2035	Kenosha	CTH H (Part)	STH 50 to STH 165	$14.6	$20.1	3.0
	Racine	STH 20	IH 94 to Oaks Road	46.1	63.4	4.5
	Milwaukee	IH 794 Lake Interchange	Milwaukee River to Hoan Bridge	200.0	257.3	0.7
	Milwaukee	USH 45/STH 100	Rawson Avenue to 60th Street	24.7	34.0	4.8
	Waukesha	Pilgrim Road	USH 18 to Lisbon Road	36.4	50.1	4.8
	Waukesha	CTH SR/Town Line Road extension (part)	CTH JJ to STH 190	24.2	33.3	3.2
	Waukesha	CTH Y (part)	CTH L to College Avenue	12.8	17.6	2.1
			Subtotal	$358.8	$475.8	23.1
2036 to 2040	Ozaukee	CTH W (part)	CTH V to Lakeland Road	$23.5	$36.2	3.1
	Waukesha	STH 67 (part)	CTH DR to USH 18	14.9	23.0	2.9
	Waukesha	STH 190	STH 16 to Brookfield Road	55.1	84.9	5.4
	Waukesha	CTH D (part)	Calhoun Road to STH 59/164	17.1	26.4	3.8
			Subtotal	$110.6	$170.5	15.2
2041 to 2045	Ozaukee	CTH W (part)	Lakeland Road to Highland Road	$23.3	$40.2	3.1
	Waukesha	STH 59/164	CTH XX to Arcadian Avenue	58.1	100.3	4.8
	Waukesha	CTH SR/Town Line Road extension (part)	STH 190 to Weyer Road	8.2	14.2	1.5
			Subtotal	$89.6	$154.7	9.4
			Total	$2,560.5	$3,176.8	108.3

[a] *Significant projects include those projects involving new construction or widening with a cumulative length of four or more miles.*

[b] *The schedule shown in this table represents an estimate of the timing of construction and reconstruction for the purposes of comparison of costs and revenues, and is not a recommendation for the schedule of construction and reconstruction. Such a schedule can only be developed by the responsible implementing agency and will necessarily entail frequent updating, for example, due to pavement and structure condition.*

[c] *Cost of Construction does not include the cost of right-of-way required for the project.*

Source: SEWRPC

Table 2.4
Fixed-Route Public Transit Service Levels: Fiscally Constrained Transportation System

Average Weekday Transit Service Characteristics	Existing (2018)	Fiscally Constrained Transportation System (2050)
Revenue Vehicle-Hours		
Rapid Transit	--	150
Commuter Rail	10	10
Commuter Bus	290	180
Express Bus	880	--
Local Transit	3,690	2,850
Total	4,870	3,190
Revenue Vehicle-Miles		
Rapid Transit	--	3,000
Commuter Rail	100	100
Commuter Bus	5,700	3,500
Express Bus	10,400	--
Local Transit	46,100	33,300
Total	62,300	39,900

Source: SEWRPC

attractive to residents. Those recommendations are included in the FCTS and are listed below. More detail on these recommendations can be found in Chapter 1 of this volume.

- **Recommendation 2.6: Implement "transit-first" designs on urban streets**
- **Recommendation 2.7: Enhance stops, stations, and park-ride facilities with state-of-the-art amenities**
- **Recommendation 2.8: Accommodate bicycles on all fixed-route transit vehicles**
- **Recommendation 2.9: Implement programs to improve access to suburban employment centers**
- **Recommendation 2.10: Provide information to promote transit use**
- **Recommendation 2.12: Consider implementation of proof-of-payment on heavily used transit services**

The bicycle and pedestrian element is unchanged between VISION 2050 and the FCTS as there would likely be enough revenue to fund this element as recommended.

Description of Bicycle and Pedestrian Element

Given that bicycle and pedestrian facility costs are primarily included in the costs for surface arterial streets and highways, and typically represent a small fraction of the cost to reconstruct an arterial facility, there would likely be enough revenue to fund the bicycle and pedestrian element as recommended under VISION 2050. As discussed in Chapter 3 of Volume I, substantial progress in implementing the bicycle and pedestrian element of the year 2035 regional transportation plan occurred between when that plan was adopted and VISION 2050 was prepared, further supporting this conclusion. Therefore, the bicycle and pedestrian element is unchanged between VISION 2050 and the FCTS.

Bicycle recommendations for the FCTS include providing on-street bicycle accommodations on the arterial street and highway system (non-freeways),

Map 2.1
Transit Services: Fiscally Constrained Transportation System

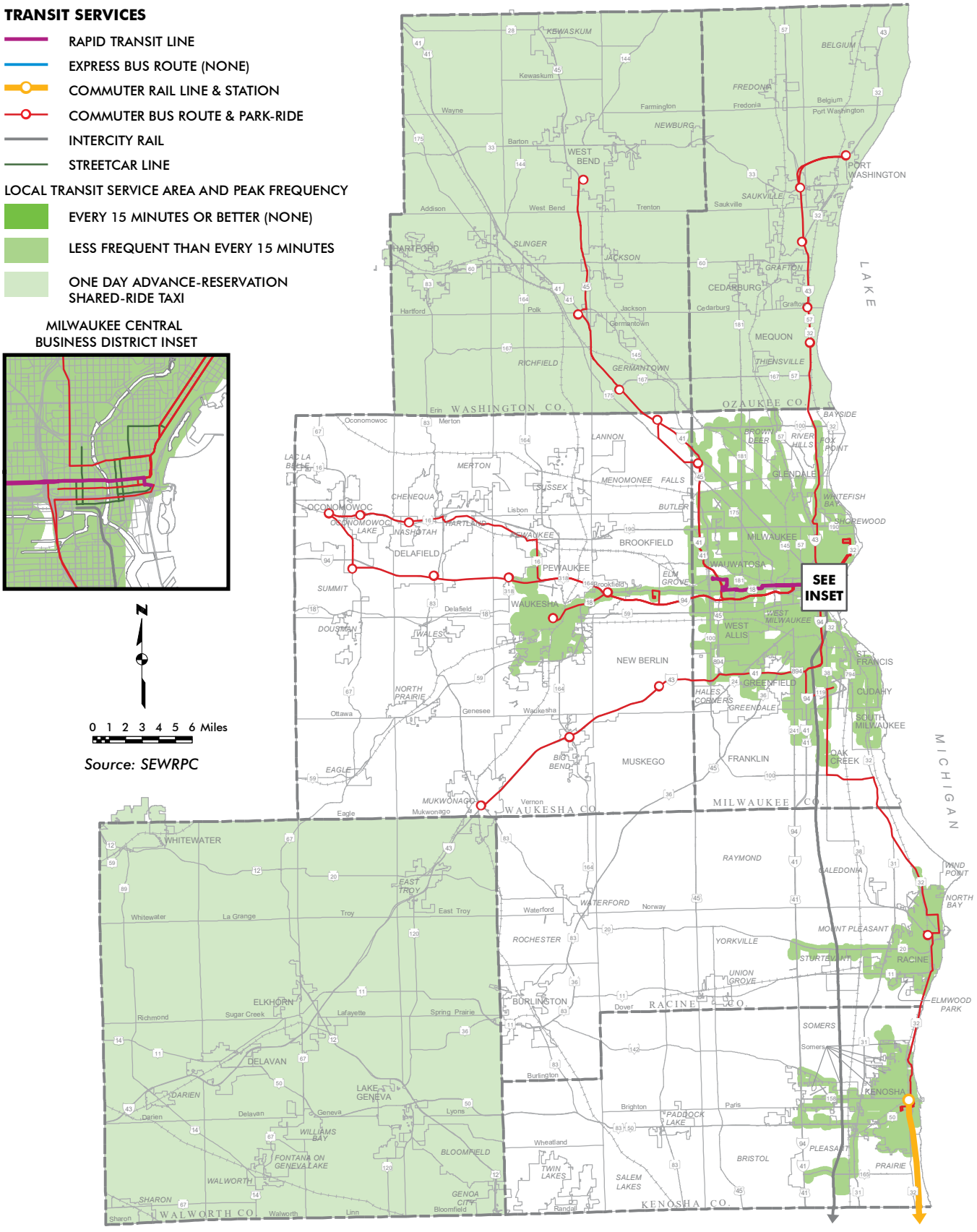


Table 2.5
Transit Service Hours and Frequency: Fiscally Constrained Transportation System

Service Type	Weekdays/ Weekends	Existing (2018)		Fiscally Constrained Transportation System (2050)	
		Service Hours	Service Headways	Service Hours	Service Headways
Rapid Transit	Weekdays	No service	No service	4 a.m. – 2 a.m.	10 – 15 minutes
	Weekends	No service	No service	5 a.m. – 2 a.m.	15 – 20 minutes
Commuter Rail	Weekdays	6 a.m. – 2 a.m.	30 – 360 minutes	6 a.m. – 2 a.m.	30 – 360 minutes
	Weekends	7 a.m. – 2 a.m.	60 – 480 minutes	7 a.m. – 2 a.m.	60 – 480 minutes
Commuter Bus	Weekdays	5 a.m. – 10 a.m. 12 p.m. – 8 p.m., many services peak direction only	10 – 225 minutes, many services peak direction only	5 a.m. – 10 a.m. 3 p.m. – 8 p.m., many services peak direction only	25 – 250 minutes, many services peak direction only
	Weekends	8 a.m. – 11 p.m., KRM Bus only	90 – 240 minutes, KRM Bus only	8 a.m. – 11 p.m., KRM Bus only	100 – 300 minutes, KRM Bus only
Express Bus					
Milwaukee County	Weekdays	4 a.m. – 2 a.m.	10 – 35 minutes	No service	No service
	Weekends	5 a.m. – 2 a.m.	20 – 45 minutes	No service	No service
Kenosha and Racine Counties	Weekdays	6 a.m. – 7 p.m.	60 – 75 minutes	6 a.m. – 7 p.m.	60 – 75 minutes
	Weekends	No service	No service	No service	No service
Local Transit					
Milwaukee County	Weekdays	4 a.m. – 2 a.m.	10 – 70 minutes	4 a.m. – 2 a.m.	10 – 90 minutes
	Weekends	5 a.m. – 2 a.m.	12 – 100 minutes	5 a.m. – 2 a.m.	15 – 120 minutes
Remainder of Region	Weekdays	6 a.m. – 10 p.m.	30 – 60 minutes	6 a.m. – 8 p.m.	35 – 70 minutes
	Weekends	6 a.m. – 10 p.m.	30 – 60 minutes	6 a.m. – 6 p.m., no service on some systems	60 – 90 minutes, no service on some systems

Source: SEWRPC

expanding the off-street bicycle path system, implementing enhanced bicycle facilities in key regional corridors, and expanding bike share program implementation. As shown in Table 2.6, the FCTS includes approximately 2,997 miles of standard on-street bicycle accommodations, 393 miles of enhanced bicycle facilities, and 731 miles of off-street bicycle paths. Map 2.2 shows the recommended bicycle network, which identifies on-street bicycle facilities, potential corridors for enhanced bicycle facilities, off-street bicycle paths, and nonarterial street connections to the off-street bicycle network.

The FCTS also includes recommendations for the location, design, and construction of pedestrian facilities and further recommends that local communities develop bicycle and pedestrian plans to supplement the regional plan. More detail on all of these recommendations can be found in Chapter 1 of this volume.

- **Recommendation 3.1: Expand the on-street bicycle network as the surface arterial system is resurfaced and reconstructed**
- **Recommendation 3.2: Expand the off-street bicycle path system to provide a well-connected regional network**
- **Recommendation 3.3: Implement enhanced bicycle facilities in key regional corridors**
- **Recommendation 3.4: Expand bike and scooter share program implementation**

Table 2.6
Miles of Bicycle Facilities: Fiscally Constrained Transportation System

Bicycle Facility	Estimated Mileages	
	Existing (2019)	Fiscally Constrained Transportation System (2050)
On-Street Accommodations		
Standard	893.9	2,997.3
Enhanced	106.9	392.7
Off-Street Paths	310.6	730.5

Source: SEWRPC

- **Recommendation 3.5: Provide pedestrian facilities that facilitate safe, efficient, and accessible pedestrian travel**
- **Recommendation 3.6: Prepare local community bicycle and pedestrian plans**

Description of Transportation Systems Management Element
Similar to the bicycle and pedestrian element, the costs associated with the transportation systems management (TSM) element are primarily included in the costs for arterial streets and highways, and typically represent a small fraction of the cost to reconstruct an arterial facility. Therefore, there would likely be enough revenue to fund the TSM element as recommended under VISION 2050. As discussed in Chapter 3 of Volume I, substantial progress in implementing the TSM element of the year 2035 regional transportation plan occurred between when that plan was adopted and VISION 2050 was prepared, further supporting this conclusion. Therefore, the TSM element is unchanged between VISION 2050 and the FCTS.

The TSM element is unchanged between VISION 2050 and the FCTS as there would likely be enough revenue to fund this element as recommended.

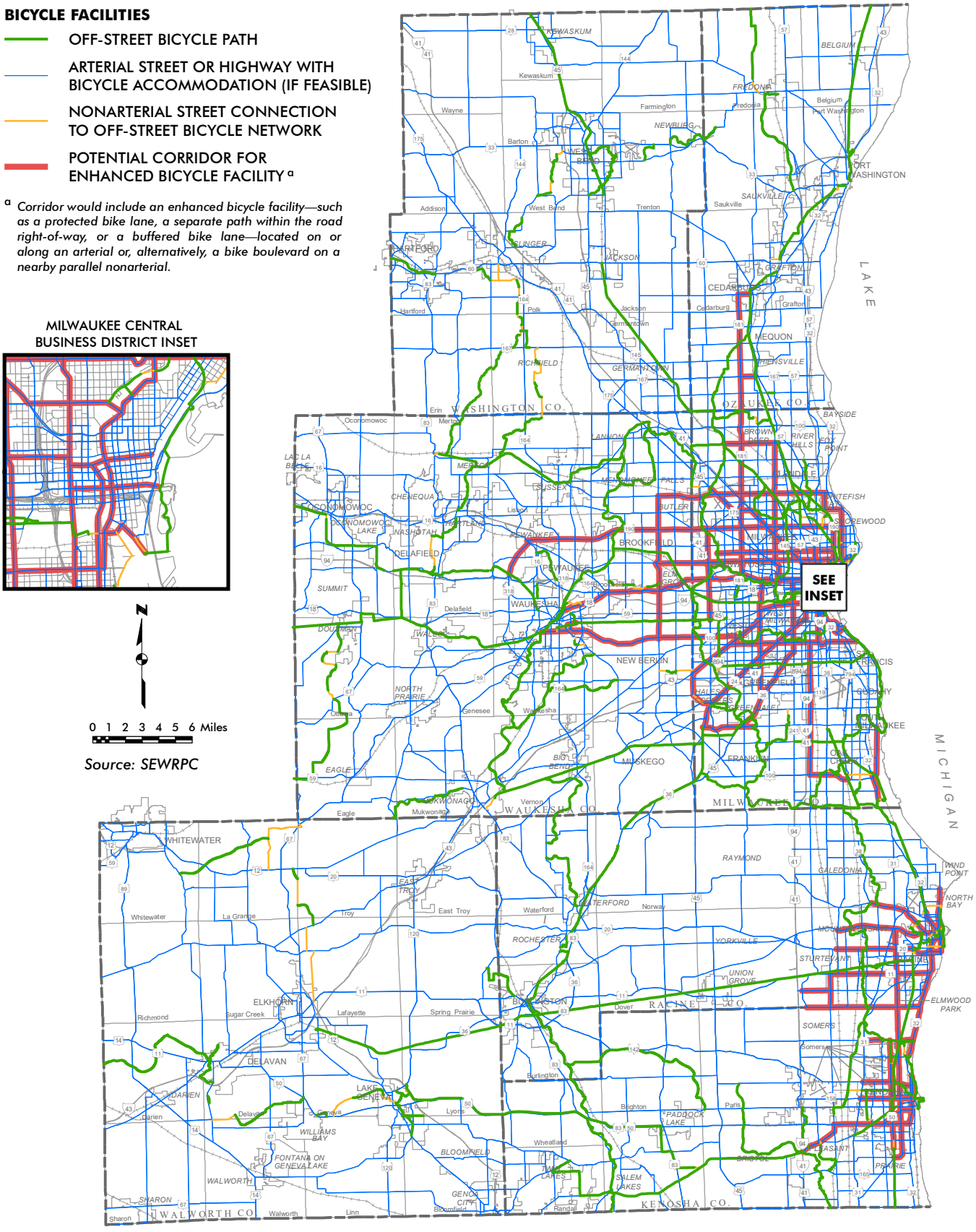
TSM involves managing and operating existing transportation facilities to maximize their carrying capacity and travel efficiency. TSM recommendations included in the FCTS relate to freeway traffic management, surface arterial street and highway traffic management, and major activity center parking management and guidance. The specific TSM measures within each of the three categories collectively would be expected to result in a more efficient and safer transportation system. More detail on all of these recommendations can be found in Chapter 1 of this volume.

Freeway Traffic Management
Freeway traffic management strategies include measures that improve the operational control, advisory information, and incident management on the regional freeway system.

- **Recommendation 4.1: Implement freeway operational control measures**
- **Recommendation 4.2: Implement advisory information measures for the freeway system**
- **Recommendation 4.3: Implement incident management measures for the freeway system**

Surface Arterial Street and Highway Traffic Management
Surface arterial street and highway traffic management strategies are measures that improve the operation and management of the regional surface arterial street and highway network.

Map 2.2
Bicycle Network: Fiscally Constrained Transportation System



- **Recommendation 4.4: Improve and expand coordinated traffic signal systems**
- **Recommendation 4.5: Improve arterial street and highway traffic flow at intersections**
- **Recommendation 4.6: Expand curb-lane parking restrictions**
- **Recommendation 4.7: Develop and adopt access management standards**
- **Recommendation 4.8: Enhance advisory information for surface arterial streets and highways**
- **Recommendation 4.9: Expand the use of emergency vehicle preemption**

Major Activity Center Parking

The FCTS recommends strategies to improve parking around major activity centers that allow motorists to find available parking quickly, reducing traffic volume and congestion and associated air pollutant emissions and fuel consumption.

- **Recommendation 4.10: Implement parking management and guidance systems in major activity centers**
- **Recommendation 4.11: Implement demand-responsive pricing for parking in major activity centers**

Regional Transportation Operations Plan

The current regional transportation operations plan (RTOP), originally completed in 2012, is a five-year program identifying candidate corridor and intersection TSM projects prioritized for implementation and funding, particularly with respect to FHWA Congestion Mitigation and Air Quality Improvement (CMAQ) Program funding.

- **Recommendation 4.12: Review and update the regional transportation operations plan**

Description of Travel Demand Management Element

Travel demand management (TDM) refers to a series of measures or strategies intended to reduce the total and peak period demand for roadway travel, allowing for more efficient use of the existing capacity of the transportation system. TDM strategies encourage and incentivize people to consider alternatives to single-occupancy vehicle (SOV) trips, such as public transit, ridesharing, walking, biking, and working remotely. The general intent of such measures is to reduce traffic volume and congestion, and the associated air pollutant emissions and fuel consumption. To be effective, TDM measures should be technically and politically feasible; integrated with public transit, bicycle and pedestrian, and arterial street and highway improvements; and combined into coherent packages so that a variety of measures are implemented. As such, the recommendations included in the TDM element of VISION 2050 are either policy initiatives that do not require public funding, or are infrastructure investments that are made largely as part of the construction and operation of arterial streets and highways, and therefore are likely to be funded and are included in the FCTS. More detail on all of these recommendations can be found in Chapter 1 of this volume.

The TDM element is unchanged between VISION 2050 and the FCTS as there would likely be enough revenue to fund this element as recommended.

- **Recommendation 5.1: Enhance the preferential treatment for high-occupancy vehicles**
- **Recommendation 5.2: Expand the network of park-ride lots**
- **Recommendation 5.3: Price personal vehicle travel at its true cost**
- **Recommendation 5.4: Promote travel demand management**
- **Recommendation 5.5: Facilitate transit, bicycle, and pedestrian movement in local land use plans and zoning**
- **Recommendation 5.6: Partner with private-sector mobility service providers**

A funding gap for the arterial streets and highways element will reduce the amount of the system that can be reconstructed, widened, or newly constructed.

Description of Arterial Streets and Highways Element

Arterial streets and highways are those portions of the total street and highway system principally intended to provide travel mobility, serving the through movement of traffic and providing transportation service between major subareas of a region and also through the region. A comparison of estimated costs to expected revenues for the VISION 2050 transportation system, shown in Tables 2.1 and 2.2, indicates a funding gap for the arterial streets and highways element. The gap will result in a reduction in the amount of freeway and surface arterials that can be reconstructed, widened, or newly constructed. With respect to surface arterials under the FCTS, approximately two-thirds of the total miles that would be expected to be reconstructed by 2050 would instead be rehabilitated—extending the overall life of the roadway, but likely resulting in a reduction in pavement quality.

Specifically, only approximately 20 miles, or 11 percent, of the 186 miles of remaining freeway reconstruction recommended in VISION 2050 would be expected to be implemented by the year 2050 under the updated FCTS, as shown on Map 2.3. As such, the FCTS does not include approximately 106 miles of planned freeway reconstruction at existing capacity, 48 miles of planned freeway expansion, and 12 miles of planned new freeway facilities. With respect to surface arterials, all of the surface arterial capacity expansion recommended in VISION 2050 is included in the updated FCTS, with the exception of the planned extension of the Lake Parkway between Edgerton Avenue and STH 100 in Milwaukee County and the extension of Cold Springs Road between CTH O and IH 43 (associated with the reconstruction of the IH 43/STH 57 interchange) in Ozaukee County, as shown on Map 2.4.

The arterial street and highway system under the FCTS totals 3,650 miles. Approximately 94 percent, or 3,426 of these miles, would be resurfaced and reconstructed to their existing traffic carrying capacity. Approximately 179 miles, or about 5 percent of the year 2050 arterial street and highway system, would involve capacity expansion through widening to provide additional through traffic lanes. The remaining 46 miles, or about 1 percent of the total arterial street mileage, would involve capacity expansion through the construction of new arterial facilities.

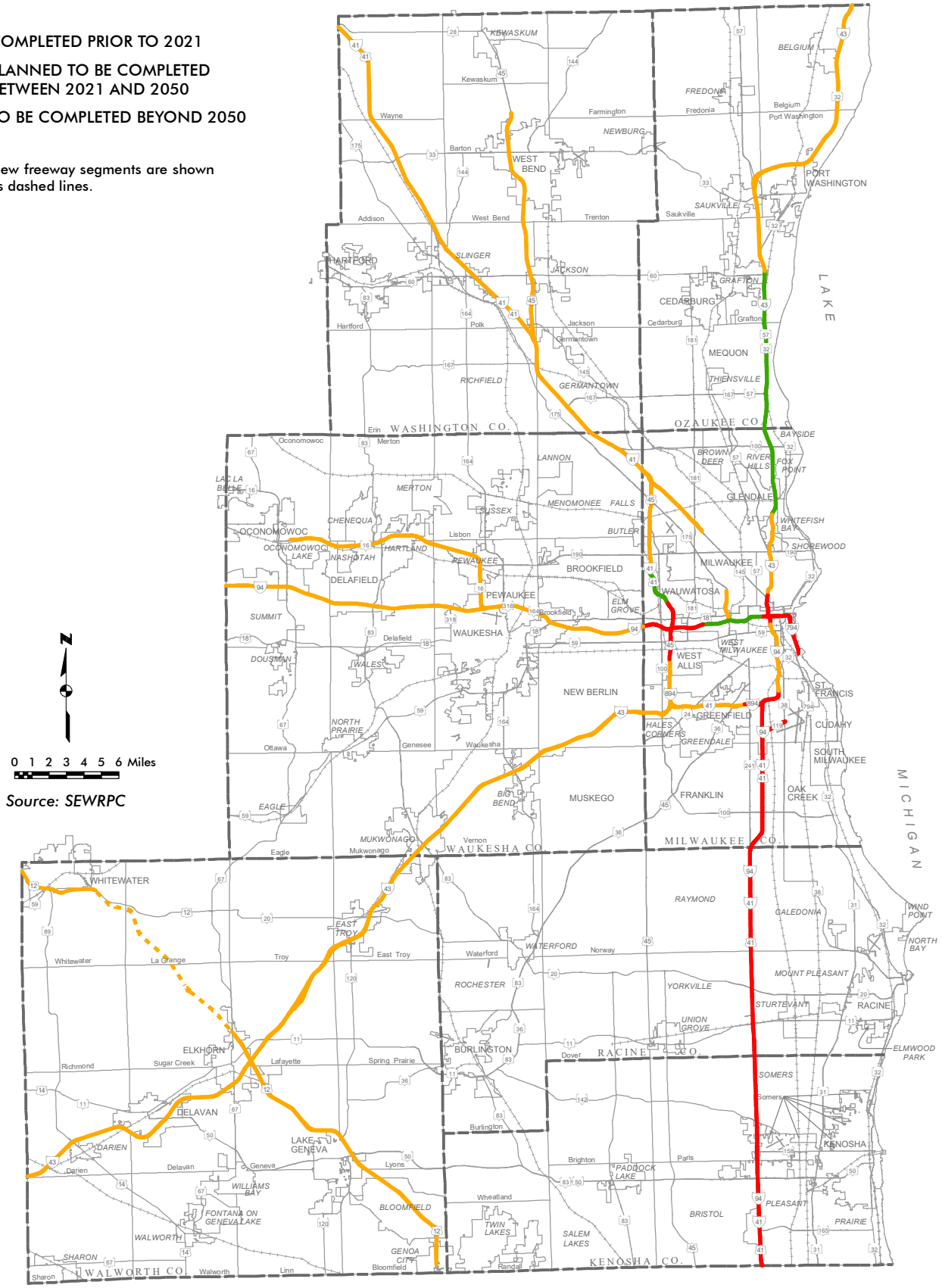
The FCTS does not make any recommendation with respect to whether the 10.0 route-miles of IH 43 between Howard Avenue and Silver Spring Drive, when reconstructed, should be reconstructed with or without additional traffic lanes. The FCTS recommends that preliminary engineering conducted for the reconstruction of this segment of IH 43 should include the consideration of alternatives for rebuilding the freeway with additional lanes and rebuilding

Map 2.3
Schedule for Reconstructing the Freeway System Under the FCTS

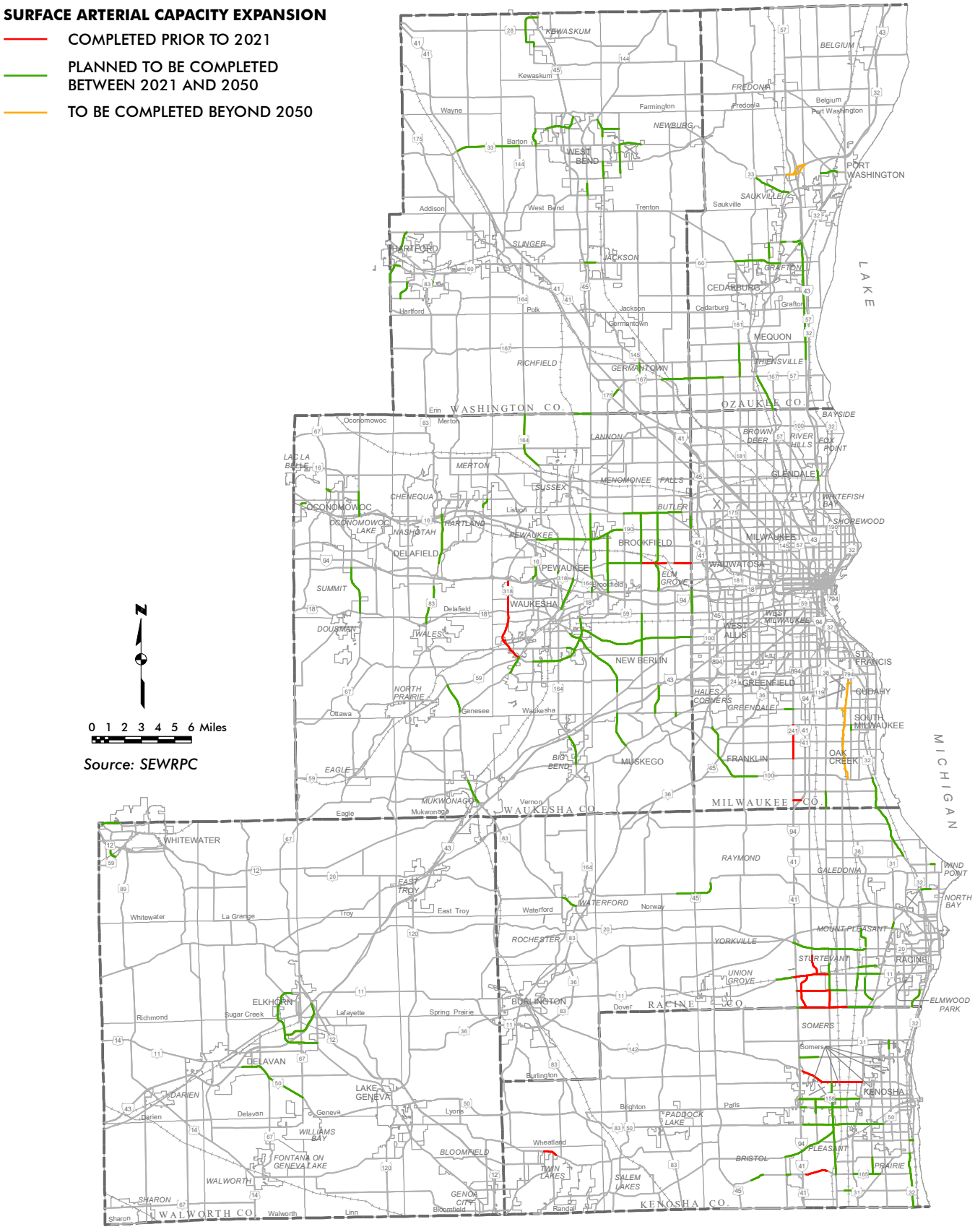
FREEWAY

- COMPLETED PRIOR TO 2021
- PLANNED TO BE COMPLETED BETWEEN 2021 AND 2050
- TO BE COMPLETED BEYOND 2050

Note: New freeway segments are shown as dashed lines.



Map 2.4
Schedule for Reconstructing Surface Arterials with Capacity Expansion Under the FCTS



it with the existing number of lanes. The decision of how this segment of IH 43 would be reconstructed would be made by the Wisconsin Department of Transportation (WisDOT) through preliminary engineering and environmental impact study. During preliminary engineering, WisDOT would consider and evaluate a number of alternatives, including rebuild as is, various options of rebuilding to modern design standards, compromises to rebuilding to modern design standards, rebuilding with additional lanes, and rebuilding with the existing number of lanes. Only at the conclusion of preliminary engineering would a determination be made as to how this segment of IH 43 freeway would be reconstructed. Following the conclusion of the preliminary engineering for the reconstruction, VISION 2050 and the FCTS would be amended to reflect the decision made as to how IH 43 between Howard Avenue and Silver Spring Drive would be reconstructed. Any construction along this segment of IH 43 prior to preliminary engineering—such as bridge reconstruction—should fully preserve and accommodate the future option of rebuilding the freeway with additional lanes.

Table 2.7 and Maps 2.5 through 2.11 display the arterial streets and highways element of the FCTS. More detail on the following recommendations can be found in Chapter 1 of this volume.

- **Recommendation 6.1: Keep the Region's arterial street and highway system in a state of good repair**
- **Recommendation 6.2: Incorporate "complete streets" concepts for arterial streets and highways**
- **Recommendation 6.3: Expand arterial capacity to address residual congestion**
- **Recommendation 6.4: Avoid, minimize, or mitigate environmental impacts of arterial capacity expansion**
- **Recommendation 6.5: Address safety needs on the arterial street and highway network**
- **Recommendation 6.6: Address security needs related to the arterial street and highway system**
- **Recommendation 6.7: Monitor growth and development of automated vehicles**

Description of Freight Transportation Element

VISION 2050 recommends a multimodal freight transportation system designed to provide for the efficient and safe movement of raw materials and finished products to, from, and within Southeastern Wisconsin. All recommendations included in the freight transportation element would be expected to be included as part of the regular operations and maintenance of the arterial street and highway system, or would not require additional public funding to implement, and therefore are unchanged between VISION 2050 and the FCTS. More detail on the following recommendations can be found in Chapter 1 of this volume.

- **Recommendation 7.1: Accommodate truck traffic on the regional highway freight network**

The freight transportation element is unchanged between VISION 2050 and the FCTS as there would likely be enough revenue to fund this element as recommended.

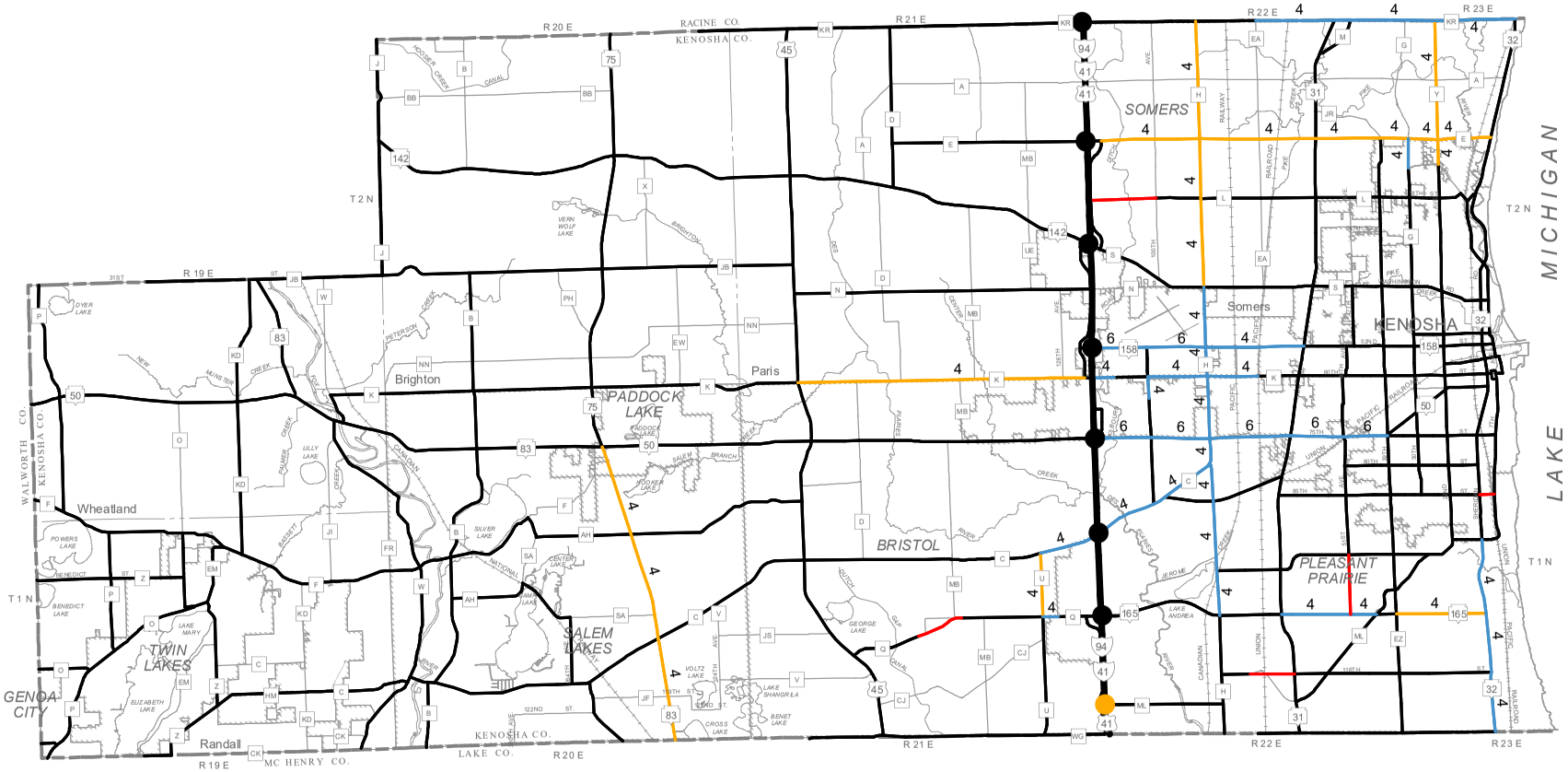
Table 2.7
Arterial Street and Highway System Preservation, Improvement, and Expansion by Arterial Facility Type by County: Fiscally Constrained Transportation System

County	Arterial Facility Type	System Preservation (miles)	System Improvement (miles)	System Expansion (miles)	Total Miles
Kenosha	Freeway	12.0	--	--	12.0
	Surface Arterial	322.2	27.4	3.9	353.5
	Subtotal	334.2	27.4	3.9	365.5
Milwaukee	Freeway	57.7	10.3	--	68.0
	Surface Arterial	719.0	9.3	--	728.3
	Subtotal	776.7	18.5	--	796.3
Ozaukee	Freeway	18.7	8.7	--	27.4
	Surface Arterial	262.4	18.5	2.8	283.7
	Subtotal	281.1	27.2	2.8	311.1
Racine	Freeway	12.0	--	--	12.0
	Surface Arterial	416.1	15.8	8.8	440.7
	Subtotal	428.1	15.8	8.8	452.7
Walworth	Freeway	49.8	--	--	49.8
	Surface Arterial	413.9	4.3	10.3	428.5
	Subtotal	463.7	4.3	10.3	478.3
Washington	Freeway	42.2	--	--	42.2
	Surface Arterial	389.9	8.8	15.5	414.2
	Subtotal	432.1	8.8	15.5	456.4
Waukesha	Freeway	58.8	--	--	58.8
	Surface Arterial	650.9	75.8	4.3	789.8
	Subtotal	709.7	75.8	4.3	789.8
Region	Freeway	251.2	19.0	--	270.2
	Surface Arterial	3,174.4	159.9	45.6	3,379.9
	Total	3,425.6	178.9	45.6	3,650.1

Source: SEWRPC

- **Recommendation 7.2: Accommodate oversize/overweight shipments to, from, and within Southeastern Wisconsin**
- **Recommendation 7.3: Pursue development of a new truck-rail intermodal facility in or near Southeastern Wisconsin**
- **Recommendation 7.4: Develop truck size and weight regulations in Wisconsin consistent with neighboring states**
- **Recommendation 7.6: Address the potential need for truck drivers in Southeastern Wisconsin**
- **Recommendation 7.7: Address safety needs related to freight transportation**
- **Recommendation 7.8: Address security needs related to freight transportation**
- **Recommendation 7.9: Support efforts in areas outside the Region that improve freight movement to and from the Region**

Map 2.5
Functional Improvements to the Arterial Street and Highway System in Kenosha County: Fiscally Constrained Transportation System



ARTERIAL STREET OR HIGHWAY

- NEW
- WIDENING AND/OR OTHER IMPROVEMENT TO PROVIDE SIGNIFICANT ADDITIONAL CAPACITY
- RESERVE RIGHT-OF-WAY TO ACCOMMODATE POTENTIAL FUTURE IMPROVEMENT BEYOND 2050 (ADDITIONAL LANES OR NEW FACILITY)
- RESURFACING OR RECONSTRUCTION TO PROVIDE ESSENTIALLY THE SAME CAPACITY
- 4 NUMBER OF TRAFFIC LANES FOR NEW OR IMPROVED FACILITY, INCLUDING RIGHT-OF-WAY RESERVATIONS (2 LANES WHERE UNNUMBERED)

FREEWAY INTERCHANGE

- EXISTING
- RESERVE RIGHT-OF-WAY TO ACCOMMODATE FUTURE IMPROVEMENT (POTENTIAL NEW INTERCHANGE)

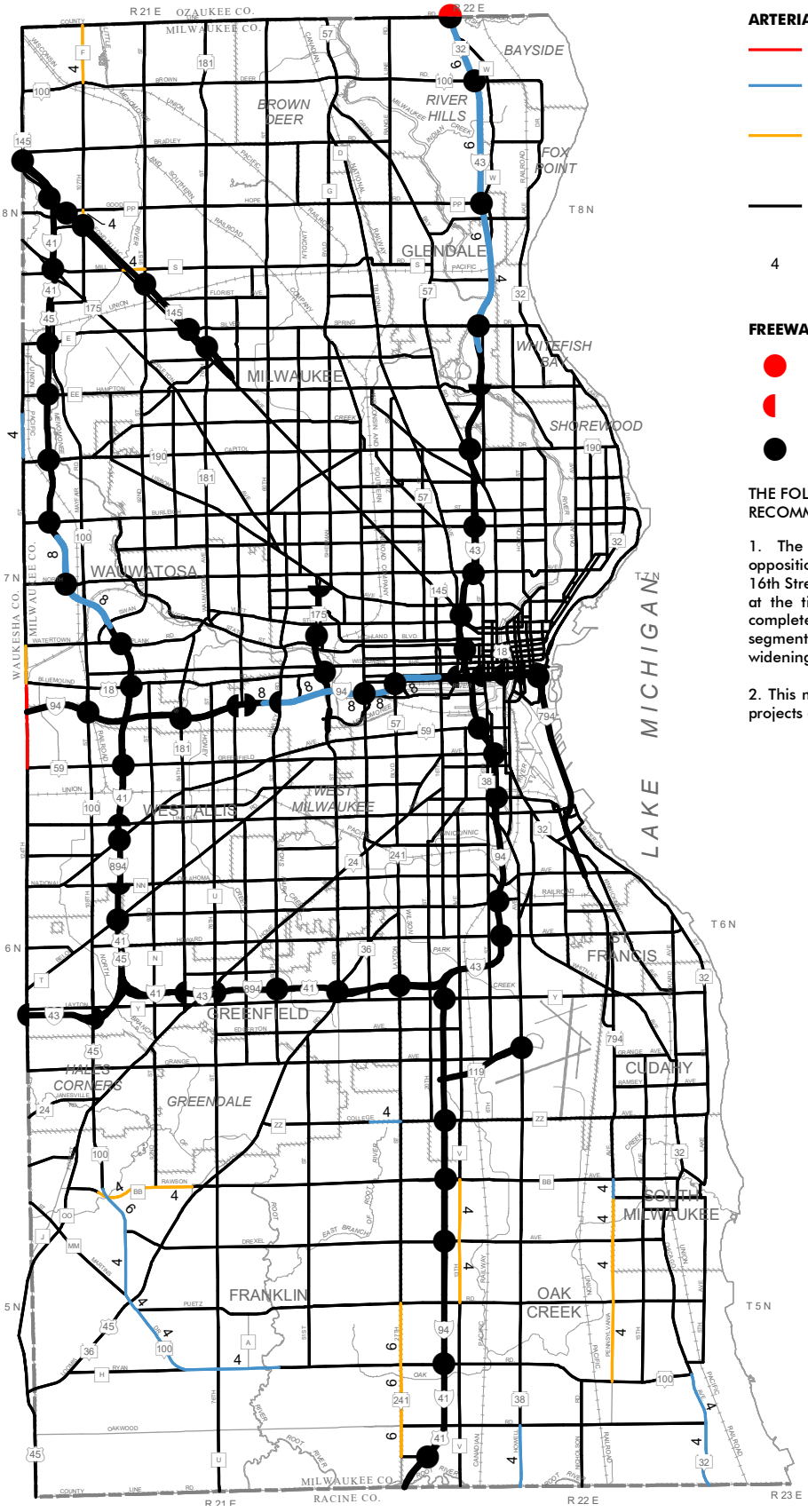
Note: This map has been updated to not show capacity expansion projects completed through the end of 2020.

N

0 1 2 3 Miles

Source: SEWRPC

Map 2.6
Functional Improvements to the Arterial Street and Highway System in Milwaukee County: Fiscally Constrained Transportation System



ARTERIAL STREET OR HIGHWAY

- NEW
- WIDENING AND/OR OTHER IMPROVEMENT TO PROVIDE SIGNIFICANT ADDITIONAL CAPACITY
- RESERVE RIGHT-OF-WAY TO ACCOMMODATE POTENTIAL FUTURE IMPROVEMENT BEYOND 2050 (ADDITIONAL LANES OR NEW FACILITY)
- RESURFACING OR RECONSTRUCTION TO PROVIDE ESSENTIALLY THE SAME CAPACITY
- 4 NUMBER OF TRAFFIC LANES FOR NEW OR IMPROVED FACILITY, INCLUDING RIGHT-OF-WAY RESERVATIONS (2 LANES WHERE UNNUMBERED)

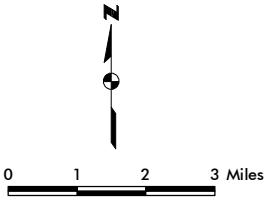
FREEWAY INTERCHANGE

- NEW
- HALF NEW
- EXISTING

THE FOLLOWING NOTES SUPPLEMENT THE RECOMMENDATIONS PORTRAYED ON THIS MAP:

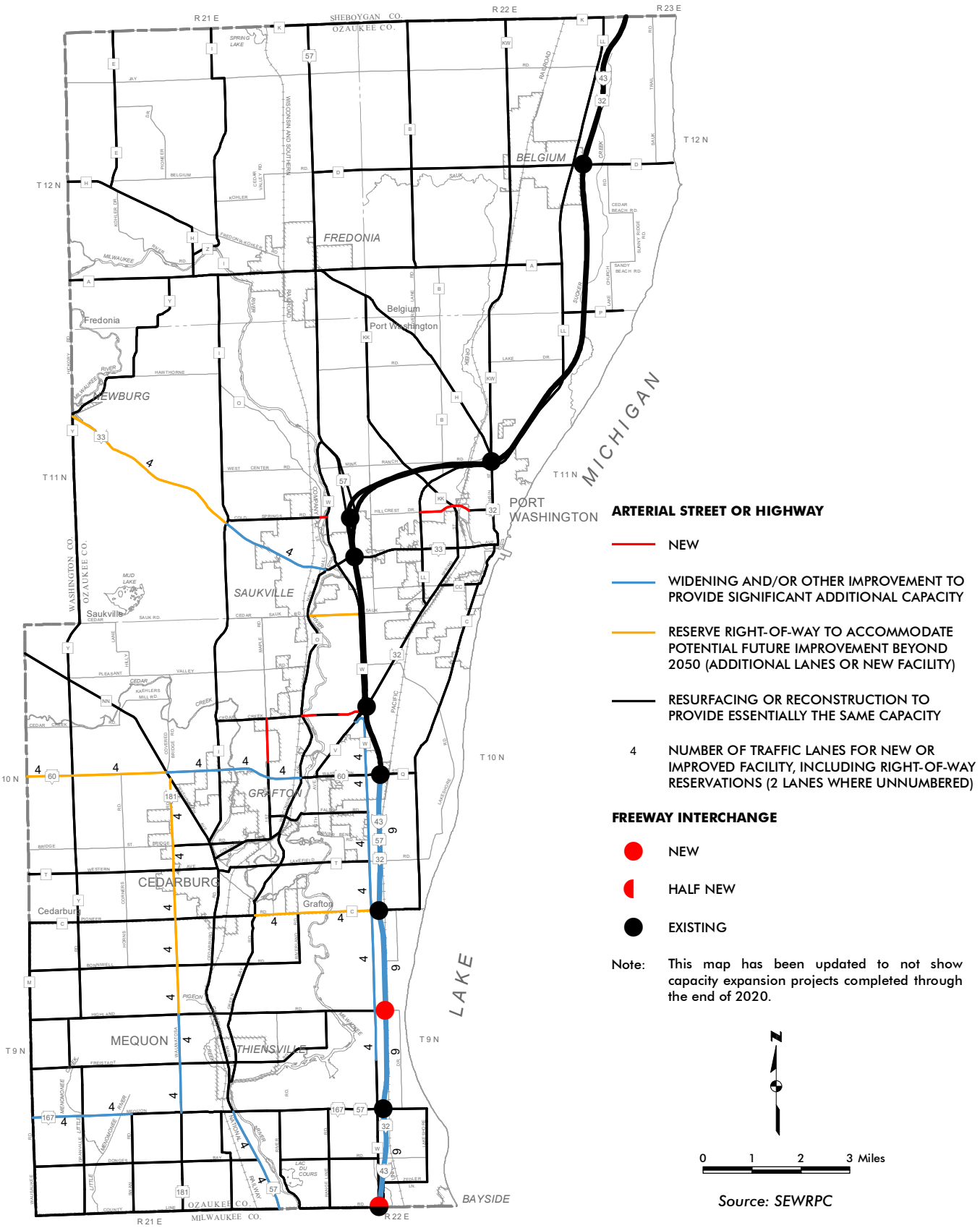
1. The Cities of Milwaukee and Wauwatosa expressed opposition to the widening of IH 94 between 70th Street and 16th Street, which is considered a committed project as WisDOT, at the time VISION 2050 was updated in 2020, had nearly completed preliminary engineering for the reconstruction of this segment of IH 94 and their preferred alternative includes its widening.

2. This map has been updated to not show capacity expansion projects completed through the end of 2020.



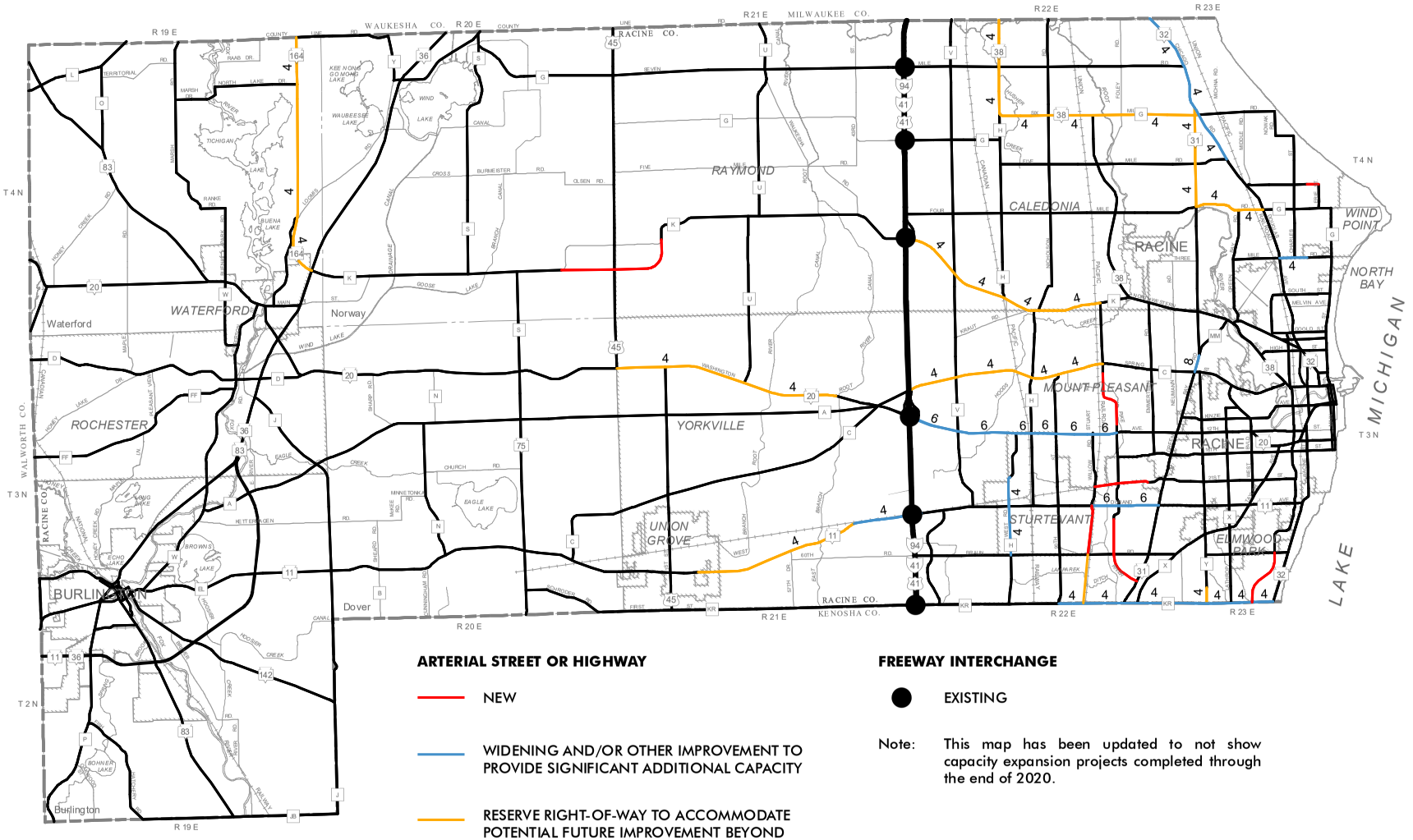
Source: SEWRPC

Map 2.7
Functional Improvements to the Arterial Street and Highway System in Ozaukee County: Fiscally Constrained Transportation System



Source: SEWRPC

Map 2.8
Functional Improvements to the Arterial Street and Highway System in Racine County: Fiscally Constrained Transportation System



Source: SEWRPC

ARTERIAL STREET OR HIGHWAY

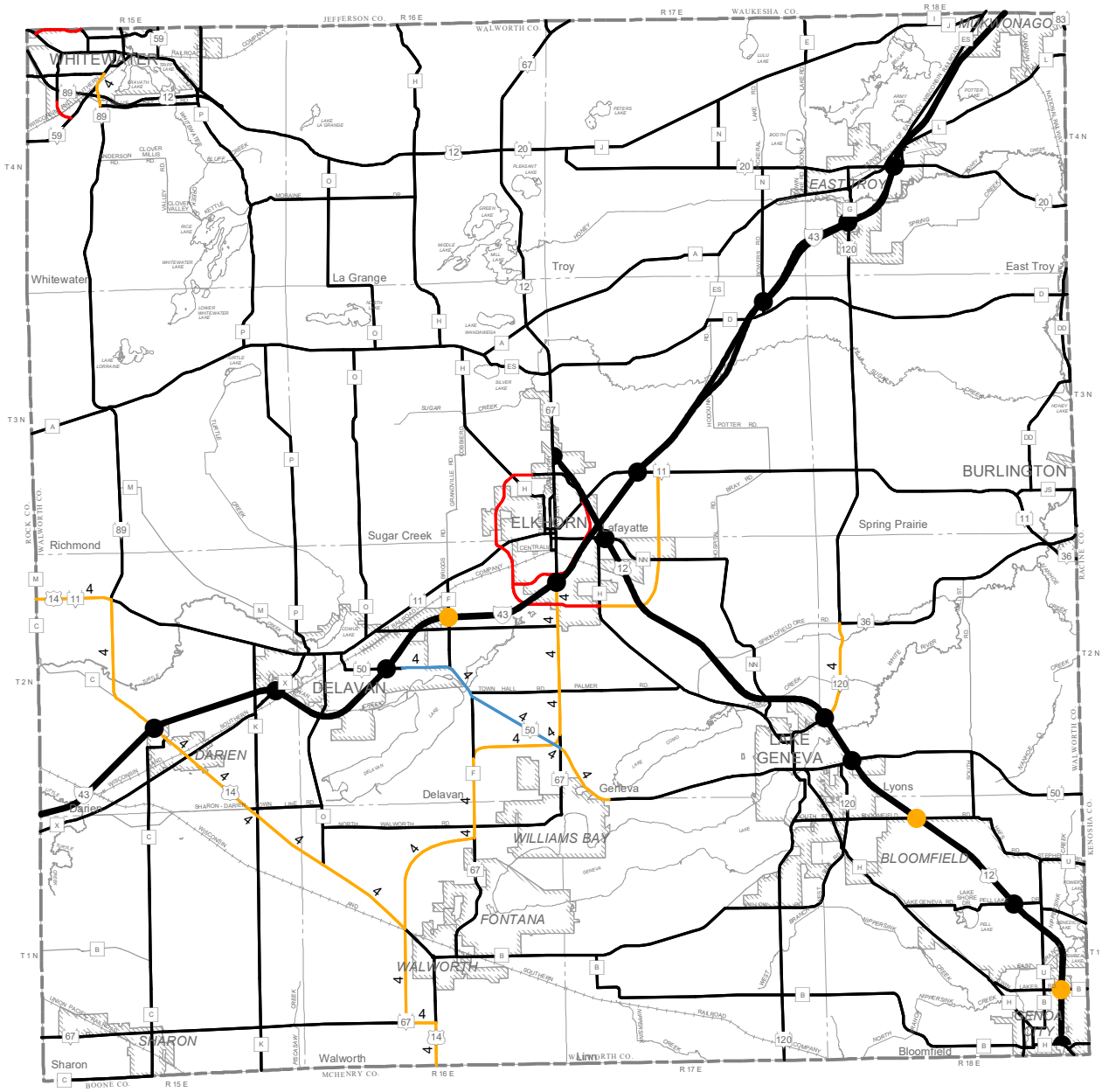
- NEW
- WIDENING AND/OR OTHER IMPROVEMENT TO PROVIDE SIGNIFICANT ADDITIONAL CAPACITY
- RESERVE RIGHT-OF-WAY TO ACCOMMODATE POTENTIAL FUTURE IMPROVEMENT BEYOND 2050 (ADDITIONAL LANES OR NEW FACILITY)
- RESURFACING OR RECONSTRUCTION TO PROVIDE ESSENTIALLY THE SAME CAPACITY
- 4 NUMBER OF TRAFFIC LANES FOR NEW OR IMPROVED FACILITY, INCLUDING RIGHT-OF-WAY RESERVATIONS (2 LANES WHERE UNNUMBERED)

FREEWAY INTERCHANGE

- EXISTING

Note: This map has been updated to not show capacity expansion projects completed through the end of 2020.

Map 2.9
Functional Improvements to the Arterial Street and Highway System in Walworth County: Fiscally Constrained Transportation System



ARTERIAL STREET OR HIGHWAY

- NEW
- WIDENING AND/OR OTHER IMPROVEMENT TO PROVIDE SIGNIFICANT ADDITIONAL CAPACITY
- RESERVE RIGHT-OF-WAY TO ACCOMMODATE POTENTIAL FUTURE IMPROVEMENT BEYOND 2050 (ADDITIONAL LANES OR NEW FACILITY)
- RESURFACING OR RECONSTRUCTION TO PROVIDE ESSENTIALLY THE SAME CAPACITY
- 4 NUMBER OF TRAFFIC LANES FOR NEW OR IMPROVED FACILITY, INCLUDING RIGHT-OF-WAY RESERVATIONS (2 LANES WHERE UNNUMBERED)

FREEWAY INTERCHANGE

- EXISTING
- RESERVE RIGHT-OF-WAY TO ACCOMMODATE POTENTIAL FUTURE IMPROVEMENT BEYOND 2050 (POTENTIAL NEW INTERCHANGE)

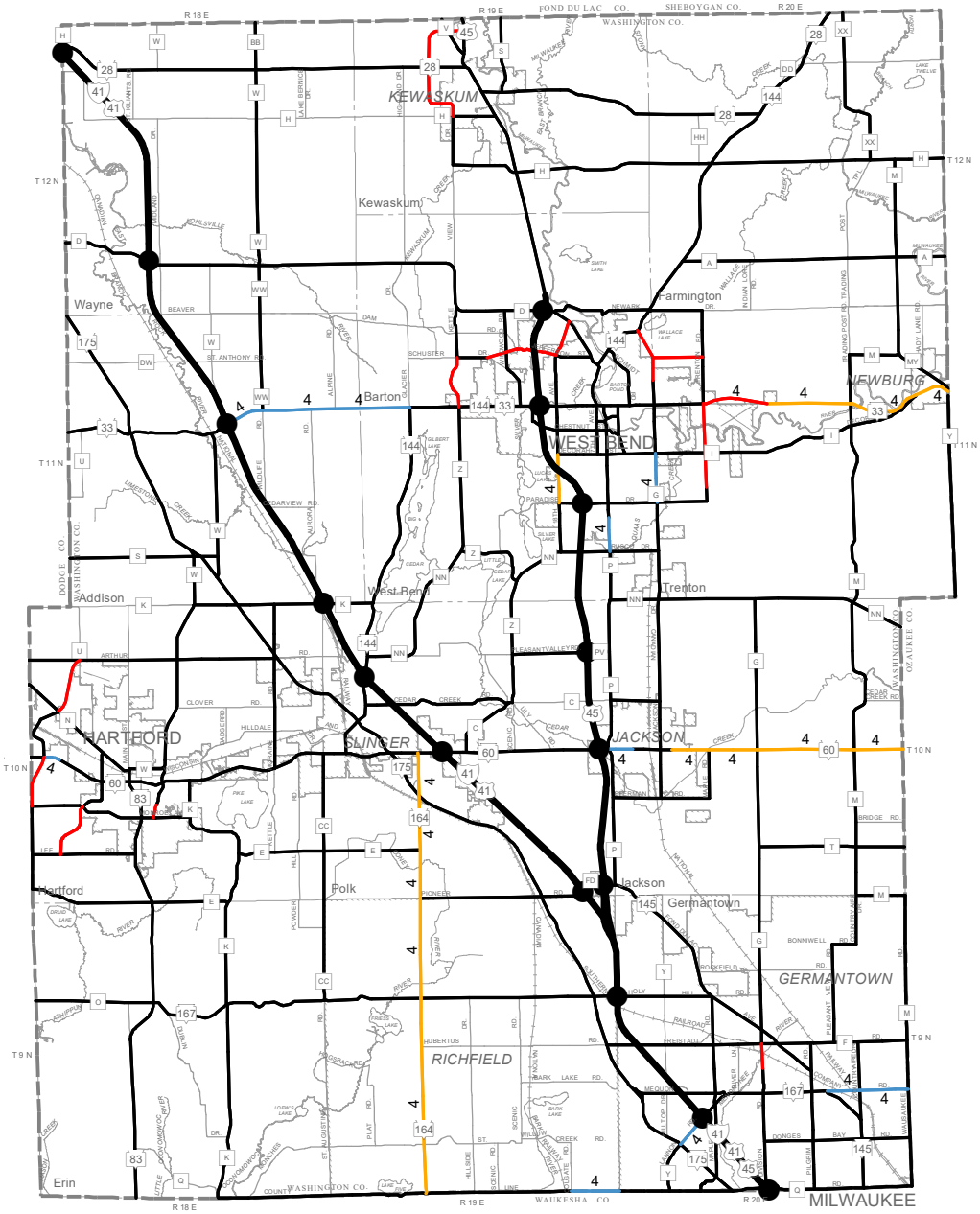
Note: This map has been updated to not show capacity expansion projects completed through the end of 2020.

N

0 1 2 3 Miles

Source: SEWRPC

Map 2.10
Functional Improvements to the Arterial Street and Highway System in Washington County: Fiscally Constrained Transportation System



ARTERIAL STREET OR HIGHWAY

- NEW
- WIDENING AND/OR OTHER IMPROVEMENT TO PROVIDE SIGNIFICANT ADDITIONAL CAPACITY
- RESERVE RIGHT-OF-WAY TO ACCOMMODATE POTENTIAL FUTURE IMPROVEMENT BEYOND 2050 (ADDITIONAL LANES OR NEW FACILITY)
- RESURFACING OR RECONSTRUCTION TO PROVIDE ESSENTIALLY THE SAME CAPACITY
- 4 NUMBER OF TRAFFIC LANES FOR NEW OR IMPROVED FACILITY, INCLUDING RIGHT-OF-WAY RESERVATIONS (2 LANES WHERE UNNUMBERED)

FREEWAY INTERCHANGE

- EXISTING

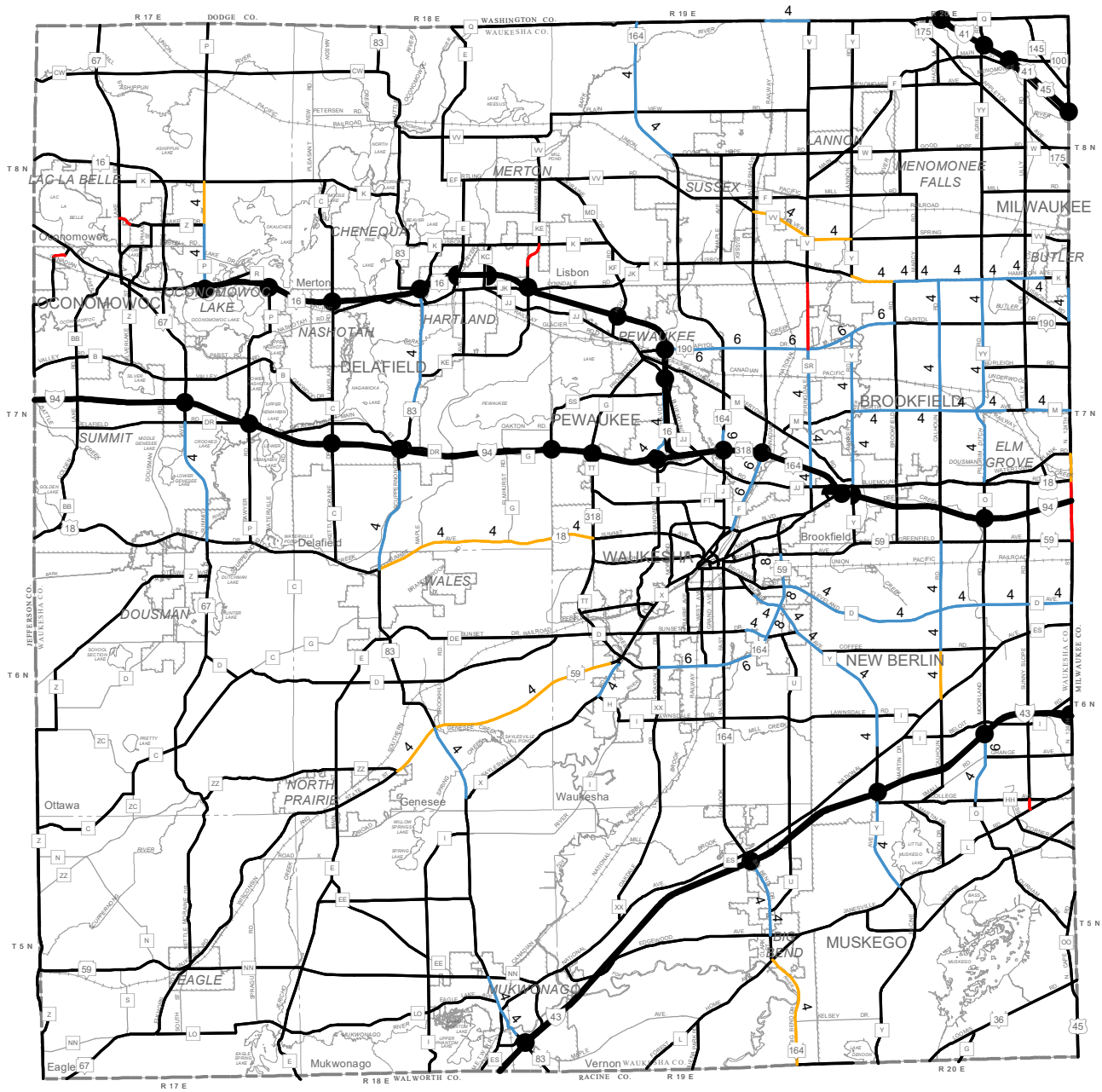
Note: This map has been updated to not show capacity expansion projects completed through the end of 2020.

N

0 1 2 3 Miles

Source: SEWRPC

Map 2.11
Functional Improvements to the Arterial Street and Highway System in Waukesha County: Fiscally Constrained Transportation System



ARTERIAL STREET OR HIGHWAY

- NEW
- WIDENING AND/OR OTHER IMPROVEMENT TO PROVIDE SIGNIFICANT ADDITIONAL CAPACITY
- RESERVE RIGHT-OF-WAY TO ACCOMMODATE POTENTIAL FUTURE IMPROVEMENT BEYOND 2050 (ADDITIONAL LANES OR NEW FACILITY)
- RESURFACING OR RECONSTRUCTION TO PROVIDE ESSENTIALLY THE SAME CAPACITY
- 4 NUMBER OF TRAFFIC LANES FOR NEW OR IMPROVED FACILITY, INCLUDING RIGHT-OF-WAY RESERVATIONS (2 LANES WHERE UNNUMBERED)

FREEWAY INTERCHANGE

- EXISTING

Note: This map has been updated to not show capacity expansion projects completed through the end of 2020.

N

0 1 2 3 Miles

Source: SEWRPC

The funding gaps need to be addressed to achieve the numerous benefits of improving and expanding transit service and to reconstruct streets and highways in a timely manner.

2.2 CONSEQUENCES OF NOT SUFFICIENTLY FUNDING THE TRANSPORTATION SYSTEM

There are numerous benefits associated with significantly improving and expanding public transit and it is critical that the Region's arterial streets and highways be reconstructed in a timely manner. Not fully implementing the transportation system recommended under VISION 2050 due to the limitations of current and expected transportation revenues would result in significant negative consequences for Southeastern Wisconsin.

Not improving and expanding transit service will likely result in the following negative impacts:

- Limited transit-oriented development and redevelopment
- Reduced traffic carrying capacity in the Region's heavily traveled corridors
- Reduced access to jobs, healthcare, education, and other daily needs, particularly for the 1 in 10 households in the Region without access to a car, which is more likely to affect people of color and low-income residents
- Smaller labor force available to employers
- Reduced ability to develop compact, walkable neighborhoods

Postponing reconstruction of freeways beyond their service life and not adding capacity on highly congested segments will have the following negative impacts:

- Costly emergency repairs and inefficient pavement maintenance due to unnecessary, and increasingly ineffective, repaving projects
- Increased traffic congestion and travel delays, along with decreased travel reliability
- Increased crashes due to traffic congestion, antiquated roadway design, and deteriorating roadway condition

PLAN IMPLEMENTATION 3

Credit: SEWRPC Staff

3.1 INTRODUCTION

VISION 2050, the recommended year 2050 regional land use and transportation plan, is described in detail in Chapter 1 of this volume. In a practical sense, however, the plan is not complete until the steps required to implement the plan—that is, to convert the plan into action—are specified. Accordingly, this chapter is presented as a guide to assist in implementing VISION 2050.

More specifically, this chapter outlines the actions that should be taken by various agencies and units of government to implement VISION 2050. Section 3.2 of this chapter describes plan implementation recommendations with respect to the land use component of the plan. Section 3.3 describes the implementation recommendations with respect to the transportation component of the plan. Section 3.4 describes the process for plan adoption, endorsement, and integration.

Because the Regional Planning Commission is an advisory agency, implementation of VISION 2050 will be dependent upon the actions taken by local, county, areawide, State, and Federal agencies of government. Agencies and units of government that have a role in plan implementation are listed in Table 3.1. While this chapter focuses on the role of the various units and agencies of government, implementation of VISION 2050 also depends upon the cooperation of private entities. These private sector interests range from businesses, developers, builders, and engineering and design consultants—who have a major influence on development patterns in the Region—to private conservancy groups that play an increasingly important role in the protection and management of environmentally significant open spaces.

VISION 2050 implementation relies on the actions of local, county, State, and Federal governments in conjunction with the private sector.

Table 3.1
Summary of VISION 2050 Implementation Responsibilities

Agencies	Plan Endorsement and Integration	Preparation of Local Refinements of Regional Plan	Administration of General Zoning, Land Division Regulations, and Official Mapping	Administration of Other Regulatory Mechanisms[a]	Implementation and Coordination of Public Utilities/ Facilities	Park and Open Space Acquisition	Urban Revitalization: Planning and Administration of Related Support Programs	Planning-Related Financial and Technical Assistance	Planning-Related Education	Transportation Conformity
Local-Level Agencies										
County Boards of Supervisors	X	X	X	X	X	X	X	X	X	--
County Planning Committees and Park and Planning Commissions	X	X	X	X	X	X	X	X	X	--
County Highway, Transit, and Public Works Committees	X	X	--	--	X	--	--	--	--	--
County Land Conservation Committees	X	--	--	--	--	--	--	X	--	--
City Councils, Village Boards, and Town Boards	X	X	X	X	X	X	X	X	X	--
City, Village, and Town Plan Commissions	X	X	X	X	--	--	X	X	X	--
City, Village, and Town Boards of Public Works	X	X	--	--	X	--	--	--	--	--
City Transit Commissions	X	X	--	--	X	--	--	--	--	--
County Drainage Boards and Drainage Districts	X	--	--	--	X	--	--	--	--	--
Sanitary and Utility Districts	X	--	--	--	X	--	--	--	--	--
Community Development Authorities	X	--	--	--	--	--	X	--	--	--
Lake Management Districts	X	--	--	--	X	X	--	--	--	--
County Economic Development Corporations	X	--	--	--	--	--	X	X	--	--
Areawide Agencies										
Metropolitan Sewerage Districts	X	--	--	--	X	X	--	X	--	--
Cooperative Contract Commissions	X	--	--	--	X	--	--	--	--	--
Regional Planning Commission	X	--	--	--	X	--	--	X	X	X
State-Level Agencies										
UW-Madison Division of Extension	X	--	--	--	--	--	--	X	X	--
Wisconsin Department of Administration	X	--	--	--	--	--	--	X	--	--
Wisconsin Department of Agriculture, Trade and Consumer Protection	X	--	--	--	--	--	--	--	X	--
Wisconsin Department of Safety and Professional Services	X	--	--	X	X	--	--	--	--	--
Wisconsin Department of Natural Resources	X	--	--	X	X	X	X	X	--	X
Wisconsin Department of Transportation	X	--	--	--	X	--	--	X	--	X
Wisconsin Land Council	X	--	--	--	--	--	--	X	X	--
Federal-Level Agencies										
U.S. Department of Agriculture										
Natural Resources Conservation Service	X	--	--	--	--	X	--	X	--	--
Farm Service Agency	X	--	--	--	--	--	--	--	--	--
U.S. Department of Commerce										
Economic Development Administration	X	--	--	--	--	--	X	--	--	--
U.S. Department of Housing and Urban Development	X	--	--	--	--	--	X	--	--	--
U.S. Department of Transportation										
Federal Highway Administration	X	--	--	--	--	--	--	X	X	X
Federal Transit Administration	X	--	--	--	--	--	--	X	X	X
U.S. Army Corps of Engineers	X	--	--	X	--	--	--	--	--	--
U.S. Environmental Protection Agency	X	--	--	X	--	--	--	--	--	X
Federal Emergency Management Agency	X	--	--	X	--	--	--	--	--	--

[a] *Includes State-local floodplain and shoreland zoning; State-local oversight of public sanitary sewerage facilities and private sewage systems; and the Federal wetland regulatory program.*

Source: SEWRPC

3.2 LAND USE PLAN IMPLEMENTATION

Land Use Plan Design Guidelines

One of the most important tasks accomplished as part of the first regional land use planning study in the mid-1960s was the formulation of a set of objectives, principles, and standards expressing the desired direction, magnitude, and quality of future development within the Region. Formulated under the guidance of a broad-based advisory committee, these objectives provided the basis for the development of the first regional land use plan—the design year 1990 regional land use plan adopted by the Commission in 1966. Over time, the objectives, principles, and standards were subsequently reaffirmed, with minor modifications, and recommended for use as a basis for the preparation of the subsequent regional land use plans.

Under the current regional planning effort, the land use objectives were again reviewed and evaluated by the Advisory Committee on Regional Land Use Planning. The updated plan objectives are included in Chapter 3 of Volume II and summarized in Chapter 1 of this volume. The principles and standards included in previous regional plans have also been reviewed and evaluated and have been recast as "design guidelines" in VISION 2050. The modification to design guidelines is intended primarily to update the language and clarify intent, leaving the underlying concepts largely unchanged.

Appendix K lists the land use plan recommendations that are intended to achieve plan objectives along with detailed design guidelines that serve to facilitate implementation of the plan recommendations. The plan recommendations and design guidelines are concerned with the proper allocation of space to the various categories of land use and the proper arrangement of land use at the systems level of planning. While the design guidelines include guidelines for neighborhood development and the development of commercial and industrial areas, detailed site design considerations are properly addressed at the local level of planning, and it is the function of local planning to ensure good design at individual development sites. It is in the local planning process that the ultimate responsibility lies to ensure the development of properly designed neighborhood units, commercial and industrial areas, and mixed-use areas appropriately related to, and integrated with, the surrounding urban areas. Local planning must also seek to ensure that, to the extent that it is accommodated, rural development is designed in a way that minimizes impacts on the natural resource base, scenic values, and overall character of rural areas of the Region. Achievement of the land use objectives embodied in VISION 2050 thus depends to a large extent upon local planning within the framework of the regional plan, along with the exercise of local land use controls in a manner that is consistent with such planning.

Appendix K presents design guidelines intended to provide direction in implementing VISION 2050 land use recommendations.

Detailed design considerations for individual development sites are properly addressed at the local level of planning.

The plan objectives, recommendations, and design guidelines provide a vision for land use within Southeastern Wisconsin. Under that vision, urban land would increase as necessary to accommodate growth in the regional population and economic base. New urban land would be provided through the infilling and renewal of existing urban areas, as well as through the orderly expansion of existing urban areas, resulting in a more compact and efficient overall urban settlement pattern, one that is readily served by basic urban services and facilities and that maximizes the use of existing urban service and facility systems. The land development needs of the Region would be met while preserving the best remaining elements of the natural resource base and minimizing the loss of important farmland.

Land Use Plan Implementation Measures
Implementation of the land use component of VISION 2050 depends upon the judicious application of a variety of plan implementation measures and cooperation among the local units of government and the areawide, State, and Federal agencies involved in the application of those measures. The most important land use plan implementation measures are addressed within this section. For convenience in presentation and use, this section has been divided into the following subject areas:

- County and Community comprehensive plans
  - Planning in urban areas
  - Planning in rural areas
  - Planning in environmentally significant areas

- Local regulatory measures
  - Zoning ordinances
    - Zoning in urban areas
    - Zoning in rural areas
    - Zoning in environmentally significant areas
  - Land division ordinances
  - Official mapping

- State and Federal regulatory measures
  - State-local floodplain and shoreland regulations
  - Federal wetland regulatory program
  - Regulation of public sanitary sewerage systems
  - Regulation of private sewage disposal systems

- Park and open space acquisition/conservation easements

- Purchase of development rights

- Transfer of development rights

- Municipal boundary and utility extension agreements

- Municipal revenue sharing

- Capital improvement programming

- Brownfield redevelopment

- Development design standards

- Sound land and water management practices

- Educational activities

- Technical and financial assistance for planning

VISION 2050 is a systems-level plan that needs refinement and detailing through county and community comprehensive plans.

County and Community Comprehensive Plans
The land use component of the regional plan is a systems-level plan. As such, it includes generalized boundaries for urban service areas, allocations of population, households, and employment and associated land uses to urban and rural areas; and recommended density ranges for urban service areas. The systems-level regional plan thus provides an overall regional land use planning framework that needs refinement and detailing through county and community planning. The vehicle for such refinement and detailing of

the regional plan is the local comprehensive plan that is effectively required of all counties, cities, villages, and towns under the State comprehensive planning law.

The balance of this section provides guidance to counties and communities in the Region as they prepare local comprehensive plans within the framework of the regional plan. It includes a discussion of planning for urban areas and rural areas, as well as for environmentally significant areas, which are found within both urban and rural areas.

Planning in Urban Areas

- **Community-Level Planning** – Community-level comprehensive plans[37] should refine and detail the VISION 2050 recommendations for urban areas. While such plans may vary in format and level of detail, they should generally do the following:
    - Precisely identify boundaries of urban service areas.
    - Identify residential neighborhoods and special planning districts within urban service areas.
    - Recommend an overall density for each residential neighborhood within the broad density range recommended in the regional plan.
    - Identify general site locations for needed neighborhood and community facilities.
    - Identify environmentally significant lands to be preserved consistent with the recommendations of VISION 2050.
    - Include, as appropriate, an indication of the staging of development in subareas of the community over time. Staging recommendations should be based upon anticipated market demands, the availability of utilities and basic urban services and facilities, and other factors.

- **Neighborhood and Special District Planning** – Within the context of community-level plans, detailed neighborhood development plans should be prepared for each residential neighborhood or special district where significant growth is expected. Community-level plans may allow for a broad range of interpretation, and potential misinterpretation, by both community officials and property owners or developers. In addition, the actions taken to implement a community-level plan may occur over a lengthy period of time, allowing for the potential for further misinterpretation. Detailed neighborhood-level planning provides an opportunity to clarify the intent of a community-level plan at the neighborhood-level. While neighborhood-level plans may vary in format and level of detail, they should generally do the following:
    - Define the neighborhood. This may involve identifying a point of common interest, such a park, school, or place of employment/ commerce. This may also involve identifying boundaries such as arterial streets/highways or bodies of water.

Detailed neighborhood plans can clarify the intent of community-level comprehensive plans.

[37] *The discussion of community-level plans here pertains to all community-level comprehensive plans, whether prepared by individual cities, villages, and towns or prepared cooperatively as part of a county-wide or other multi-jurisdictional comprehensive planning effort.*

- Designate future collector and land access street locations and alignments, pedestrian paths and bicycle ways, and, as appropriate, the configuration of individual blocks and lots.

- Further classify residential areas as to structure type and density, with the mix of housing structure types and lot sizes resulting in an overall density for the neighborhood consistent with that recommended in the community-level plan and regional plan.

- Identify specific sites for neighborhood parks, schools, and retail and service centers that are recommended on a general-site-location basis in the community-level plan.

- Identify environmentally significant areas to be preserved consistent with the community-level plan and regional plan.

- Indicate areas to be reserved for stormwater management and utility easements.

- **Design Concepts** – The neighborhood planning process should make full use of the many design concepts that can enhance the living environment and increase efficiency in the provision of urban services and facilities and in travel patterns. Among these design concepts are the following:

  - **Mixed-Use Development** – Residential development in mixed-use settings can provide a desirable environment for a variety of household types seeking the benefits of proximity to places of employment as well as civic, cultural, commercial, and other urban amenities. Examples of mixed-use settings include dwellings above the ground floor of commercial uses and residential structures intermixed with, or located adjacent to, compatible commercial, institutional, or other civic uses.

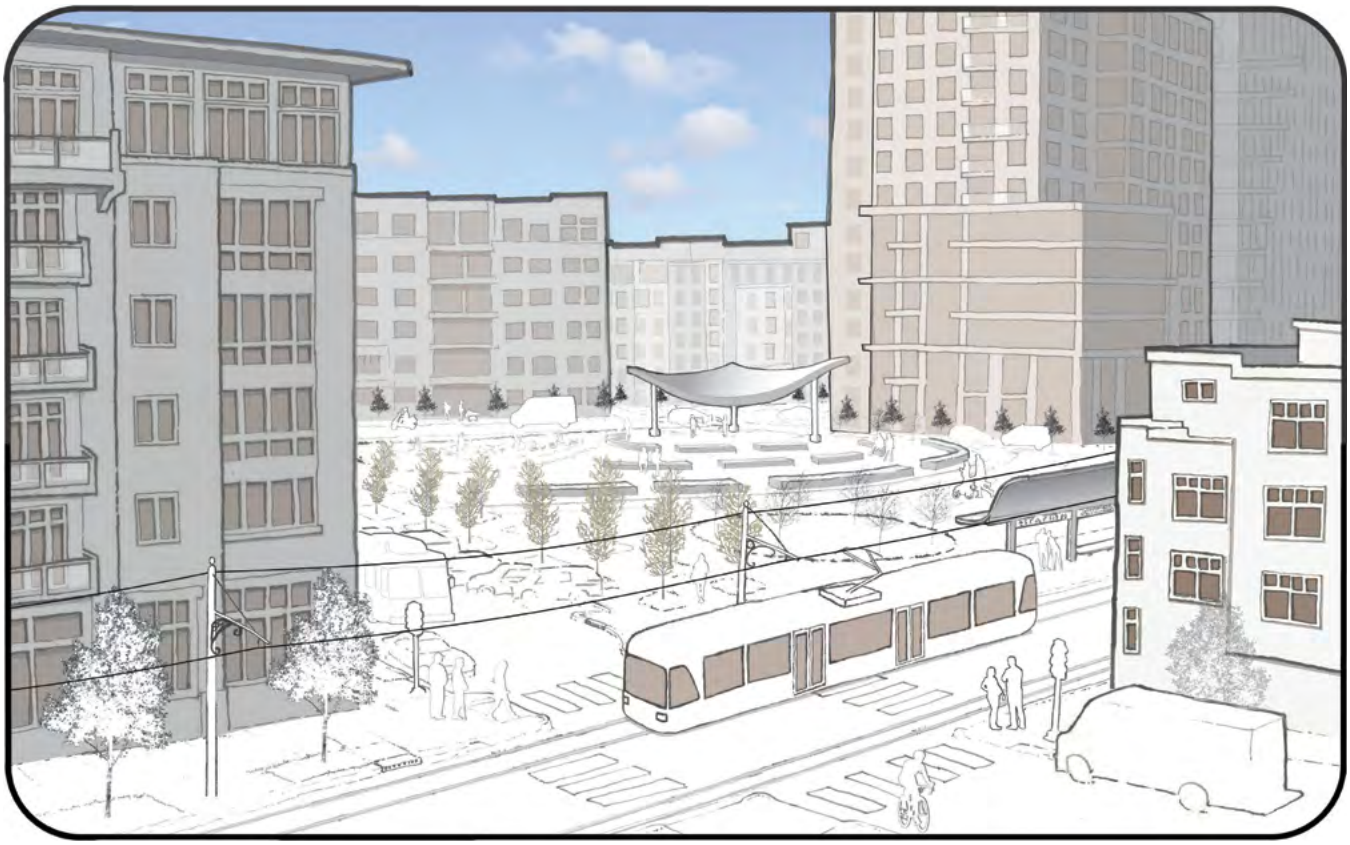
  - **Traditional Neighborhood Development** – The term traditional neighborhood development (TND) refers to compact, pedestrian-oriented, mixed-use neighborhoods typically characterized by a gridlike street system and street-oriented setbacks and building designs. The overall design, including the layout of streets and sidewalks, encourages walking and bicycling as alternatives to automobile transportation within the neighborhood.

  - **Transit-Oriented Development** – The term transit-oriented development (TOD) refers to compact, mixed-use development whose internal design is intended to maximize access to a transit stop located within or adjacent to the development. Within the development, commercial uses and higher-density residential uses are located near the transit stop. The layout of streets and sidewalks provides convenient and safe walking and bicycling access to the transit stop. Figure 3.1 provides an example of mixed-use, transit-oriented design concepts. Detailed TOD design guidelines are presented in Appendix K.

Traditional neighborhood development and transit-oriented development encourage active modes of transportation, such as walking, bicycling, and public transit.

- **Mature Neighborhood Planning –** In addition to plans for developing neighborhoods, detailed plans should also be prepared for mature neighborhoods or special-purpose districts showing signs of land use instability or deterioration. Such plans should identify

Figure 3.1
Example of a Transit-Oriented Development



Source: SEWRPC

areas recommended for redevelopment to a different use, areas recommended for rehabilitation, any local street re-alignments or improvements, and other public utility and facility improvements. Special consideration should be given in such planning to overcoming contamination problems at, and reuse of, brownfields. Redevelopment plans should seek to preserve those historic, cultural, and natural features and features of the urban landscape that provide for neighborhood identity within the larger urban complex. Such plans should maximize opportunities for the provision of living arrangements and amenities that are unique to older cities in the Region, such as "downtown" housing and urban waterfront development.

Redevelopment plans should preserve historic, cultural, and natural features that provide neighborhood identity.

VISION 2050 seeks to maintain the viability of major industrial centers and other economic activity centers in the older urban areas of the Region and to moderate the historical loss in employment at these centers. Cities with aging industrial centers should undertake strategic and physical planning efforts for each center. Such planning should include a determination of the potential for assembling marketable sites and assessment of any contamination problems. Cities should make full use of—and assist private developers in securing—all State and Federal financial assistance available, be it for environmental cleanup, blight elimination, or other renewal activities, in support of the reuse and revitalization of these sites.

Planning in Rural Areas

Comprehensive plans prepared by county and local units of government should also incorporate, refine, and detail the recommendations of VISION 2050 for rural areas—that is, those areas that are located beyond the recommended urban service areas—including prime agricultural lands and other rural lands.

Each county in the Region except Milwaukee County has adopted a farmland preservation plan that identifies areas to preserve in agricultural use.

- **Prime Agricultural Land** – As required by the Wisconsin Farmland Preservation Law (Chapter 91 of the *Wisconsin Statutes*) as revised and enacted by the Wisconsin Legislature in 2009, each county in the Region, excluding Milwaukee County, has adopted a farmland preservation plan that identifies areas to preserve in agricultural use. Chapter 91 of the Statutes also requires that farmland preservation plans be included in county comprehensive plans and ensures that the farmland preservation plan is consistent with the comprehensive plan. Most of the county farmland preservation plans place an emphasis upon the preservation of the most productive soils—soils in U.S. Natural Resources Conservation Service (NRCS) Capability Class I and Class II soils.[38] These plans also considered other factors—such as the size of farm units, the overall size of the farming area, the availability of farm implement dealers, and conflicts between farming operations and urban activities. Based upon these factors, not all Class I and Class II farmland was identified as prime.

  Except as needed to accommodate the planned expansion of urban service areas, prime agricultural land identified in this manner should be designated for continued agricultural use in local comprehensive plans.

- **Other Rural Land** – Local comprehensive plans should incorporate the VISION 2050 recommendation that other rural lands—comprised, for the most part, of non-prime farmland—be retained in rural use. This could be in the form of continued agricultural activity (traditional agricultural activity, hobby farms, equestrian farms, or community-supported agricultural operations) or in the form of rural-density residential development (no more than one dwelling unit per five acres). Other development should generally be limited to uses that are consistent with the rural character of the area or otherwise needed within the area, such as animal hospitals, veterinary clinics, and riding stables. In general, office, industrial, and institutional development and the types of retail and service uses that are provided as a matter of convenience and necessity in urban residential neighborhoods should not be accommodated within rural planning areas.

  Local comprehensive plans should emphasize cluster subdivision design in rural areas.

  Local comprehensive plans should emphasize the use of cluster subdivision designs where rural-density residential development is

[38] *As an alternative to the U.S. Natural Resources Conservation Service agricultural capability class system, Ozaukee and Washington Counties chose to use the "land evaluation" system, also developed by the Natural Resources Conservation Service, to identify prime farmland. The land evaluation system provides a rating of farmland derived from soil-based factors. That rating may be combined with site assessment factors that are not related to soil characteristics, through a land evaluation and site assessment system ('LESA' system) that integrates various soil-based and non-soil-based factors for evaluating farmland. Site assessment factors may include the level of on-farm investment, compatibility with adjacent uses, proximity to urban development, distance to public utilities, and others.*

to be accommodated. Cluster subdivision designs generally involve locating dwelling units in clusters surrounded by open space, thereby achieving the desired overall density. In the cluster subdivision design process, open space preservation areas should be delineated first, with residential clusters designed around those areas. Designs for residential clusters should be integrated with topographic and other natural features, taking full advantage of the settings provided by those features without causing undue disturbance. Designed in this manner, cluster subdivision designs can minimize the visual impact of the permitted residential development; preserve significant natural features and, in some cases, agricultural lands; and increase the efficiency of infrastructure development, including a potential reduction in the length of needed access streets.[39]

Similar to the preparation of detailed plans for neighborhoods within urban areas, consideration should be given to planning for "rural neighborhoods." This approach would be appropriate for larger non-prime farming areas where a decision has been made to accommodate rural-density residential development. As a practical matter, rural neighborhoods or planning units will be several square miles in size and may encompass large portions of a civil town. Planning for a rural neighborhood, as opposed to planning on a parcel-by-parcel basis, can result in more integrated designs that better preserve existing natural features and the rural landscape. Figure 3.2 presents an example of a neighborhood-scale plan for a rural area, incorporating cluster subdivision design principles.

It should be recognized that the recommended density of no more than one dwelling unit per five acres can be achieved in a number of ways. To a large extent, the density would be achieved through cluster subdivision designs, as noted above. In addition, local planning may call for some accretion-like growth on smaller lots around small cross-road communities and other existing settlements, creating a hamlet-like environment within the rural area. The density calculation should be done on an overall basis for the rural neighborhood or planning area, taking into account dwellings to be accommodated in cluster subdivisions, in hamlets, or in other settings. Figure 3.3 presents an example of a rural area plan featuring a small hamlet and other forms of rural development.

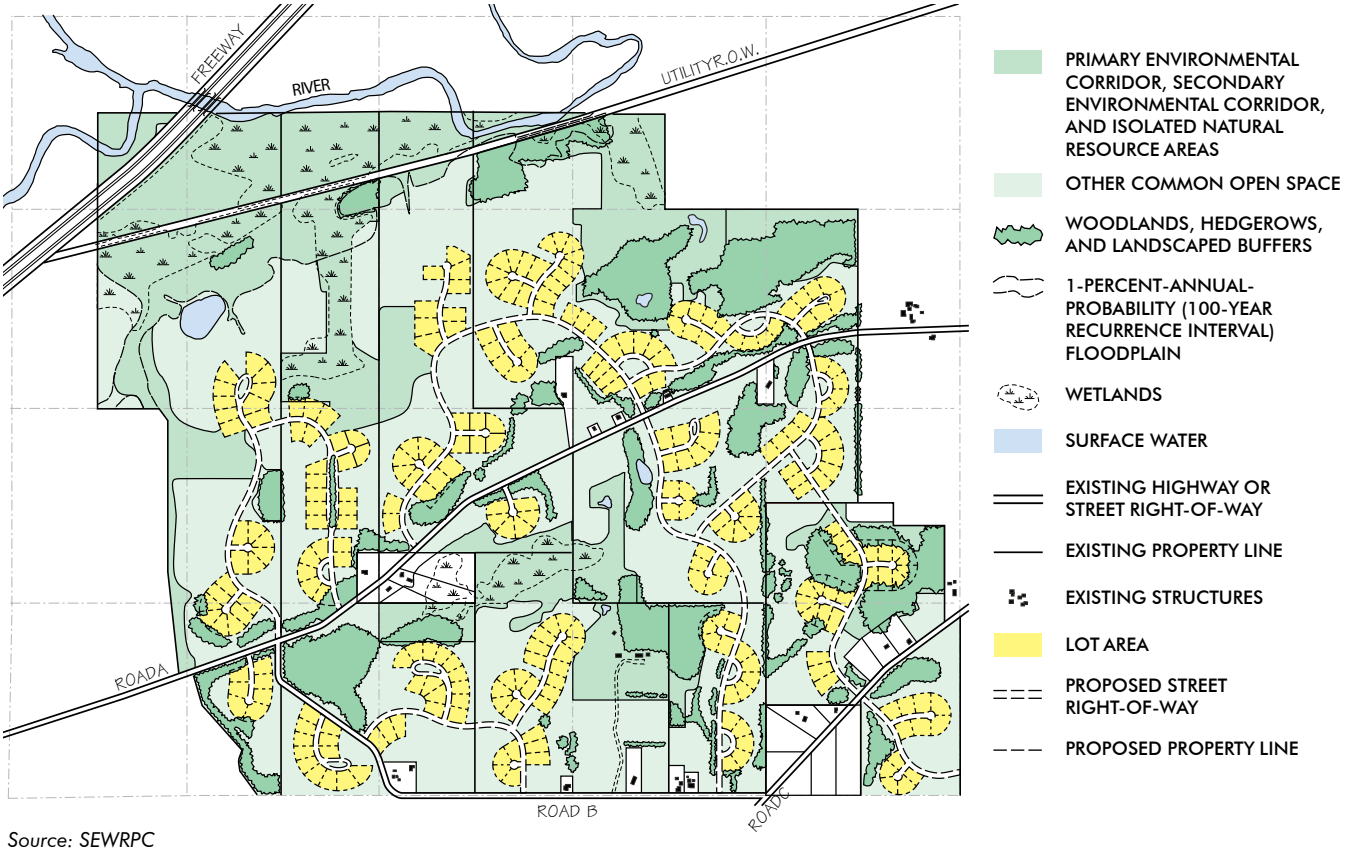
Planning in Environmentally Significant Areas

Local comprehensive plans should incorporate the VISION 2050 recommendations for environmentally significant areas. At a minimum, local comprehensive plans should incorporate the primary environmental corridor delineations set forth in VISION 2050, recommend the preservation of those corridors in accordance with the guidelines presented in Appendix K, and prohibit the extension of sanitary sewers to serve urban development within primary environmental corridor areas. In addition, county and local units of government are encouraged to include recommendations for the preservation of secondary environmental corridors and isolated natural resource areas in their comprehensive plans, applying the guidelines for preservation to those areas as well.

Local comprehensive plans should preserve primary environmental corridors.

[39] *The cluster subdivision design process is described in detail in SEWRPC Planning Guide No. 7,* Rural Cluster Development Guide*, December 1996.*

Figure 3.2
Example of a Rural Area Plan Incorporating Cluster Subdivision Design Principles



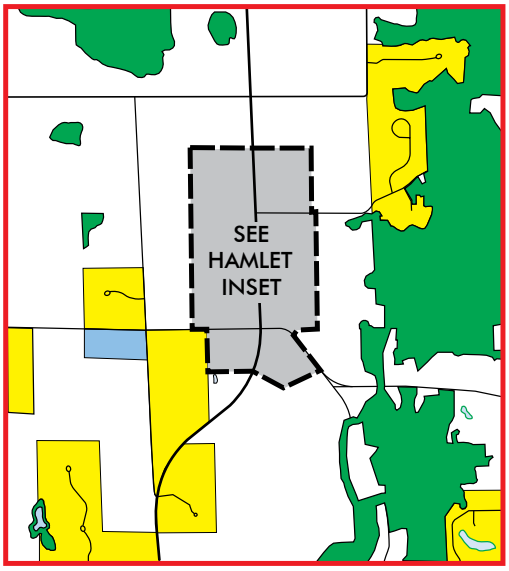
Source: SEWRPC

The planning guidelines set forth in Appendix K are an integral part of the land use component of VISION 2050. These guidelines recognize that certain development can be accommodated within environmental corridors and isolated natural resource areas without jeopardizing their overall integrity. They recognize that certain transportation and utility uses may need to be located within such areas and that limited residential and recreational uses may be accommodated within such areas. Under the guidelines, residential development would be limited to upland areas at an overall density of no more than one dwelling unit per five upland acres, with cluster subdivision designs strongly encouraged where rural-density residential development is accommodated.[40] Under the guidelines, in lieu of rural-density residential development, up to 10 percent of the upland corridor area in a parcel may be disturbed to accommodate urban-density residential, commercial, industrial, or other urban development.

The guideline allowing for a disturbance area of up to 10 percent of the upland environmental corridor in a parcel was first included under the year 2035 regional land use plan. The environmental corridor guidelines set forth in Appendix K include an allowance for a disturbance of up to 10 percent

[40] *It is recommended that the number of dwelling units to be accommodated be limited to no more than one dwelling unit per five acres of upland corridor in the parcel. It is recognized that, in some situations, it may be appropriate to include certain lowland corridor area in calculating the number of dwellings to be accommodated, particularly where the lowland area comprises a relatively small portion of the development parcel. In such cases the number of dwelling units should not exceed one dwelling unit per five acres of lowland and upland corridor combined.*

Figure 3.3
Example of a Rural Area Plan Incorporating Hamlet Design Principles



RURAL-DENSITY RESIDENTIAL
(ONE DWELLING UNIT PER FIVE ACRES)

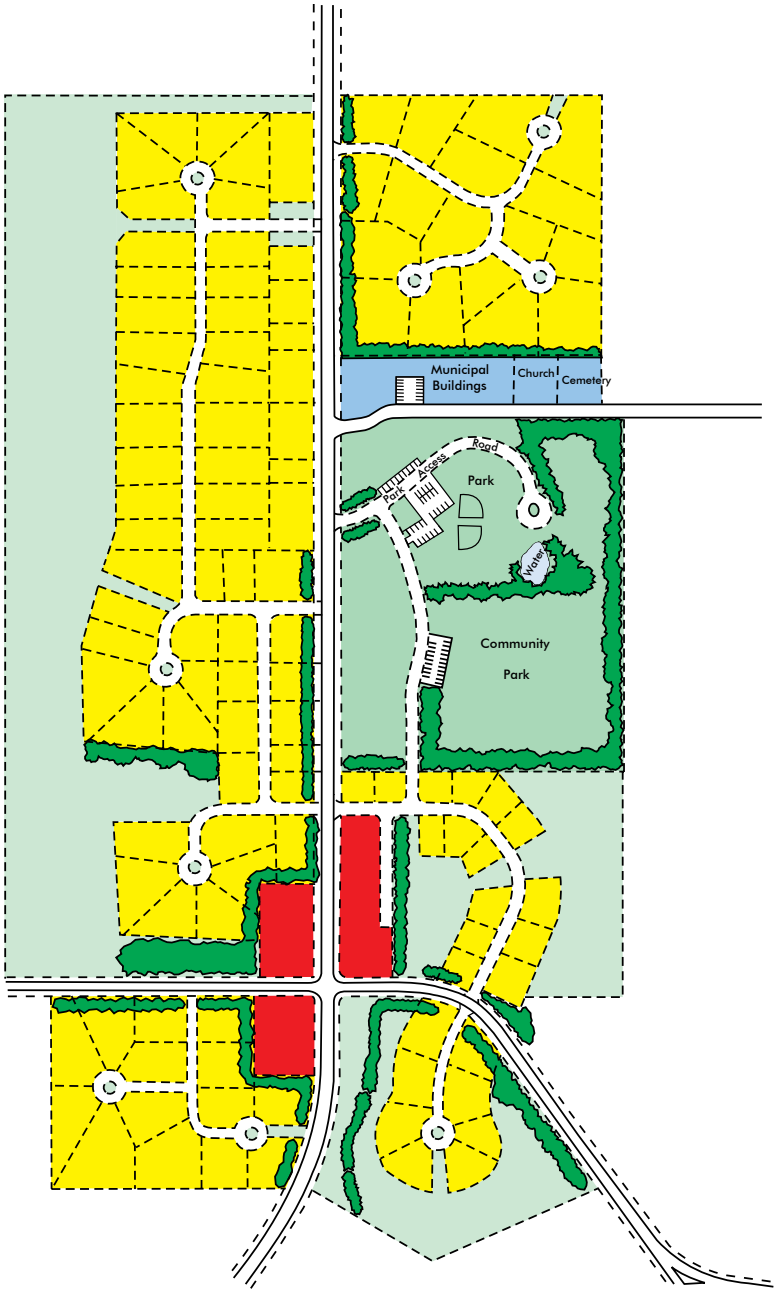
GOVERNMENTAL/INSTITUTIONAL

ENVIRONMENTAL CORRIDOR OR
ISOLATED NATURAL RESOURCE AREA

SURFACE WATER

AGRICULTURAL

Source: SEWRPC



PROPERTY LINES

HIGHWAY OR
STREET RIGHT-OF-WAY

RESIDENTIAL

COMMERCIAL

GOVERNMENTAL/
INSTITUTIONAL

RECREATION

COMMON OPEN SPACE

WOODLANDS, HEDGEROWS,
AND LANDSCAPED BUFFERS

SURFACE WATER

AGRICULTURAL

of the upland corridor area in a parcel to accommodate urban residential, commercial, or other urban development, provided that the balance of the corridor area is protected from any future disturbance. This allowance would be in lieu of the rural-density residential development permitted under prior guidelines. The allowance would be granted only under the following conditions: 1) the area to be disturbed is compact rather than scattered in nature; 2) the disturbance area is located on the edge of a corridor or on marginal resources within a corridor; 3) the development does not threaten the integrity of the remaining corridor; 4) the development does not result in significant adverse water quality impacts; and 5) the development of the remainder of the parcel is prohibited by a conservation easement or deed restriction. All such proposals would be reviewed on a site-by-site basis. The allowance recognizes that, from a resource preservation point of view, preserving a minimum of 90 percent of the environmental corridor in this manner may be preferable to accommodating rural-density residential development in the form of scattered homesites and attendant access roads at a density of up to one dwelling unit per five acres within upland corridor areas.

It is not the intent of VISION 2050 to encourage the types of development specified in Appendix K within environmentally significant areas. Rather, the limited development specified is an accommodation that seeks to balance landowner interests in development with natural resource base preservation objectives.

Local zoning, land division, and official mapping ordinances must be consistent with comprehensive plans under State law.

Local Regulatory Measures

Land use regulatory ordinances are an important means available to county and local units of government to shape growth and development in accordance with local and regional land use objectives. Under the State comprehensive planning law, beginning on January 1, 2010, key local land use regulatory ordinances—zoning ordinances, land division ordinances, and official map ordinances—must be consistent with the local comprehensive plan. Accordingly, upon completion of their comprehensive plans, counties, cities, villages, and towns must review their ordinances and adjust them as necessary for consistency with their plans. To the extent that counties, cities, villages, and towns incorporate VISION 2050 into their comprehensive plans, VISION 2050 may be expected to be reflected in their various land use regulations. Guidance with respect to local review and adjustment of zoning, land division, and official map ordinances within the framework of VISION 2050 follows.

<u>Zoning Ordinances</u>

Of all the land use plan implementation devices presently available, perhaps the most important and most versatile is the application of local police power to regulate land use development through the adoption of zoning ordinances, including zoning district regulations and zoning district maps. Cities and villages are authorized under the *Wisconsin Statutes* to adopt and administer general zoning within their corporate limits. Counties are authorized to adopt and administer general zoning throughout their unincorporated areas; a county ordinance becomes effective within a given town only after approval by the town board. Towns that are not under county zoning may exercise village powers and thereby adopt and administer general zoning; however, in counties having a county zoning ordinance, no such town ordinance or ordinance amendment may be adopted unless approved by the county board. Towns in counties that have not enacted a county zoning ordinance may also adopt their own zoning ordinances under

powers specifically granted to towns, provided that the town first petitions the county to enact a county ordinance and the county fails to do so.[41]

- **Zoning in Urban Areas** – Zoning in urban areas should be administered in accordance with county and local comprehensive plans, which refine the urban area recommendations of VISION 2050.

  The application of zoning districts that accommodate residential, commercial, industrial, and other urban development should be done in a manner that is consistent with any recommendations in the local comprehensive plan regarding the staging of development over the course of the plan period. Where the local comprehensive plan includes staging provisions, the application of zoning districts that accommodate the planned urban uses should be done incrementally in accordance with the timeframe set forth in the comprehensive plan. In the interim, the lands concerned should be placed in zoning districts consistent with their existing use, or, alternatively, placed in an urban land holding district or transition district. This approach can help to avoid premature development and the creation of isolated urban enclaves and incomplete neighborhoods.

  Zoning ordinances should include provisions that allow for a range of development designs, including mixed-use development, TND, and TOD, as discussed earlier in this chapter. Such flexibility in design can be achieved through the inclusion of planned unit development (PUD) provisions as a basic district or an overlay district in the zoning ordinance. PUD provisions can enable coordinated site planning, allowing for latitude in the location and type of structures and for a mixture of compatible residential, commercial, institutional, and open space uses.

  Zoning ordinances should allow a wide range of development types in urban areas, including mixed-use development, TND, and TOD.

  It is important to recognize that residential zoning regulations may have a significant influence on housing costs and the supply of affordable housing. To enable the provision of affordable housing, all urban communities, especially "developing" communities, should incorporate provisions for a full range of residential structure types—single-family, two-family, and multifamily—as well as a reasonable range of housing sizes within their zoning ordinances. Moreover, urban communities should incorporate provisions for a full range of residential lot sizes and include one or more residential districts specifying lot sizes of no more than 7,200 square feet for single-family detached housing units and 8,000 square feet for two-family structures.

  Zoning regulations have a significant influence on housing costs.

- **Zoning in Rural Areas** – Zoning in rural areas should be administered in accordance with county and local comprehensive plans, which refine the rural area recommendations of VISION 2050. The following is recommended:

[41] *The Wisconsin Statutes enable cities and villages to exercise extraterritorial zoning power within unincorporated town areas located within specified distances of their corporate limits—three miles from the corporate limits of a first-, second-, or third-class city, and one and one-half miles from the limits of a fourth-class city or a village. This extraterritorial zoning power must be exercised through a joint six-member committee composed equally of representatives of the city or village and the concerned town. By statute, the establishment of extraterritorial zoning district regulations and zoning district boundaries and any subsequent amendments requires the favorable vote of a majority of the joint extraterritorial zoning committee.*

Prime agricultural lands identified in comprehensive plans should be placed into an exclusive agricultural zoning district.

- Prime agricultural lands identified in county and local comprehensive plans should be placed into an exclusive agricultural zoning district that essentially permits only agricultural and agriculture-related uses. Such a district should provide for a residential density of no more than one dwelling unit per 35 acres and should prohibit incompatible urban development.

- Other areas identified for continued agricultural use in county and local comprehensive plans should be placed into exclusive agricultural districts as defined above or into general agricultural districts with smaller minimum parcel sizes as may be appropriate for smaller agricultural operations, such as hobby farms or other specialty farms.

- Areas recommended in county and local comprehensive plans for rural residential development should be placed into a rural residential zoning district that limits development to no more than one dwelling unit per five acres and that encourages, or even requires, the use of cluster subdivision designs to accommodate the permitted development.

Zoning should protect primary environmental corridors.

- **Zoning in Environmentally Significant Areas** – Zoning of environmentally significant lands, including primary environmental corridors, secondary environmental corridors, and isolated natural resource areas, should be administered in accordance with county and local comprehensive plans that refine VISION 2050. At a minimum, zoning should be applied to protect primary environmental corridors. Zoning should also be applied to protect secondary environmental corridors and isolated natural resource areas in a manner consistent with county and local comprehensive plans.

  To protect environmental corridors and isolated natural resource areas, the component lakes, rivers, and streams, wetlands, and associated undeveloped floodplains and riparian buffers should be placed in lowland conservancy or floodplain protection districts. Upland wooded areas and areas of steep slope should be placed in appropriate upland conservancy or park and recreation districts. These various districts should be designed in accordance with the guidelines presented in Appendix K. As previously noted, under those guidelines, development would be confined to necessary transportation and utility uses; limited recreational uses; rural-density residential development limited to no more than one dwelling unit per five upland acres; or, in lieu of such rural-density residential development, limited urban development confined to no more than 10 percent of the upland area.

Land division ordinances help to ensure sound development standards.

Land Division Ordinances

The regulation of land divisions is another important means for shaping development in accordance with adopted plans. Basic regulations governing the division of land are set forth in Chapter 236 of the *Wisconsin Statutes*. Chapter 236 defines the term "subdivision" as a division of a lot, parcel, or tract of land where the act of division creates five or more parcels or building sites of 1.5 acres each or less in area—or where five or more parcels or building sites of 1.5 acres each or less in area are created by successive divisions within a period of five years. Chapter 236 requires that any division of land that results in a subdivision shall be, and provides that any other division may be, surveyed and a plat thereof approved and recorded. Chapter 236 empowers cities, villages, towns, and counties that have established

planning agencies to adopt land division ordinances that are more restrictive than the *Wisconsin Statutes*, enabling county and local units of government to regulate all land divisions.[42]

Section 236.10 of the *Wisconsin Statutes* indicates that a plat may not be recorded unless approved by the following:

- If within a city or village: the governing body of the city or village.
- If within a town, outside the extraterritorial plat approval jurisdiction area of a city or village: the town board and the county planning agency, if there is one.
- If within a town, inside the extraterritorial plat approval jurisdiction area of a city or village: the town board; the governing body of the concerned city or village, if it has adopted a land division ordinance or an official map; and the county planning agency if that agency employs full-time staff for the purpose of administering zoning or other planning legislation.

Section 236.12 identifies certain other agencies as having the power to object to a plat. A plat may not be approved until any objections have been satisfied. Section 236.12 designates two State agencies, the Wisconsin Departments of Transportation and Safety and Professional Services, as objecting agencies. County planning agencies are objecting agencies to plats located in cities and villages provided that they employ full-time staff for the purpose of administering planning legislation and provided further that they adopt a policy requiring submission of plats to the planning agency. County planning agencies review proposed plats for potential conflicts with parks, parkways, expressways, major highways, airports, drainage channels, schools, or other planned public developments.

As noted above, cities, villages, towns, and counties that have established planning agencies are authorized to adopt land division ordinances more restrictive than the provisions of Chapter 236. For example, county and local ordinances may adopt a more inclusive definition of the term "subdivision" and may require the recording of certified surveys for land divisions not defined as subdivisions. Such ordinances may establish design guidelines and public improvement requirements consistent with local development objectives. Local units of government may choose to integrate the local regulation of condominium developments, as defined under Chapter 703 of the *Wisconsin Statutes*, into comprehensive land division and land development control ordinances.

County and local units of government should administer their local land division ordinances in a manner consistent with their comprehensive plans prepared within the framework of VISION 2050.

Official mapping ordinances provide a means for reserving land for future public use, such as streets, highways, waterways, railways, transit facilities, and parkways.

Official Mapping

Official mapping powers granted to cities under Section 62.23(6) of the *Wisconsin Statutes*, by reference under Section 61.35 to villages, and by reference under Section 60.22(3) to towns that have adopted village powers, provide a means for reserving land for future public use as streets, highways, waterways, railways, transit facilities, and parkways. The enabling statutes

[42] *Land division control powers and procedures are described in detail in SEWRPC Planning Guide No. 1 (2nd Edition),* Land Division Control Guide*, July 2001.*

generally prohibit the issuance of building permits for the construction or enlarging of buildings within the limits of such areas as shown on the official map. However, the statutes include provision for issuance of building permits where it is demonstrated that the lands within the areas designated for future public use are not yielding a fair return. Official maps may show areas designated for future parks and playgrounds, but the enabling legislation does not mention them as protected mapped facilities. State law provides that cities and villages may extend official maps beyond their corporate limits to areas within which they have been granted extraterritorial subdivision plat approval power under Chapter 236 of the *Wisconsin Statutes*.[43]

Official mapping powers represent an effective means of reserving land for future public use in accordance with local comprehensive plans that refine VISION 2050. VISION 2050 recommends that all cities, villages, and towns in the Region prepare and adopt official maps, showing thereon as proposed parkways those environmental corridors that may be proposed for public acquisition along with other proposed public lands as authorized by State statute.

Section 66.1031 of the *Wisconsin Statutes* confers what are, in effect, limited official map powers on counties. County highway width maps adopted under Section 66.1031 may be used to show the proposed widening of existing streets and highways and to show the location and width of proposed future streets and highways. Such maps must have the approval of the governing body of the municipality in which the mapped streets and highways are located. The scope of facilities to be mapped under this statute does not extend beyond streets and highways. This statute does not include the prohibitions on issuance of building permits that are established in the local official mapping statutes. County highway width maps can, nevertheless, help to ensure that planned arterial street and highway improvements are properly taken into account in county and local land use decision-making.

State and Federal Regulatory Measures

State-Local Floodplain and Shoreland Regulations

Section 87.30 of the *Wisconsin Statutes* mandates that cities and villages, as well as counties with respect to unincorporated areas, adopt appropriate floodplain zoning regulations, basing such regulations on the hydrologic, hydraulic, and other engineering data required to appropriately define flood hazard areas. Minimum standards that city, village, and county floodplain ordinances must meet are set forth in Chapter NR 116 of the *Wisconsin Administrative Code*. All such regulations must govern filling and development activity within the 1-percent-annual-probability (100-year recurrence interval) floodplain. Under minimum State requirements, local floodplain zoning regulations must prohibit nearly all forms of development within the floodway—that is, the area of the floodplain required to convey the 1-percent-probability peak flood flow. Local regulation must also restrict filling and development within the flood fringe, or that portion of the floodplain located outside the floodway that would be covered by floodwater during a 1-percent-probability flood event. Marginal modifications may be made to flood fringe areas if provided for in local ordinances. VISION 2050 recommends that, where such modifications are allowed, there be a policy or corresponding regulatory provision requiring no loss in floodwater storage volume. Chapter NR 116 also provides for establishment of a flood storage district in areas where storage of floodwaters is accounted for in developing

[43] *Official mapping powers and procedures are described in detail in SEWRPC Planning Guide No. 2 (2nd Edition),* Official Mapping Guide*, June 1996.*

the regional (1-percent-probability) flood discharge. Filling in a flood storage district must be offset by the provision of an equal volume of compensatory flood storage.

Section 59.692 of the *Wisconsin Statutes* requires that counties in Wisconsin adopt special regulations governing development within shoreland areas. By statutory definition, shoreland areas are lands within 1,000 feet of the ordinary high water mark (OHWM) of a navigable lake, pond, or flowage, or within 300 feet of the OHWM of a navigable stream, or to the landward side of the floodplain, whichever distance is greater. Standards for county shoreland regulations are set forth in Chapter NR 115 of the *Wisconsin Administrative Code*.[44] Shoreland regulations include requirements for lot size and building setbacks as well as restrictions on removal of vegetation. In addition, the State regulations require that counties place all wetlands at least five acres in size lying in shoreland areas into a protective conservancy zoning district. Under Sections 62.231 and 61.351, respectively, of the *Wisconsin Statutes*, cities and villages in Wisconsin are also required to enact zoning regulations to protect wetlands five acres or greater in size lying in shoreland areas. Administrative rules pertaining to city and village shoreland-wetland conservancy zoning are set forth in Chapter NR 117 of the *Wisconsin Administrative Code*.

Floodplain and shoreland regulations protect many of the wetlands and other low-lying areas within environmental corridors and isolated natural resource areas.

Floodplain and shoreland regulations have been applied by counties, cities, and villages throughout the Region in accordance with the *Wisconsin Statutes* and *Administrative Code*. These regulations serve to protect many of the wetlands and other low-lying areas within environmental corridors and isolated natural resource areas, as recommended in VISION 2050.

Federal Wetland Regulatory Program

Under Section 404 of the Clean Water Act as amended, the U.S. Congress has provided for the regulation of most of the wetlands of the Nation. That statute requires the U.S. Army Corps of Engineers (USACE), working in cooperation with the U.S. Environmental Protection Agency (EPA), to regulate the discharge of dredged and fill materials into the waters of the United States, including lakes, rivers, and wetlands. In carrying out this responsibility, the USACE identifies waters of the United States, including wetlands, and determines when permits are required for the discharge of dredged and fill material.

The Section 404 program established under the Clean Water Act is an important means for protecting and preserving wetlands.

Federal law provides for the involvement of states in the Section 404 program. The Wisconsin Department of Natural Resources (DNR) may deny or grant certification of any proposed discharge of dredged or fill material into a wetland. In considering such certifications, the DNR applies the wetland preservation policies and standards set forth in Section NR 1.95 and Chapter NR 103 of the *Wisconsin Administrative Code*. If the State denies certification,

[44] *The 2015-2017 State Budget (Act 55) changed State law relative to shoreland zoning. Under Act 55, a shoreland zoning ordinance may not regulate a matter more restrictively than it is regulated by a State shoreland zoning standard unless the matter is not regulated by a standard in Chapter NR 115, "Wisconsin's Shoreland Protection Program," of the* Wisconsin Administrative Code *(examples of unregulated matters may involve wetland setbacks, bluff setbacks, development density, and stormwater standards). In addition, under Act 55, a local shoreland zoning ordinance may not require establishment or expansion of a vegetative buffer on already developed land and may not establish standards for impervious surfaces unless those standards consider a surface to be pervious if its runoff is treated or is discharged to an internally drained pervious area. Additional legislation relative to shoreland zoning enacted after the 2015-2017 State budget legislation includes Act 41, which addresses town shoreland zoning authority relative to county authority (effective date: July 3, 2015), and Act 167, which codifies and revises current DNR shoreland zoning standards.*

then Federal law requires that the USACE deny the requested Section 404 permit.

The Section 404 regulatory program represents an important means for protecting and preserving wetlands. The continued steadfast administration of this program can contribute significantly to implementation of the VISION 2050 recommendations regarding preservation of environmentally sensitive lands.

Sanitary sewer service area plans define service limits and delineate environmentally sensitive lands where service should not be provided.

Regulation of Public Sanitary Sewerage Systems:
Sanitary Sewer Service Areas

In Wisconsin, the comprehensive water quality management planning program has led to the development of State regulations that have the effect of requiring the preparation of sanitary sewer service area plans for each public sewage treatment plant. In the Region, these plans are prepared cooperatively by the concerned local unit of government and the Regional Planning Commission, with ultimate approval authority resting with the DNR. Sewer service area plans have now been prepared for nearly all the public sanitary sewerage systems in the Region.[45] These plans define sewer service limits and delineate environmentally sensitive lands within those service limits to which service should not be provided. Chapter NR 110 and Chapter SPS 382 of the *Wisconsin Administrative Code* require that the DNR, with respect to public sanitary sewers, and the Wisconsin Department of Safety and Professional Services (DSPS), with respect to private sanitary sewers, make a finding that all proposed sanitary sewer extensions are in conformance with adopted areawide water quality management plans and the sanitary sewer service areas identified in such plans before approving such extensions.

Sewer service areas must be sized consistent with long-range population projections.

Under Chapter NR 110, sewer service areas must be sized in a manner that is consistent with long-range population projections. As a practical matter, this requirement is considered to be met if the buildout population of the sewer service area—that is, the population that could be accommodated if the sewer service area were completely developed at locally planned residential densities—is within the projection range envisioned under VISION 2050. In sizing their sewer service areas, many communities choose to plan for the high end of the projected population range to retain flexibility in terms of the location of future urban growth. The projected population ranges for sewer service areas in the Region under VISION 2050 are set forth in Appendix O.

The Commission assists communities in amending their sewer service area plans to respond to changing needs.

Historically, communities in the Region, with the assistance of the Regional Planning Commission, have amended their sewer service area plans from time to time in response to changing needs and conditions. This may be expected to continue in the years ahead, particularly as communities implement or amend their local comprehensive plans.

As noted above, sanitary sewer service area plans are an important part of the basis for State agency review and approval of proposed sewer extensions. Policies adhered to by the DNR and DSPS prohibit or otherwise limit the extension of sanitary sewers to serve development in certain environmentally significant lands identified in local sewer service area plans. The following restrictions were in effect at the time of this writing:

[45] *The planned public sanitary sewer service areas shown on Map 1.3 in Chapter 1 of Volume III reflect currently adopted sewer service areas, expanded in some cases in anticipation of future needs.*

- The extension of sanitary sewers to serve new development in primary environmental corridors is confined to limited recreational and institutional uses and rural-density residential development (maximum of one dwelling unit per five acres) in areas other than wetlands, floodplain, riparian buffers,[46] and steep slope (12 percent or greater).

- The extension of sanitary sewers to serve development in portions of secondary environmental corridors and isolated natural resource areas comprised of wetlands, floodplains, riparian buffers, or steep slope is not permitted.

It should be noted that, under current rules, building sewers that are intended to serve buildings that have fewer than 54 drainage fixture units are exempt from the water quality management plan conformance review process. This provision effectively eliminates from that review process one- and two-family homes and some commercial buildings, potentially including large warehouses. VISION 2050 recommends that DSPS, which has oversight with respect to private sewer extensions, effect an administrative rule change that would eliminate this "loophole"—at least as related to non-residential buildings.

VISION 2050 recommends that the Wisconsin Department of Safety and Professional Services eliminate the loophole that exempts certain buildings from the water quality management plan conformance review process.

Regulation of Private Sewage Disposal Systems

VISION 2050 does not recommend large lot and exurban-density residential development—that is, development on lots of one-half acre to less than five acres—in outlying areas of the Region, removed from established urban service areas and reliant upon onsite disposal systems for wastewater treatment and disposal. Such development was once constrained in many areas of the Region owing to soil limitations that prevented such systems from functioning properly. New onsite sewage disposal systems designed to operate in once-limiting soil conditions, along with regulatory changes favorable to the use of the new systems, have increased the area subject to unsewered residential development.

Under Sections 59.70 and 145.01 of the *Wisconsin Statutes*, all counties in Wisconsin except Milwaukee County are required to adopt and enforce a comprehensive private sewage system ordinance that governs the installation and maintenance of onsite sewage disposal systems and sewage holding tanks. Within Milwaukee County, this regulatory responsibility is assigned to cities and villages. Under State law, the county and local ordinances generally cannot be more restrictive than the State plumbing code, which has been revised to allow for a greater variety of onsite sewage disposal systems under a wider range of conditions.

All counties in the State except Milwaukee County are required to adopt an ordinance that governs installing and maintaining onsite sewage disposal systems and holding tanks.

Clearly, soil limitations and regulations governing the use of onsite sewage disposal systems have become much less of a constraint on large lot and exurban-density residential development in outlying areas detached from planned urban service areas. This situation underscores the importance of local planning and zoning as the primary means to minimize such development.

As an alternative to outlying large lot and exurban-density residential development, VISION 2050 recommends meeting the expected continued demand for country living through rural-density residential development (no more than one dwelling unit per five acres), with cluster subdivision designs

[46] *As identified for purposes of delineating environmental corridors, riparian buffers include a band 50 feet in depth along both sides of intermittent streams; a band 75 feet in depth along both sides of perennial streams; a band 75 feet in depth around lakes; and a band 200 feet in depth along the Lake Michigan shoreline.*

encouraged to accommodate such development. Sewage treatment for such development could be provided through individual onsite sewage disposal systems or through a larger-scale common system or series of such systems serving the entire development. Where larger-scale common systems are utilized, VISION 2050 recommends that they be owned and operated by a local sanitary or utility district.

Park and Open Space Acquisition/Conservation Easements

Achievement of the outdoor recreation and open space preservation recommendations of VISION 2050 requires continued public interest acquisition of land for outdoor recreation and open space uses. The regional park and open space plan, as refined in county park and open space plans, recommends public interest acquisition (that is, acquisition by local, county, State, and/or Federal government and/or by private conservancy interests) of substantial amounts of land for recreation and resource protection purposes.[47] The regional natural areas and critical species habitat protection and management plan also includes recommendations for public interest acquisition for most of the natural areas and critical species habitat sites identified in that plan.[48] Moreover, cities, villages, and towns may acquire other lands for park and open space purposes as recommended in local comprehensive or park and open space plans. Each of the concerned units and agencies of government should continue or begin land acquisition programs in accordance with such plans. Private conservancy organizations are encouraged to supplement public open space acquisition efforts, as appropriate, to ensure the preservation of important natural areas.

Conservancy organizations are encouraged to supplement public open space acquisitions to preserve important natural areas.

Purchase of less than fee simple interest in park and open space lands may be less costly than acquisition of the entire interest. Acquisition of less than fee simple interest may include conservation easements ensuring that the land remains in open space use, permitting public access for recreational use, and public site management. Easements may achieve the desired recreational and open space preservation recommendations at lower cost, with the property concerned remaining on the local tax roll and continuing to generate property tax revenue.

Conservation easements may be a less costly method of preserving open space than acquisition.

As noted above, specific recommendations for open space acquisition—in fee simple or less than fee simple (easement) interest—are set forth for State, county, and local units of government and private conservancy interests in the regional park and open space plan and in the regional natural areas and critical species habitat protection and management plan. Easement programs administered by the NRCS can also help ensure the long-term

[47] *SEWRPC Community Assistance Planning Report No.131 (2nd Edition),* A Park and Open Space Plan for Kenosha County*, April 2012; SEWRPC Community Assistance Planning Report No. 132,* A Park and Open Space Plan for Milwaukee County*, November 1991; SEWRPC Community Assistance Planning Report No. 133 (3rd Edition),* A Park and Open Space Plan for Ozaukee County*, June 2011; SEWRPC Community Assistance Planning Report No.134 (3rd Edition),* A Park and Open Space Plan for Racine County*, February 2013; SEWRPC Community Assistance Planning Report No. 135 (3rd Edition),* A Park and Open Space Plan for Walworth County*, March 2014; SEWRPC Community Assistance Planning Report No. 136 (3rd Edition),* A Park and Open Space Plan for Washington County*, March 2004; and Chapter XIII, "Park and Open Space Plan," of SEWRPC Community Assistance Planning Report No. 209,* A Development Plan for Waukesha County*, Wisconsin, August 1996 (updated by Waukesha County in 2018).*

[48] *SEWRPC Planning Report No. 42,* A Regional Natural Areas and Critical Species Habitat Protection and Management Plan for Southeastern Wisconsin*, dated September 1997, as amended in 2010.*

protection and enhancement of open space lands. The NRCS Wetland Reserve Program provides financial incentives, through the purchase of easements or cost-share agreements, to landowners to restore and protect wetlands in marginal farming areas. The NRCS Farm and Ranch Lands Protection Program provides financial assistance to states, tribes, local governments, and non-profit entities in the acquisition of conservation easements or development rights on productive farmland in order to keep such land in agricultural use.

Purchase of Development Rights[49]

Purchase-of-development-rights programs, or "PDR" programs, represent another potential means to ensure the preservation of agricultural lands. Under a PDR program, landowners are compensated for permanently committing their land to agricultural and open space use. Deed restrictions or easements are used to ensure that the lands concerned remain in agricultural or other open use. Such restrictions are attached to the land and remain in effect regardless of future sale or other transfer of the land.

Purchase-of-development-rights programs compensate landowners for permanently committing their land to agriculture or open space.

PDR programs may be administered and funded by State, county, or local units of government, land trusts and other private organizations, or combinations of these. The amounts paid to farmland owners under PDR programs may be calculated on the basis of the number of dwelling units permitted under existing zoning, on the basis of the difference between the market value of the land and its value solely for agricultural purposes, or on some other basis.

PDR programs provide assurance that farmland will be permanently retained in open use. Landowners receive a potentially substantial cash payment while retaining all other rights to the land, including the right to continue farming. The money paid to the landowner may be used for any purpose, such as debt reduction, capital improvement to the farm, or retirement income. Lands included in a PDR program remain on the tax roll and continue to generate property taxes. Since the land remains in private ownership, the public sector does not incur any land management responsibilities.

PDR programs have not been widely embraced within the Region to this point. The primary drawback of PDR programs is the potentially high cost.

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[49] *Purchase of development rights (PDR) and transfer of development rights (TDR) programs are based upon the premise that development rights are distinct attributes of land ownership that can be sold or otherwise transferred. No widespread agreement exists on the nature or extent of development rights that may be inherent in fee simple ownership of land. There is general agreement that landowners have the right to use their land with the limits set by public regulation. Such regulation must be defensible from a constitutional law standpoint, leaving landowners a reasonable use of their land so as not to constitute a public taking of the land without payment of just compensation.*

Some individuals maintain that since zoning ordinances and other land use regulations may legally be, and indeed, historically have been, amended to become more restrictive, there are no development rights inherent in land ownership, the owner being entitled only to a continuation of existing use. Others argue that where zoning and other public land use controls have been in place for a long period of time, a right to develop in accordance with such longstanding zoning regulations becomes effectively attached to the land and that the removal of such development rights—rights that are commonly taken for granted by landowners—through downzoning would constitute a "taking." While the latter position is frequently taken in a political context—as many local elected officials believe that such a position is fair and equitable—the Wisconsin Supreme Court *has taken the position that a landowner has no vested right in zoning until proper development and/or building permit applications have been filed.*

Given the attendant costs, PDR programs should be strategically targeted toward agricultural lands where long-term preservation is particularly important. A PDR program could, for example, be directed at existing farmland surrounding a public nature preserve or major park in order to ensure a permanent open space buffer around the park or nature preserve.

Transfer-of-development-rights programs transfer the right to develop dwelling units from one parcel, which would be maintained in open space, to another parcel where the number of dwelling units allowed would be correspondingly increased.

Transfer of Development Rights

Under transfer-of-development-rights programs, or "TDR" programs, the right to develop a specified number of dwelling units under existing zoning may be transferred from one parcel, which would be maintained in open space use, to a different parcel, where the number of dwelling units permitted would be correspondingly increased. When the parcels are held by the same owner, the development rights are, in effect, simply transferred from one parcel to the other by the owner; when the parcels are held by different landowners, the transfer of development rights involves a sale of rights from one owner to another, at fair market value. In either case, the result is a shift in density away from areas proposed to be maintained in farming or other open use toward areas recommended for development. The transfer of development rights may be permanent or may be for a specific period of time or set of conditions.

The transfer of development rights may be implemented only if authorized under county or local zoning. To enable the transfer of development rights, the zoning ordinance must establish procedures by which the TDR technique will be administered, including the formula for calculating the number of residential dwelling units that may be transferred from the "sending" area to the "receiving" area. The zoning district map must identify the sending and receiving areas, or at least identify the districts within which development rights can be transferred from one parcel to another.

While the creation and administration of a TDR program is somewhat complicated, the technique remains a potentially effective means for preserving open space and maintaining rural densities, while directing development to areas where it may best be accommodated.

Municipal Boundary and Utility Extension Agreements

The VISION 2050 recommendations concerning the location and density of new urban development are formulated without regard to the location of city, village, and town boundaries. Rather, those plan recommendations are based upon a consideration of such factors as the location of existing utility infrastructure, including public sanitary sewer and water supply systems; the location of environmentally sensitive lands; and the availability of lands considered to be suitable for urban development. Where cities and villages own and operate essential public utilities not provided by adjacent towns, VISION 2050 assumes that cities and villages will either annex unincorporated territory recommended in VISION 2050 for urban development and provide extensions of essential utility services to serve such development, or that the cities and villages will reach agreement with adjacent unincorporated towns on the extension of those essential services without the need for annexation and municipal boundary change.

There are a number of cooperative arrangements communities can make to share municipal services and determine community boundaries.

The *Wisconsin Statutes* establish a number of arrangements for cooperation among communities with regard to sharing of municipal services and cooperatively determining community boundaries, as indicated in the following:

- **Section 66.0301** – This section of the *Statutes* provides broad authority for intergovernmental cooperation among local units of government with respect to the provision and receipt of services and the joint exercise of their powers and duties.

- **Section 66.0307** – This section of the *Statutes* allows any combination of cities, villages, and towns to determine the boundary lines between themselves under a cooperative plan, subject to oversight by the Wisconsin Department of Administration. Section 66.0307 envisions the cooperative preparation of a plan for the affected area by the concerned local units of government and prescribes in detail the contents of the cooperative plan. Importantly, the cooperative plan must identify any boundary change and any existing boundary that may not be changed during the planning period; identify any conditions that must be met before a boundary change may occur; include a schedule of the period during which a boundary change shall or may occur; and specify arrangements for the provision of urban services to the territory covered by the plan.

- **Section 66.0225** – This section of the *Statutes* allows two abutting communities that are parties to a court action regarding an annexation, incorporation, consolidation, or detachment, to enter into a written stipulation compromising and settling the litigation and determining a common boundary between the communities.

Cooperative approaches to the identification of future corporate limits and the extension of urban services can contribute significantly to attainment of the compact, centralized urban growth recommended in VISION 2050. Conversely, failure of neighboring civil divisions to reach agreement on boundary and service extension matters may result in development at variance with VISION 2050—for example, by causing new development to leap past logical urban growth areas where corporate limits are contested, to outlying areas where sewer and water supply service are not available. Accordingly, VISION 2050 recommends that neighboring incorporated and unincorporated communities cooperatively plan for future land use, civil division boundaries, and the provision of urban services, as provided for under the *Wisconsin Statutes*, within the framework of the land use component of VISION 2050.

Municipal Revenue Sharing

Additional opportunity for intergovernmental cooperation is provided under Section 66.0305 of the *Wisconsin Statutes*, entitled "Municipal Revenue Sharing." Under this statute, two or more cities, villages, and towns may enter into revenue sharing agreements, providing for the sharing of revenues derived from taxes and special charges. The agreements may address matters other than revenue sharing, including municipal services and municipal boundaries. Municipal revenue sharing can provide for a more equitable distribution of the property tax revenue generated from new commercial and industrial development within metropolitan areas and help reduce tax-base competition among communities, competition that can work against the best interests of the metropolitan area as a whole.

A good example of municipal revenue sharing under this statute is the revenue sharing agreement included in the Racine Area Intergovernmental Sanitary Sewer Service, Revenue Sharing, Cooperation and Settlement Agreement entered into by the City of Racine and neighboring communities in 2002. Under this agreement, the City of Racine receives shared revenue payments

from neighboring communities for use in renovating older residential areas, redeveloping brownfield sites, and supporting regional facilities like the City zoo, fine arts museum, and library. In return, the City of Racine agreed to support the incorporation of the two adjacent Towns of Caledonia and Mt. Pleasant; refrain from annexations without the consent of the Towns; refrain from using extraterritorial and plat review powers; and move ahead with sewerage system improvements that will accommodate growth in the Towns. It should be noted that the Towns of Mt. Pleasant and Caledonia were incorporated as villages in 2003 and 2005, respectively.

Capital Improvement Programming

The ability of county and local units of government to implement VISION 2050 as refined and detailed in county and community comprehensive plans depends in part upon the proper timing and coordination of major capital improvements, including major streets and highways, major utility facilities, parks, libraries, and other major public facilities. This can best be accomplished through systematic capital improvement programming, a process involving the scheduling of major public improvements over a specified period of time, taking into account the relative importance of, and need for, those improvements and the financial resources anticipated to be available. Although procedures vary, this process typically involves the preparation of a capital improvement budget for the next fiscal year and a capital improvement program indicating improvements planned for the following four or five years. It is common for the improvement budget to be prepared and the capital improvement program to be revised annually. As part of the capital improvement programming process, every effort should be made to relate major capital improvement to the development objectives set forth in county and local plans that refine VISION 2050.

Brownfield Redevelopment

The Southeastern Wisconsin Region, like many urbanizing regions throughout the Nation, has experienced an increase in vacant or underutilized sites once devoted to industrial, commercial, and related uses. Factors contributing to the abandonment or underutilization of older commercial and industrial sites vary from site to site, but often include structures that are obsolete in terms of accommodating current manufacturing, warehousing, and office needs; inadequate site access to the freeway system; and insufficient site area for horizontally oriented structures, contemporary parking and loading requirements, and possible future plant expansion needs.

Brownfields are former industrial and commercial sites whose reuse is constrained by contamination problems.

Once abandoned, the reuse of former commercial and industrial sites is frequently constrained by contamination problems created by past industrial and commercial activities, giving rise to the term "brownfields"—sites that are underutilized or abandoned due to known or suspected environmental contamination. While brownfields tend to be concentrated in older central city areas, they also occur in outlying urban areas. Redevelopment of brownfields is often hindered by high cleanup costs, and, even where contamination is only suspected, the potential for high cleanup costs tends to dampen private-sector interest in redevelopment.

Maintaining the viability of existing urban areas will require special efforts to promote the reuse of brownfields.

Maintaining the viability of existing urban areas of the Region as recommended in VISION 2050 will require special efforts to promote the reuse of brownfields. Local units of government should include the cleanup and reuse of brownfields as a key element in their planning for the revitalization of urban areas and promote such reuse through such tools as tax-incremental financing. Limited State and Federal financial assistance has been made available in support of site assessment and the cleanup and

reuse of contaminated sites. Local units of government should make full use of, and assist private developers in securing, available State and Federal financial assistance.

The reuse of brownfield sites need not be limited to industrial use, but may include a mix of residential, commercial, recreational, and other development, in accordance with local development objectives. Properly carried out, the cleanup and reuse of brownfields has many potential benefits in addition to the underlying environmental benefits: elimination of blight, increase in the property-tax base, expansion of the housing stock, provision of jobs in proximity to concentrations of the labor force, and increased use of existing public infrastructure. The redevelopment of such sites should consider the use of sustainable development practices such as green roofs, porous pavement, and rain gardens. Those practices increase stormwater infiltration and/or evapotranspiration, potentially reducing small storm runoff volumes and providing water quality benefits. Such practices must be designed in concert with site remediation measures to ensure the stormwater features function as intended.

Development Design Standards

Achievement of a settlement pattern that is functional, safe, and attractive, as recommended in VISION 2050, ultimately depends upon good design of individual development sites. Local units of government can promote good site design through the establishment of design standards to be adhered to in private-sector development. Adherence to soundly conceived design standards can enhance the visual character of the developed areas, contribute to the long-term stability of the developed areas and the maintenance of property values, and protect the public investment in supporting infrastructure systems.

Communities can promote good site design through design standards, which can be incorporated into zoning and land division ordinances.

Design standards should reflect both regional and local development objectives. Regional concerns that should be addressed in such standards include transit serviceability, proper access to arterial streets and highways, and protection of the natural resource base. Local concerns that may be addressed in such standards include, among others, the layout of lots and blocks; provision of off-street parking; building mass, facades, and materials; solar access; grading; drainage; screening or buffering of building appurtenances; landscaping; open space reserves; controlled outdoor lighting; pedestrian and bicycle circulation; access to public transit; and buffering and screening of new development along freeways and other major highways. Some of the design standards may be quantitative in nature, so that compliance is directly measurable. Other standards may be qualitative in nature, so that determination of compliance involves experienced judgment.

Perhaps the best way to ensure compliance with design standards is to incorporate those standards into local land use controls—particularly zoning and land division control ordinances. Zoning ordinances can be expanded by requiring that site plans and building plans be prepared for each proposed development and by specifying the standards that the plans must meet. Land division control ordinances may be expanded to stipulate additional design standards required to be met in the land development process. Freestanding architectural control ordinances may also be used to codify building-related design standards.

With respect to zoning, design standards can be incorporated in several ways. For example, where a zoning ordinance requires site and building plan review by the local plan commission, specific design standards can be included in that

section of the ordinance. Design standards can also be incorporated as part of 'form-based' zoning provisions. Still an emerging concept, form-based zoning generally places more emphasis on physical building and site design attributes and less emphasis on the regulation of specific uses than conventional zoning. The use of form-based zoning is likely to have most application to situations where it is desired to accommodate a diversity of uses and to allow buildings to accommodate different uses over time.

VISION 2050 recommends that each county and local unit of government in the Region consider the formulation of a comprehensive set of design standards reflecting regional and local development objectives and determine whether and how existing local land use controls should be amended to ensure adherence to those standards.

Sound Land and Water Management Practices

As previously noted, the land use component of VISION 2050 is a systems-level plan. It includes recommendations regarding the general location and intensity of urban lands, the preservation of environmentally significant lands, the preservation of prime agricultural land, and the appropriate use of land in other rural areas. As VISION 2050 is implemented in the years ahead, it is essential that appropriate land and water management practices be planned for and applied, as a complement to the regional plan. A detailed discussion in this regard is beyond the scope of this report. This report can only highlight the types of planning and related management practices that should be considered in planned urban and rural areas.[50]

Communities should develop a stormwater management plan and adopt a stormwater management ordinance.

Stormwater runoff pollution performance standards for new development, existing urban areas, and transportation facilities are set forth in Chapters NR 151 and NR 216 of the *Wisconsin Administrative Code*. Each municipality in the Region should develop a stormwater management plan and adopt a stormwater management ordinance to achieve the standards set forth in the Administrative Code. Stormwater management practices appropriate for each urban area can best be developed through the preparation of a management plan. These practices should be developed in a manner that integrates development needs and environmental protection, including integrated water resources protection. Such practices should reflect both stormwater runoff quantity and quality considerations, as well as groundwater quantity and quality protection. Practices that are designed to maintain the natural hydrology should be considered where appropriate.

Chapter NR 151 of the *Wisconsin Administrative Code*, along with the Wisconsin Uniform Dwelling Code, sets forth regulations relating to construction site erosion. Construction site erosion is one of the leading causes of siltation in waterways. VISION 2050 recommends that each municipality adopt a construction site erosion control ordinance that incorporates the sound erosion control techniques outlined in the rules noted above.

Chapter NR 151 of the *Wisconsin Administrative Code* also includes performance standards in relation to stormwater runoff in agricultural areas. Runoff from agricultural lands may include significant nonpoint source pollutant loadings. In addition, the control of erosion on agricultural lands is important for long-term soil productivity. Consequently, the use of land and water management

[50] *Detailed information and recommendations regarding land and water management practices are presented in other Regional Planning Commission reports. In addition, information regarding land and water management practices is included in reports and other informational materials prepared by county land and water conservation committees, the Milwaukee Metropolitan Sewerage District, the DNR, and the NRCS.*

practices in rural areas is an important adjunct to the recommended land use component of VISION 2050. The management practices to be implemented in agricultural areas should be developed through the preparation of farm plans on a site-specific basis and should be prepared in a manner consistent with each county's land and water resources management plan.

Educational Activities

Planning-related educational efforts directed at county and local units of government and private interests are important to VISION 2050 implementation. Recognizing this, the Regional Planning Commission undertakes a variety of educational efforts to promote implementation of VISION 2050. These efforts include the following: informational meetings and formal public hearings on VISION 2050; presentations to county and local planning committees and commissions; classroom presentations; preparation of a series of planning guides intended to serve as manuals of sound planning practice; sponsorship of conferences and workshops related to special planning and plan implementation issues; publication of newsletters describing Commission planning programs and current issues in planning; publication of an annual report that includes an overview of current Commission planning activities and presents data gathered on an annual basis to help monitor regional plan implementation; and informational postings via social media. The Regional Planning Commission's Public Involvement and Outreach Division works directly with other Commission staff on coordinating plan implementation activities.

The Commission undertakes a variety of educational efforts to promote implementation of VISION 2050.

The Commission's website is an important part of the Commission's education and public information effort. All new Commission publications, and many past publications, are available online through the website. All draft report materials and advisory committee minutes for ongoing regional planning projects are also available on the website. In addition, an interactive website dedicated to VISION 2050 was created at the beginning of the VISION 2050 process and will be a valuable resource for plan implementation.

Technical and Financial Assistance for Planning

As noted above, an important step in the implementation of VISION 2050 is the refinement and detailing of the plan through the preparation of county and local comprehensive plans. This should be followed by adjustment of zoning and other local land use controls and administration of such controls in accordance with VISION 2050 over time. A number of public agencies provide technical assistance to local units of government in support of such local planning efforts, including county planning agencies, the University of Wisconsin-Extension, and the Regional Planning Commission. Specialized technical assistance on natural resource base-related planning matters may be obtained from county land conservation departments and the NRCS. Limited guidance and assistance may be obtained without cost or for a nominal fee. In some cases, cities, villages, and towns may contract with an agency for extensive technical assistance services. In addition to the aforementioned public agencies, county and local units of government may turn to a number of qualified planning and engineering firms for technical assistance in support of local planning activities.

A number of public agencies provide technical assistance to support community planning efforts.

A number of planning guides have been prepared specifically to assist county and local units of government in the preparation of local comprehensive plans. These guides have been prepared by various agencies, including the Wisconsin Departments of Administration, Transportation, Natural Resources, and Agriculture, Trade, and Consumer Protection; the Wisconsin Historical Society; the University of Wisconsin-Extension; and the Wisconsin Economic

Development Institute. To date, guides have been prepared for the housing, land use, transportation, economic development, intergovernmental cooperation, and agricultural, natural, and cultural resources elements of the comprehensive plan.

For the most part, county and local units of government must bear the costs of their local planning activities.

3.3 TRANSPORTATION PLAN IMPLEMENTATION

The transportation component of VISION 2050 has six major elements: public transit, bicycle and pedestrian facilities, transportation systems management, travel demand management, arterial streets and highways, and freight transportation. The specific actions required to implement each of these elements, and the agencies responsible for those actions, are described in the following sections of this chapter.

Public Transit

The public transit element of VISION 2050 recommends a significant improvement and expansion of public transit in Southeastern Wisconsin, including four commuter rail lines, eight rapid transit lines, and significantly expanded local streetcar and bus, express bus, commuter bus, and shared-ride taxi services. Map 1.8 in Chapter 1 of this volume displays the routes and areas served by the various components of the recommended transit element. Altogether, service on the regional transit system would increase by about 113 percent, from about 4,870 vehicle-hours of service on an average weekday in the year 2018 to 10,350 vehicle-hours of service in the year 2050 (see Table 1.8). The recommended service improvements and expansion include expansion of service area and hours, and significant improvements in the frequency of service. Table 1.9 shows the span of service hours and frequencies under VISION 2050. Table 3.2 identifies the entities and their roles with regard to implementing the public transit recommendations of the plan.

A comparison of estimated plan costs to existing and reasonably expected revenues identified a significant funding shortfall for the public transit element (see Table 1.13). The overall funding gap between the forecast capital and operating costs for the recommended transit system and the forecast revenues for transit is about $253 million annually in year 2019 constant dollars and about $338 million annually in year-of-expenditure dollars. The identified funding gap is a result of significantly constrained funding for public transit. Public transit in Southeastern Wisconsin is funded in a unique way, heavily dependent on Federal and State funding. The local share of funding for public transit in the Region is provided through county or municipal budgets, largely provided by property taxes, with public transit competing annually with mandated services and projects. Increasingly, due to the constraints in property tax-based funding, counties and municipalities have found it difficult to provide funding to address transit needs, and to respond to any shortfalls in Federal and State funding.

Table 3.2
Roles with Regard to Implementing the Public Transit Element of VISION 2050

Recommendation	Public Entities							Private Entities
	Local			Areawide	State			
	Municipal	Transit Agency	County	Regional Planning Commission	Wisconsin Department of Transportation	Wisconsin Department of Natural Resources	Wisconsin State Legislature	
2.1: Develop a rapid transit network	--	P	--	S	--	--	E	--
2.2: Develop commuter rail corridors and improve and expand commuter bus services	--	S	--	S	P	--	E	--
2.3: Improve existing express bus service and add service in new corridors	--	P	--	S	--	--	E	--
2.4: Increase the frequency and expand the service area of local transit	--	P	--	S	--	--	E	--
2.5: Improve intercity transit services and expand the destinations served	--	S	--	S	P	--	E	--
2.6: Implement "transit-first" designs on urban streets	P	S	P	S	S	--	--	--
2.7: Enhance stops, stations, and park-ride facilities with state-of-the-art amenities	--	P	--	S	P	--	--	--
2.8: Accommodate bicycles on all fixed-route transit vehicles	--	P	--	S	--	--	--	--
2.9: Implement programs to improve access to suburban employment centers	P	P	P	S	--	--	E	--
2.10: Provide information to promote transit use	--	P	--	S	P	--	--	--
2.11: Implement a universal fare system and free transfers across all transit operators	--	P	--	S	S	--	--	--
2.12: Consider implementation of proof-of-payment on heavily-used transit services	--	P	--	S	--	--	--	--
2.13: Promote and expand transit pricing programs	--	P	--	S	S	--	--	--
2.14: Expand "guaranteed ride home" programs	--	P	--	S	--	--	--	--

Note: P = Primary entity or entities critical to the implementation of a plan recommendation.
S = Supporting entity responsible for providing data, participating in advisory committees, or at the request of a primary agency, the conduct of a study in support of a plan recommendation.
E = Enabling entity responsible for the enactment of laws to provide a primary agency the authority or funding to implement a plan recommendation.

Source: SEWRPC

VISION 2050's recommended transit expansion will require State legislation to provide or allow additional transit funding.

Implementation of the recommended transit expansion will be dependent upon State legislation to create local dedicated transit funding[51] and a renewal of adequate annual State financial assistance to transit. As the equity analysis in Appendix N concluded, the reduction of accessibility to jobs and other activity centers due to the identified transit funding gap would particularly impact people of color, people with lower incomes, and people with disabilities, who utilize public transit at a rate proportionally higher than other population groups. The analysis further concluded that, should the amount of available and reasonably expected funding for transit continue as estimated under the FCTS, a disparate impact on the Region's people of color, people with lower incomes, and people with disabilities is likely to occur. Given current limitations at the State level on local government revenue generation and on WisDOT's ability to allocate funds between different programs, the ability for the Region to avoid such a disparate impact is dependent on the State Legislature and Governor providing additional State funding for transit services, or allowing local units of government and transit operators to generate such funds on their own. In terms of State financial assistance to transit, the State should consider restoring the cut in transit funding from the 2011-13 State budget, raising funding back to historical levels, and increasing future funding at the rate of inflation. The Wisconsin Transportation Finance and Policy Commission recommended an annual increase in statewide transit funding of $36.3 million along with recommended revenue sources to support the additional funding (including restoring the cut in transit funding from the 2011-13 budget, raising funding back to historical levels, and creating a transit capital program). In the 2015-2017 State budget, the WisDOT Secretary proposed an additional $60.7 million in statewide transit funding during the biennium, including a new capital program and increases to State transit operating assistance. However, the final 2015-2017 State budget included only a modest increase in State transit operating assistance—about $7.5 million over the biennium—and no new capital program. The 2019-2021 State budget provided increased revenues for transportation, adding funding to the State's Transportation Fund, which supports the arterial street and highway system and public transit operations statewide. The State budget also provided a 2 percent increase in mass transit operating assistance in

[51] *Regarding potential new transit revenue sources, a sales tax is the most common dedicated local transit funding source in other areas of the country and has previously been proposed for the Region. A sales tax has the potential to generate the needed revenue to implement the recommended transit improvements. Milwaukee has by far the largest transit system of its peers not supported by dedicated funding. When comparing the Milwaukee metro area to 28 peer metro areas from the Midwest and across the nation, over three-quarters of the peers have a local dedicated source of funding—typically a sales tax—which provides the bulk of their funding. The other peer metro area transit systems without dedicated funding provide one-half to one-fifth the transit service per capita provided in Milwaukee. In addition, the Milwaukee area is the most dependent on State funding compared to its 28 peers. The transit systems nationwide supported by sales tax revenue typically have a sales tax of 0.25 to 1.0 percent. In some of these areas, the sales tax rate varies by jurisdiction depending on the amount of transit service received by each jurisdiction.*

There are a number of other potential revenue sources that could provide additional transit funding in the Region (summarized in the financial analysis presented in Chapter 1 of this volume). These sources could be considered to help address the transit funding gap identified for VISION 2050. Like the sales tax, the ability to implement most of the identified funding sources would require State legislation. Also like the sales tax, it would be possible to limit levying some revenue sources to the more urban areas of the Region that would be served by a majority of the recommended transit improvements and expansion, and counties and municipalities may be able to partially eliminate the use of property tax revenues to fund transit.

calendar year 2020, and funded a one-time, $75-million competitive grant program available to local governments for local transportation system projects, including roads, bridges, transit capital and facilities, bicycle and pedestrian accommodations, railroads, and harbors. While these increases represent progress toward achieving the recommended plan, a more substantial revenue increase that provides sustainable, long-term funding would be necessary to achieve VISION 2050.

In addition to providing adequate funding, implementation of the significant improvements and expansion of transit would be bolstered through the creation of a regional transit authority (RTA) with the ability to collect dedicated funding, and construct, manage, and operate the recommended transit system. A number of the recommended transit services extend across city and county boundaries and a regional agency could assist in the implementation of these proposed services. Legislative efforts to create an RTA have not progressed since 2010.

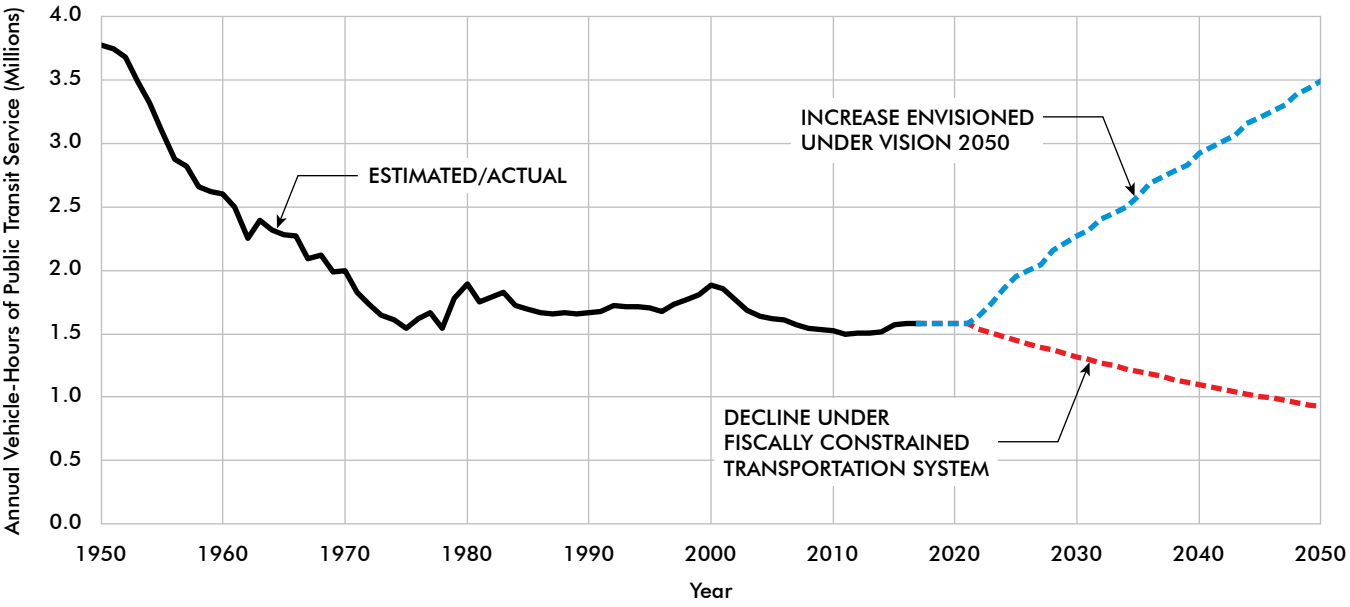
The funding constraints placed on the current operators of public fixed-route transit services in the Region—Ozaukee, Milwaukee, Washington, and Waukesha Counties and the Cities of Kenosha, Milwaukee, Racine, and Waukesha—will inhibit the implementation of the VISION 2050 recommendations for improvement and expansion of transit services. As such, the Fiscally Constrained Transportation System (FCTS), discussed in Chapter 2 of this volume, includes about a 35 percent decline in transit service. Figure 3.4 presents the schedule of service improvements envisioned under VISION 2050 and the expected service declines anticipated due to transit funding constraints included in the FCTS.

Bicycle and Pedestrian Element

The bicycle and pedestrian element of VISION 2050 is intended to promote safe accommodation of bicycle and pedestrian travel and encourage bicycle and pedestrian travel as an alternative to personal vehicle travel. The ability to support biking and walking is an important component of improving quality of life and achieving healthy, vibrant communities. While the Region has a colder climate and the proportion of residents that currently travel by bicycle is small, improving the bicycling and walking environment can have numerous benefits to the Region's residents. As the alternatives evaluation showed (presented in Appendix F of Volume II), well-connected infrastructure and a development pattern that provides a mix of uses within short distances make it easier to bike and walk. This encourages people to incorporate active travel into their daily routine, which can improve their health and reduce their healthcare costs. It is also important to integrate bicycle and pedestrian travel and public transit travel, which often begins and ends by either biking or walking. Recognizing the benefits of encouraging active transportation, the bicycle and pedestrian element of VISION 2050 recommends a well-connected bicycle and pedestrian network that improves access to activity centers, neighborhoods, and other destinations in the Region. The element seeks to encourage bicycle and pedestrian travel as a safe, attractive alternative to driving.

Bicycle recommendations for VISION 2050 include providing on-street bicycle accommodations on the arterial street and highway system, expanding the off-street bicycle path system, implementing enhanced bicycle facilities in key regional corridors, and expanding bike share program implementation. As shown in Table 1.10 of Chapter 1 of this volume, VISION 2050 recommends approximately 2,997 miles of standard on-street bicycle accommodations, 393 miles of enhanced bicycle facilities, and 731 miles of off-street bicycle

Figure 3.4
Historical and Planned Vehicle-Hours of Public Transit Service Under VISION 2050 and the Fiscally Constrained Transportation System



Source: SEWRPC

paths. Map 1.11 shows the recommended bicycle network, which identifies on-street bicycle facilities, potential corridors for enhanced bicycle facilities, off-street bicycle paths, and nonarterial street connections to the off-street bicycle network.

VISION 2050 also includes recommendations for the location, design, and construction of pedestrian facilities. The plan further recommends that local communities develop bicycle and pedestrian plans to supplement VISION 2050. The specific recommendations are provided in Chapter 1 of this volume. Table 3.3 identifies the entities and their roles with regard to implementing the bicycle and pedestrian recommendations of VISION 2050.

With regard to the on-street bicycle network, including those arterials identified as potential enhanced bicycle facility corridors, the level and unit of government responsible for constructing and maintaining the surface arterial street or highway should also have responsibility for constructing and maintaining the associated bicycle or pedestrian facility, or for entering into construction, operations, and/or maintenance agreements with local units or agencies of government. Accordingly, the Wisconsin Department of Transportation (WisDOT) should assume responsibility for bicycle and pedestrian facilities within the right-of-way of state trunk highways and connecting streets; the respective county highway, transportation, or public works departments should assume responsibility for bicycle and pedestrian facilities located within the right-of-way of county trunk highways; and the various cities, villages, and towns should assume responsibility for bicycle and pedestrian facilities located within the right-of-way of streets and highways under their jurisdiction. Bicycle and pedestrian facilities should be considered for provision at the time a street or highway is constructed, reconstructed, or resurfaced. The level and unit of government responsible for constructing and maintaining the off-street bicycle facilities are shown on Map 3.1 and summarized in Table 3.4.

Table 3.3
Roles with Regard to Implementing the Bicycle and Pedestrian Element of VISION 2050

Recommendation	Public Entities							Private Entities
	Local			Areawide	State			
	Municipal	Transit Agency	County	Regional Planning Commission	Wisconsin Department of Transportation	Wisconsin Department of Natural Resources	Wisconsin State Legislature	
3.1: Expand the on-street bicycle network as the surface arterial system is resurfaced and reconstructed	P	--	P	S	P	--	E	--
3.2: Expand the off-street bicycle path system to provide a well-connected regional network	P	--	P	S	P	P	--	--
3.3: Implement enhanced bicycle facilities in key regional corridors	P	--	P	S	P	--	--	--
3.4: Expand bike and scooter share program implementation	P	--	P	S	--	--	--	P
3.5: Provide pedestrian facilities that facilitate safe, efficient, and accessible pedestrian travel	P	--	P	S	P	--	--	--
3.6: Prepare local community bicycle and pedestrian plans	P	--	P	S	--	--	--	--

Note: P = Primary entity or entities critical to the implementation of a plan recommendation.
S = Supporting entity responsible for providing data, participating in advisory committees, or at the request of a primary agency, the conduct of a study in support of a plan recommendation.
E = Enabling entity responsible for the enactment of laws to provide a primary agency the authority or funding to implement a plan recommendation.

Source: SEWRPC

A more detailed evaluation of the recommended accommodation of bicycles on surface arterial streets or highways should be conducted by the implementing agency as part of the engineering for the resurfacing, reconstruction, and new construction of each segment of surface arterial. Factors to be considered during the detailed evaluation include the availability of right-of-way; the number and type of structures and vegetation that may need to be removed or relocated to provide the bicycle facility; the effects on environmentally sensitive areas, including wetlands; the cost of providing the bicycle facility on a specific street or highway in relation to providing the bicycle-related improvement on a parallel nonarterial street or off-street corridor; and the quality of the alternative locations and the likelihood that bicyclists would use those alternatives, including the potential for a recommended off-street bicycle path to serve as an alternative to the on-street accommodation. The location and design treatment of the bicycle facility should also be coordinated with the location and design treatment of nearby bicycle facilities.

Implementing agencies should conduct a more detailed evaluation of the recommended accommodation of bicycles on surface arterial streets or highways.

If the detailed evaluation process indicates that the recommended bicycle way location is not feasible due to site constraints, excessive costs, the traffic and operating characteristics of the roadway, or other factors, the implementing agency should identify an alternative location and evaluate the feasibility of the alternative route. The evaluation of the recommended bicycle accommodation, and, if necessary, the identification and evaluation of alternative locations, should be conducted during the preliminary engineering phase of project design. On all surface arterial streets and highways within the Region, preliminary engineering for rehabilitation, reconstruction, or new construction should consider the provision of the recommended bicycle accommodation, with the bicycle accommodation included as part of the project design, or a commitment to provide an alternative bicycle facility on a parallel nonarterial street or off-street corridor.

The Regional Planning Commission will, by request, review and update the jurisdictional responsibility of the off-street bicycle facilities as well as

Map 3.1
Recommended Off-Street Bicycle Facility Jurisdiction: VISION 2050

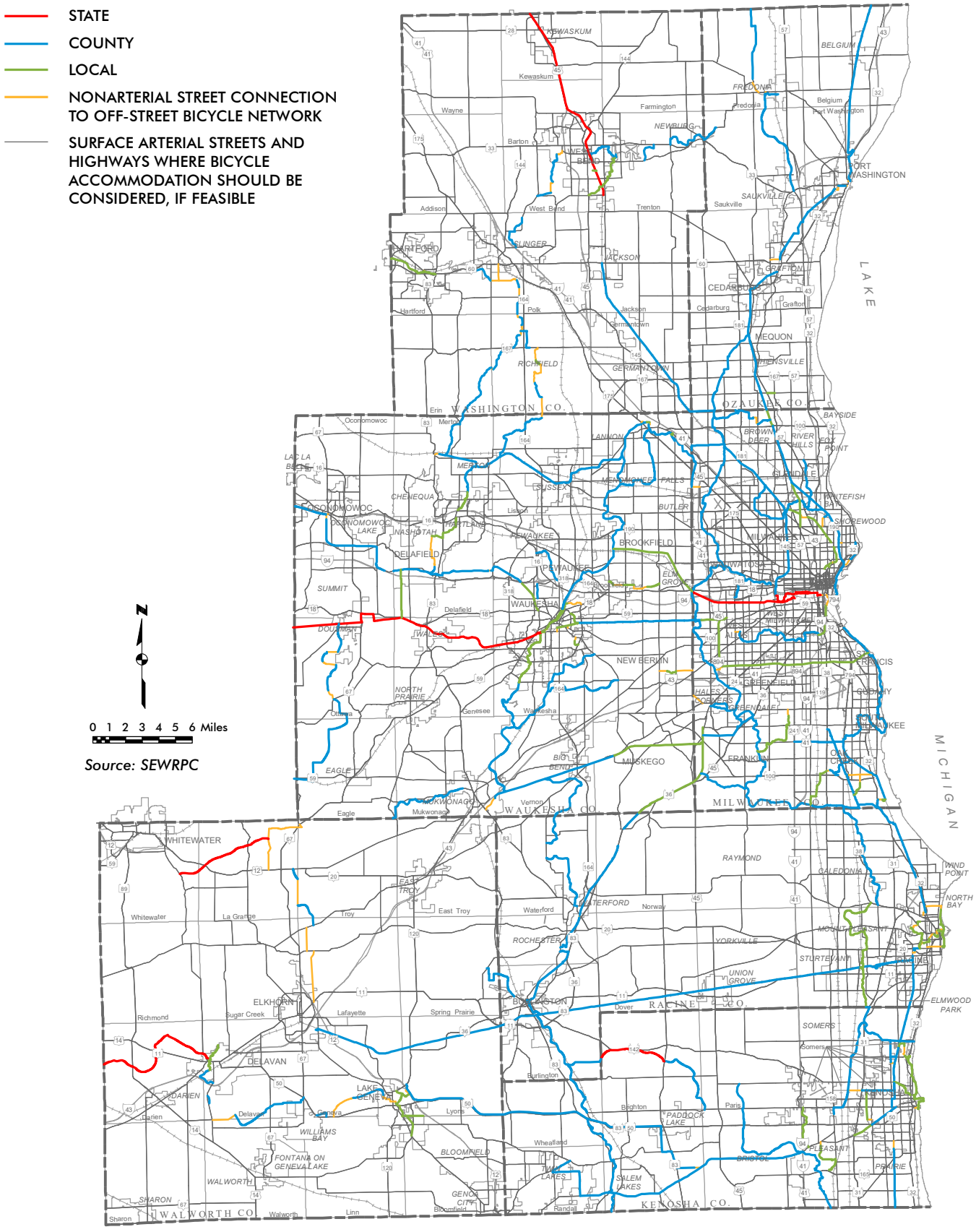


Table 3.4
Distribution of Off-Street Bicycle Facility Mileage Within the Region by County and Jurisdictional Classification: VISION 2050

County	State		County		Local		Total	
	Miles	Percent of Total	Miles	Percent of Total	Miles	Percent of Total	Miles	Percent of Total
Kenosha	4.3	7.2	88.1	16.0	15.8	13.2	108.2	14.9
Milwaukee	11.0	18.5	138.3	25.0	35.3	29.4	184.6	25.3
Ozaukee	0.0	0.0	47.8	8.7	0.5	0.4	48.3	6.6
Racine	0.0	0.0	75.4	13.7	16.6	13.8	92.0	12.6
Walworth	14.8	24.9	34.2	6.2	7.6	6.3	56.6	7.7
Washington	12.4	20.9	36.7	6.7	7.4	6.2	56.5	7.7
Waukesha	16.9	28.5	130.5	23.7	36.9	30.7	184.3	25.2
Region	59.4	100.0	551.0	100.0	120.1	100.0	730.5	100.0

Source: SEWRPC

conduct an assessment of the priority of need for bicycle accommodation on each segment of the surface arterial street and highway system considering factors including traffic volume, composition, speed, and congestion.

Transportation Systems Management Element
Transportation systems management (TSM) involves managing and operating existing transportation facilities to maximize their carrying capacity and travel efficiency. TSM recommendations for VISION 2050 include freeway traffic management, surface arterial street and highway traffic management, and major activity center parking management and guidance.

- **Freeway Traffic Management** – Freeway traffic management strategies include measures (Recommendations 4.1 to 4.3) that improve the operational control, advisory information, and incident management on the regional freeway system. Some of these measures are currently in use in Southeastern Wisconsin and are recommended to be expanded and enhanced. Several newer technologies, and certain measures not currently used in the Region, are recommended to be considered for implementation. Essential to implementing freeway traffic management measures is the State Traffic Management Center (TMC) in the City of Milwaukee, from which all freeway segments in the Region are monitored, freeway operational control and advisory information is determined, and incident management detection and confirmation is conducted.

- **Surface Arterial Street and Highway Traffic Management** – Surface arterial street and highway traffic management strategies are measures (Recommendations 4.4 to 4.11) that improve the operation and management of the regional surface arterial street and highway network. Many of these measures are currently in use in the Region and are recommended to be expanded and enhanced. Surface arterial street and highway traffic management measures are described in Chapter 1 of this volume, along with recommendations related to specific measures, including advisory information, traffic signal coordination, intersection traffic engineering improvements, curb-lane parking restrictions, and access management.

- **Regional Transportation Operations Plan** – The current regional transportation operations plan (RTOP), completed in 2012, is a five-year program identifying candidate corridor and intersection TSM

projects prioritized for implementation and funding, particularly with respect to Federal Highway Administration (FHWA) Congestion Mitigation and Air Quality Improvement (CMAQ) Program funding. VISION 2050 recommends that Commission staff work with State, county, and municipal governments to review and update the RTOP every four years (Recommendation 4.12).

Implementing the TSM recommendations will require the cooperation and coordination of multiple public and private entities.

Implementing the recommended TSM measures within each of the three categories collectively would be expected to result in a more efficient and safer transportation system. Implementing the TSM recommendations of VISION 2050 will require the cooperation and coordination of multiple public (State, areawide, county, and local) and private entities. A more detailed description of the specific measures (Recommendations 4.1 to 4.12) are provided in Chapter 1 of this volume. Table 3.5 identifies the entities and their roles with regard to implementing the TSM recommendations of VISION 2050.

Travel Demand Management Element

Travel demand management (TDM) refers to a series of measures or strategies intended to reduce personal and vehicular travel or to shift such travel to alternative times and routes, allowing for more efficient use of the existing capacity of the transportation system. The general intent of such measures is to reduce traffic volume and congestion, and attendant air pollutant emissions and fuel consumption. To be effective, these measures should be technically and politically feasible; integrated with public transit, bicycle and pedestrian, and arterial street and highway improvements; and combined into coherent packages so that a variety of measures are implemented. VISION 2050 recommends TDM measures, including high-occupancy vehicle (HOV) preferential treatment, park-ride lots, personal vehicle pricing, TDM promotion, detailed site-specific neighborhood and major activity center land use plans, and partnerships with private-sector mobility service providers. It should be noted that there is an inherent overlap between the TDM and public transit elements of VISION 2050, and the transit element recommends a number of additional measures that would reduce personal and vehicular travel beyond those included in the TDM element. The specific recommended measures or strategies (Recommendations 5.1 to 5.6) are provided in Chapter 1 of this volume. Table 3.6 identifies the entities and their roles with regard to implementing the TDM recommendations of VISION 2050.

Arterial Streets and Highways Element

The arterial street and highway system envisioned in VISION 2050 would consist of 3,669 route-miles of facilities. VISION 2050 recommends the construction of 65 route-miles of new facilities within the Region. It also recommends the widening with additional traffic lanes of 233 route-miles of arterials, including 73 miles of freeways. VISION 2050 does not make any recommendation with respect to whether the 10 miles of IH 43 between Howard Avenue and Silver Spring Drive, when reconstructed, should be reconstructed with or without additional traffic lanes. It recommends that preliminary engineering conducted for the reconstruction of this segment of IH 43 should include the consideration of alternatives for rebuilding the freeway with additional lanes and rebuilding it with the existing number of lanes. VISION 2050 also calls for pavement resurfacing and reconstruction as necessary to maintain the remaining 3,371 route-miles of planned arterial facilities, including rebuilding the regional freeway system to modern design standards as it is reconstructed. The specific recommendations for the arterial streets and highways element are provided in Chapter 1 of this volume. Table 3.7 identifies the entities and their roles with regard to implementing the arterial streets and highways recommendations of VISION 2050.

Table 3.5
Roles with Regard to Implementing the Transportation Systems Management Element of VISION 2050

Recommendation	Public Entities							Private Entities
	Local			Areawide	State			
	Municipal	Transit Agency	County	Regional Planning Commission	Wisconsin Department of Transportation	Wisconsin Department of Natural Resources	Wisconsin State Legislature	
4.1: Implement freeway operational control measures	--	--	--	--	P	--	--	--
4.2: Implement advisory information measures for the freeway system	--	--	--	--	P	--	--	--
4.3: Implement incident management measures for the freeway system	--	--	S	S	P	--	--	--
4.4: Improve and expand coordinated traffic signal systems	P	--	P	S	P	--	--	--
4.5: Improve arterial street and highway traffic flow at intersections	P	--	P	S	P	--	--	--
4.6: Expand curb-lane parking restrictions	P	--	P	S	P	--	--	--
4.7: Develop and adopt access management standards	P	--	P	S	P	--	--	--
4.8: Enhance advisory information for surface arterial streets and highways	P	--	P	S	P	--	--	--
4.9: Expand the use of emergency vehicle preemption	P	--	P	S	P	--	--	--
4.10: Implement parking management and guidance systems in major activity centers	P	--	P	S	P	--	--	--
4.11: Implement demand-responsive pricing for parking in major activity centers	P	--	P	S	--	--	--	P
4.12: Review and update regional transportation operations plan	S	--	S	P	S	--	--	--

Note: P = Primary entity or entities critical to the implementation of a plan recommendation.
S = Supporting entity responsible for providing data, participating in advisory committees, or at the request of a primary agency, the conduct of a study in support of a plan recommendation.
E = Enabling entity responsible for the enactment of laws to provide a primary agency the authority or funding to implement a plan recommendation.

Source: SEWRPC

Additional recommendations as they relate to functional improvements and jurisdiction are as follows.

Functional Improvement Recommendations

VISION 2050 recommends that WisDOT act to maintain, improve, and expand, in accordance with the plan recommendations, the arterial street and highway facilities under State jurisdiction. VISION 2050 also recommends that the county boards of the seven constituent counties in the Region, upon recommendation of their respective county public works, highway, or transportation committees, act to expand, improve, and maintain, in accordance with the plan recommendations, the arterial street and highway facilities under county jurisdiction. VISION 2050 further recommends that the common councils, village boards, and town boards within the Region, upon recommendation of their respective plan commissions and boards of public works, act to expand, improve, and maintain, in accordance with the plan recommendations, the arterial street and highway facilities under local jurisdiction. Jurisdictional classification establishes which level of government—State, county, or local—has or should have, responsibility for the design, construction, maintenance, and operation of each segment

Jurisdictional classification identifies the level of government responsible for designing, constructing, maintaining, and operating each street and highway segment.

Table 3.6
Roles with Regard to Implementing the Travel Demand Management Element of VISION 2050

	Public Entities							
	Local			Areawide	State			
Recommendation	Municipal	Transit Agency	County	Regional Planning Commission	Wisconsin Department of Transportation	Wisconsin Department of Natural Resources	Wisconsin State Legislature	**Private Entities**
5.1: Enhance the preferential treatment for high-occupancy vehicles	P	--	P	S	P	--	--	--
5.2: Expand the network of park-ride lots	P	P	P	S	P	--	--	P
5.3: Price personal vehicle travel at its true cost	--	--	--	S	P	--	E	P
5.4: Promote travel demand management	--	--	--	P	P	--	--	--
5.5: Facilitate transit, bicycle, and pedestrian movement in local land use plans and zoning	P	--	P	S	--	--	--	--
5.6: Partner with private-sector mobility service providers	P	P	P	S	--	--	--	P

Note: P = Primary entity or entities critical to the implementation of a plan recommendation.
S = Supporting entity responsible for providing data, participating in advisory committees, or at the request of a primary agency, the conduct of a study in support of a plan recommendation.
E = Enabling entity responsible for the enactment of laws to provide a primary agency the authority or funding to implement a plan recommendation.

Source: SEWRPC

Table 3.7
Roles with Regard to Implementing the Arterial Streets and Highways Element of VISION 2050

	Public Entities							
	Local			Areawide	State			
Recommendation	Municipal	Transit Agency	County	Regional Planning Commission	Wisconsin Department of Transportation	Wisconsin Department of Natural Resources	Wisconsin State Legislature	**Private Entities**
6.1: Keep the Region's arterial street and highway system in a state of good repair	P	--	P	S	P	--	E	--
6.2: Incorporate "complete streets" concepts for arterial streets and highways	P	--	P	S	P	--	E	--
6.3: Expand arterial capacity to address residual congestion	P	--	P	S	P	--	E	--
6.4: Avoid, minimize, or mitigate environmental impacts of arterial capacity expansion	P	--	P	S	P	S	--	--
6.5: Address safety needs on the arterial street and highway network	P	--	P	S	P	--	--	--
6.6: Address security needs related to the arterial street and highway system	P	--	P	S	P	--	--	--
6.7: Monitor growth and development of automated vehicles	S	S	S	P	S	--	--	S

Note: P = Primary entity or entities critical to the implementation of a plan recommendation.
S = Supporting entity responsible for providing data, participating in advisory committees, or at the request of a primary agency, the conduct of a study in support of a plan recommendation.
E = Enabling entity responsible for the enactment of laws to provide a primary agency the authority or funding to implement a plan recommendation.

Source: SEWRPC

of the total street and highway system. Table 3.8 and Figure 3.5 show the anticipated schedule for completion of these improvements.

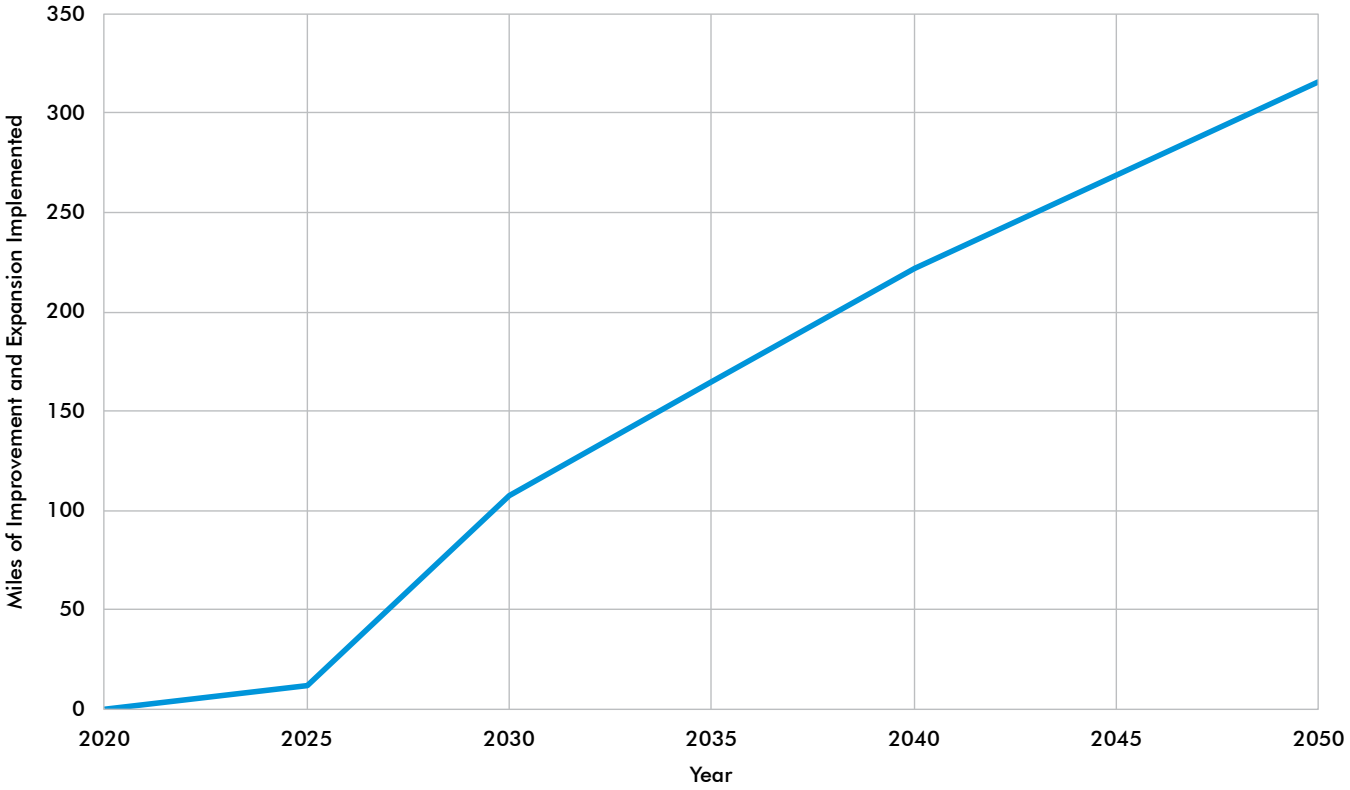
Each recommended arterial street and highway improvement, expansion, and preservation project would need to undergo preliminary engineering and environmental studies by the responsible State, county, or municipal

Table 3.8
Implementation Schedule for Arterial Street and Highway Capacity Improvement and Expansion: 2020, 2025, 2030, 2040, and 2050

Arterial Type	Proposed Incremental Arterial System Improvement and Expansion Route Miles					
	2020	2025	2030	2040	2050	Total
State Trunk Highway	--	8	49	73	69	199
County and Local Trunk Highway	--	4	46	42	25	117
Total Regional Arterial System	--	12	95	115	94	316

Source: SEWRPC

Figure 3.5
Cumulative Miles of Planned Arterial Street and Highway System Capacity Improvement and Expansion: 2020-2050



Source: SEWRPC

government prior to implementation. The preliminary engineering and environmental studies will consider alternative alignments and impacts, including a no-build option, and final decisions as to whether and how to implement a planned project will be made by the responsible State, county, or municipal unit of government at the conclusion of preliminary engineering.

The 73 miles of freeway widening proposed in VISION 2050 will undergo preliminary engineering and environmental impact studies by WisDOT. During preliminary engineering, alternatives will be considered, including rebuild-as-is, various design options of rebuilding to modern design standards, compromises to rebuilding to modern design standards, rebuilding with additional lanes, and rebuilding with the existing number of lanes. Only at the conclusion of preliminary engineering will a determination be made as to how the freeway will be reconstructed.

VISION 2050 does not make any recommendation with respect to whether the 10 miles of IH 43 between Howard Avenue and Silver Spring Drive, when reconstructed, should be reconstructed with or without additional traffic lanes. It recommends that preliminary engineering conducted for the reconstruction of this segment of IH 43 should include the consideration of alternatives for rebuilding the freeway with additional lanes and rebuilding it with the existing number of lanes. The decision of how this segment of IH 43 would be reconstructed would be determined by WisDOT through preliminary engineering and environmental impact study. During preliminary engineering, WisDOT would consider and evaluate a number of alternatives, including rebuild as is, various options of rebuilding to modern design standards, compromises to rebuilding to modern design standards, rebuilding with additional lanes, and rebuilding with the existing number of lanes. Only at the conclusion of preliminary engineering would a determination be made as to how this segment of IH 43 freeway would be reconstructed. Following the conclusion of the preliminary engineering for the reconstruction, VISION 2050 would be amended to reflect the decision made as to how IH 43 between Howard Avenue and Silver Spring Drive would be reconstructed. Any construction along this segment of IH 43 prior to preliminary engineering—such as bridge reconstruction—should fully preserve and accommodate the future option of rebuilding the freeway with additional lanes.

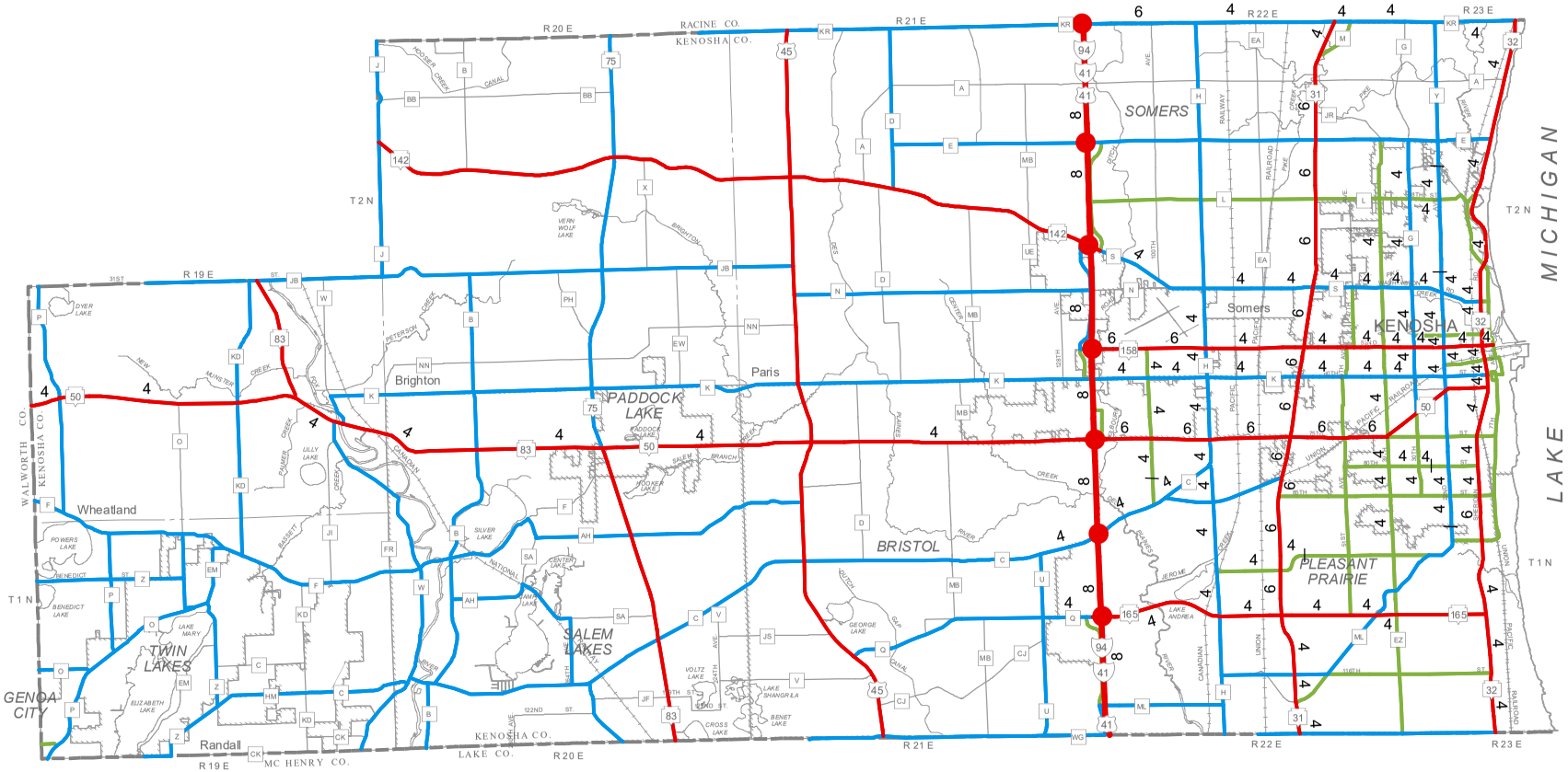
Jurisdictional Recommendations

Jurisdictional classification is intended to group all streets and highways logically into subsystems under the jurisdiction of a given level of government. Upon completion of the initial regional transportation system plan in 1966, county jurisdictional highway system plans were prepared for each county in the Region. These plans were extended in design year and updated as part of the year 2000 regional transportation system plan completed in 1978, the year 2010 plan completed in 1994, the year 2020 plan completed in 1997, and the year 2035 plan completed in 2006. The recommended jurisdictional arterial street and highway systems for the seven counties for the year 2050, based upon the extension of the year 2035 plan to the year 2050, are shown on Maps 3.2 through 3.8. Table 3.9 presents the distribution of planned arterial street and highway mileage among each jurisdictional subsystem within the Region and within each county of the Region. By the year 2050, about 1,135 miles, or about 31 percent of the planned arterial system, are recommended to be classified as state trunk highways, including connecting streets; about 1,516 miles, or 41 percent, are recommended to be classified as county trunk highways; and the remaining 1,018 miles, or about 28 percent, are recommended to be classified as local arterials.

The Commission staff will conduct a major review of the VISION 2050 jurisdictional recommendations at the request of each county.

Subsequent to Commission adoption of VISION 2050, and at the request of a county, Commission staff will work with the jurisdictional highway system planning advisory committee for that county to conduct a major review and reevaluation of the jurisdictional transfer recommendations in VISION 2050. This will be an extensive effort that will involve the review and redefinition of the functional criteria used for jurisdictional classification of arterial streets and highways, and the application of those criteria to the arterial street and highway system. This effort may change the jurisdictional recommendations of VISION 2050. Upon completion, public review, and subsequent adoption of the jurisdictional highway system plans by the Commission, VISION 2050 would then be amended to reflect the recommendations made in each county jurisdictional highway system plan. Since the adoption of the 2035 regional transportation plan in 2006, the Walworth County and Washington County jurisdictional highway system plans have been updated. In addition, an update of the Ozaukee County jurisdictional highway system plan

Map 3.2
Recommended Jurisdictional Highway System Plan for Kenosha County: 2050



ARTERIAL STREET OR HIGHWAY

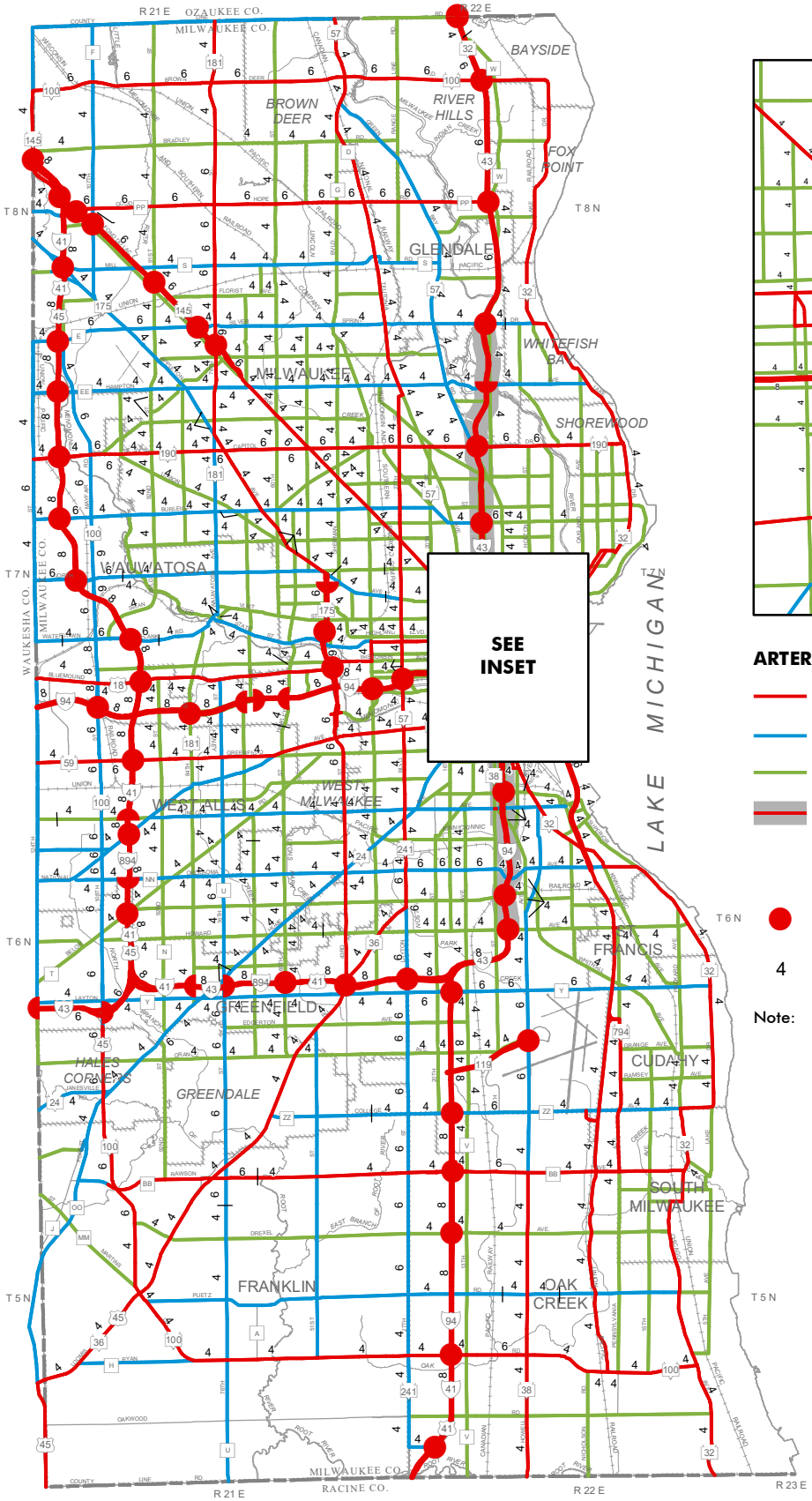
- STATE TRUNK HIGHWAY
- COUNTY TRUNK HIGHWAY
- LOCAL TRUNK HIGHWAY
- FREEWAY INTERCHANGE
- 4 NUMBER OF TRAFFIC LANES (2 LANES WHERE UNNUMBERED)

N

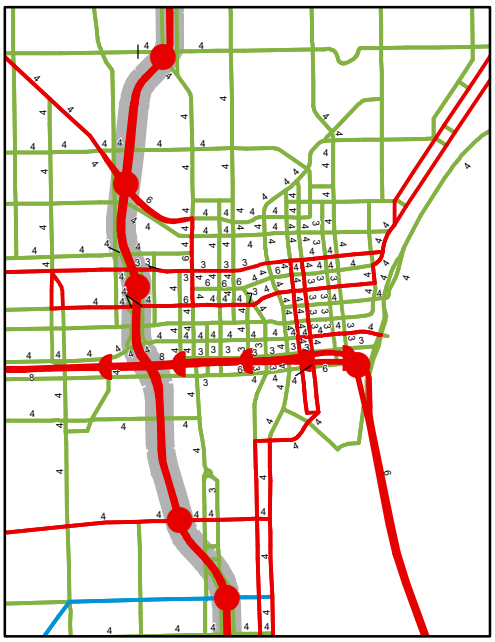
0 1 2 3 Miles

Source: SEWRPC

Map 3.3
Recommended Jurisdictional Highway System Plan for Milwaukee County: 2050



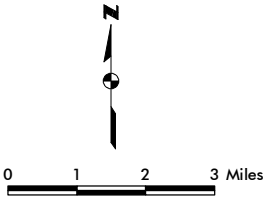
INSET



ARTERIAL STREET OR HIGHWAY

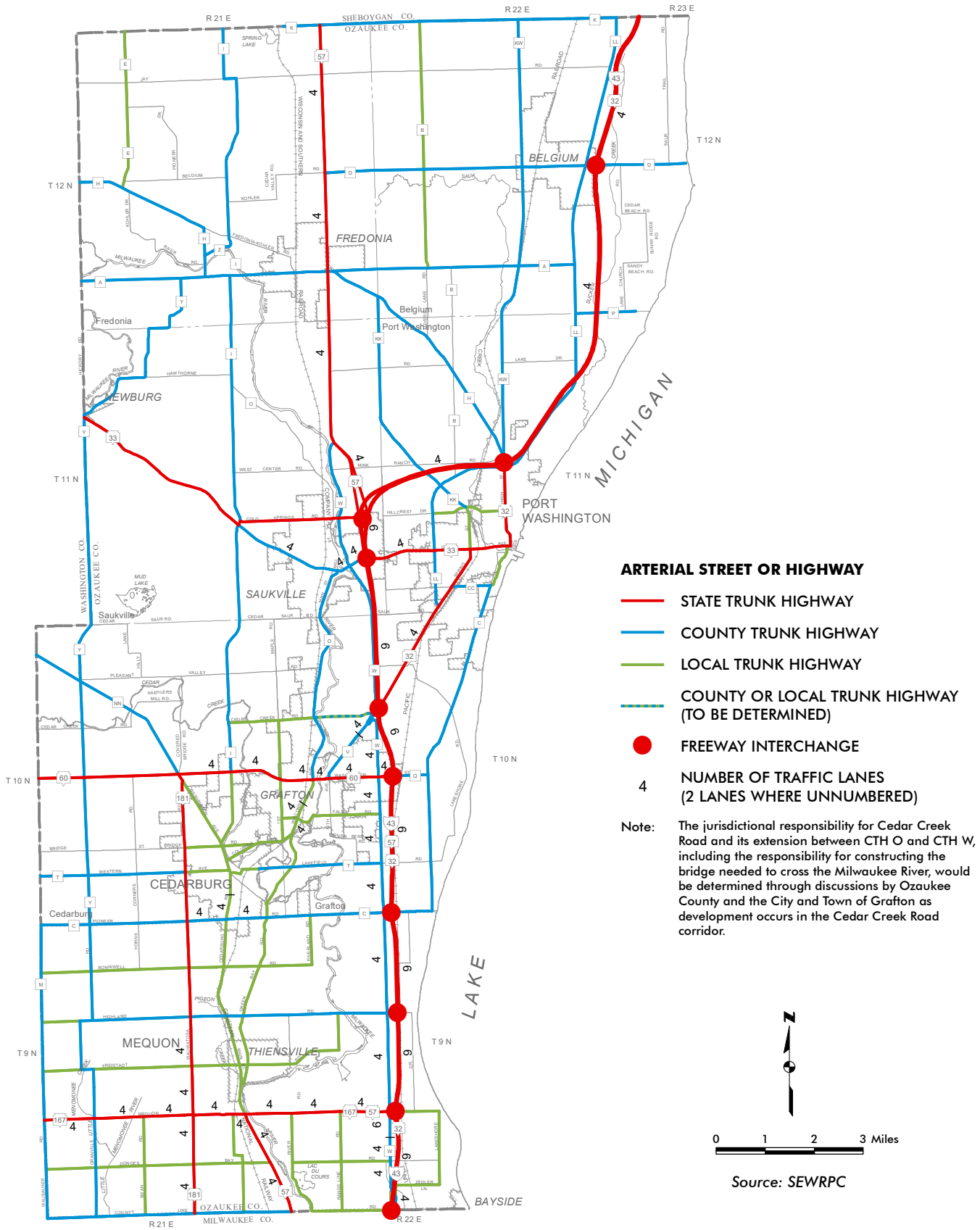
- STATE TRUNK HIGHWAY
- COUNTY TRUNK HIGHWAY
- LOCAL TRUNK HIGHWAY
- NO RECOMMENDATION WITH RESPECT TO WHETHER THIS SEGMENT OF IH 43 SHOULD BE RECONSTRUCTED WITH OR WITHOUT ADDITIONAL LANES (SEE NOTE BELOW)
- FREEWAY INTERCHANGE
- 4 NUMBER OF TRAFFIC LANES (2 LANES WHERE UNNUMBERED)

Note: VISION 2050 does not make any recommendation with respect to whether the segment of IH 43 between Howard Avenue and Silver Spring Drive, when reconstructed, should be reconstructed with or without additional lanes. The decision regarding whether this segment of IH 43 would be reconstructed with or without additional lanes would be made during preliminary engineering. Following the conclusion of the preliminary engineering for the reconstruction, VISION 2050 would be amended to reflect the decision made regarding how this segment IH 43 would be reconstructed.



Source: SEWRPC

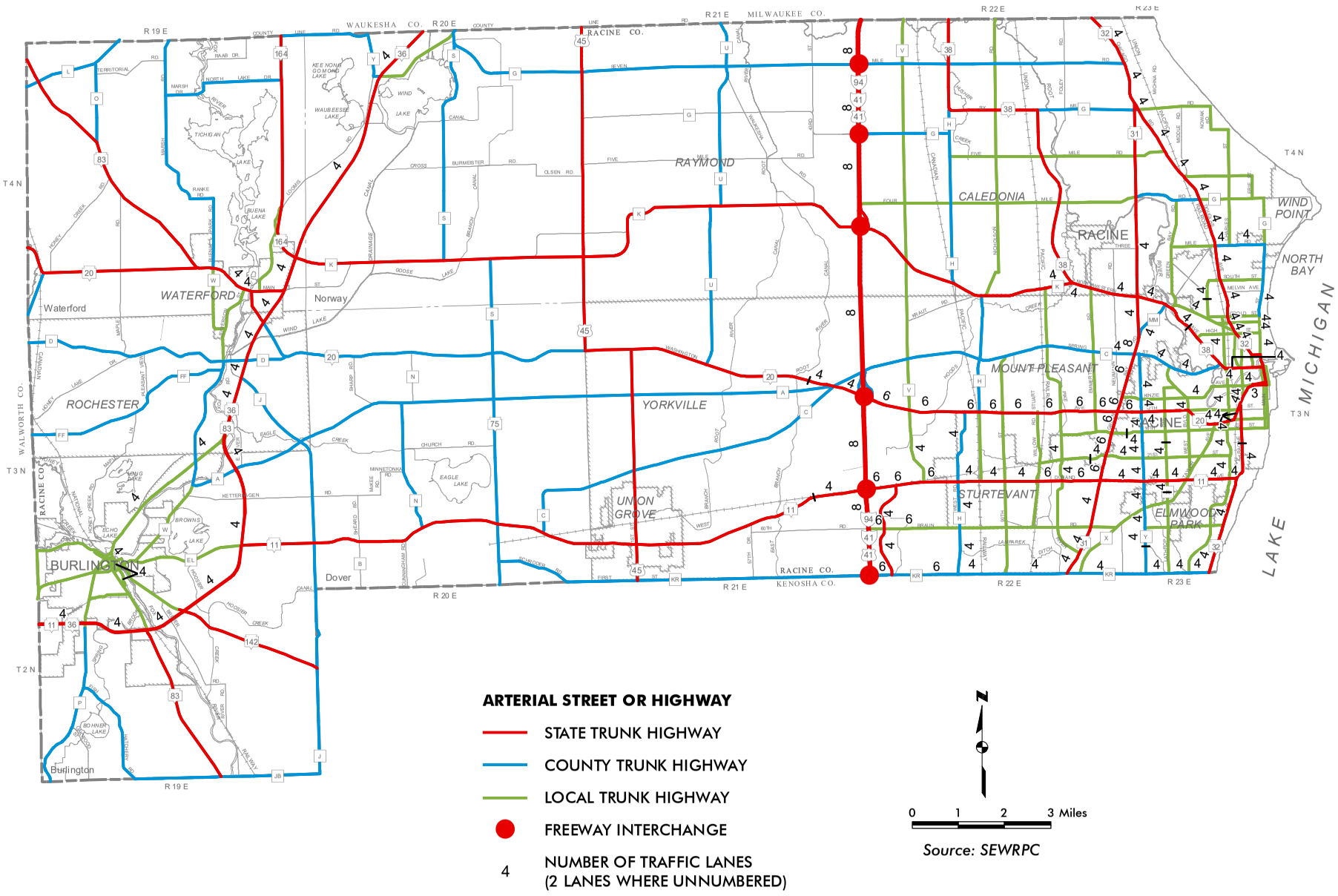
Map 3.4
Recommended Jurisdictional Highway System Plan for Ozaukee County: 2050



Note: The jurisdictional responsibility for Cedar Creek Road and its extension between CTH O and CTH W, including the responsibility for constructing the bridge needed to cross the Milwaukee River, would be determined through discussions by Ozaukee County and the City and Town of Grafton as development occurs in the Cedar Creek Road corridor.

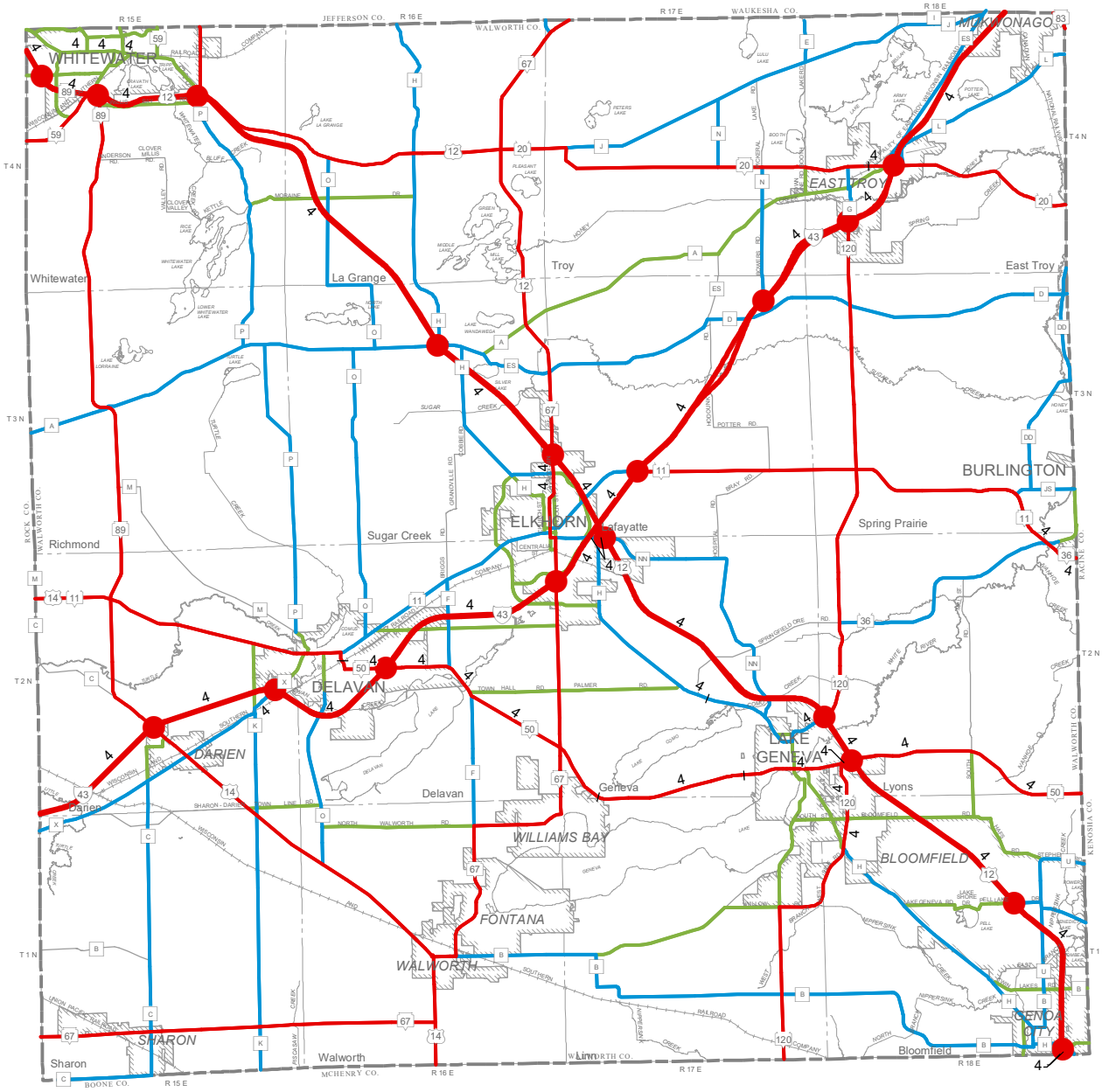
Source: SEWRPC

Map 3.5
Recommended Jurisdictional Highway System Plan for Racine County: 2050



Source: SEWRPC

Map 3.6
Recommended Jurisdictional Highway System Plan for Walworth County: 2050



ARTERIAL STREET OR HIGHWAY

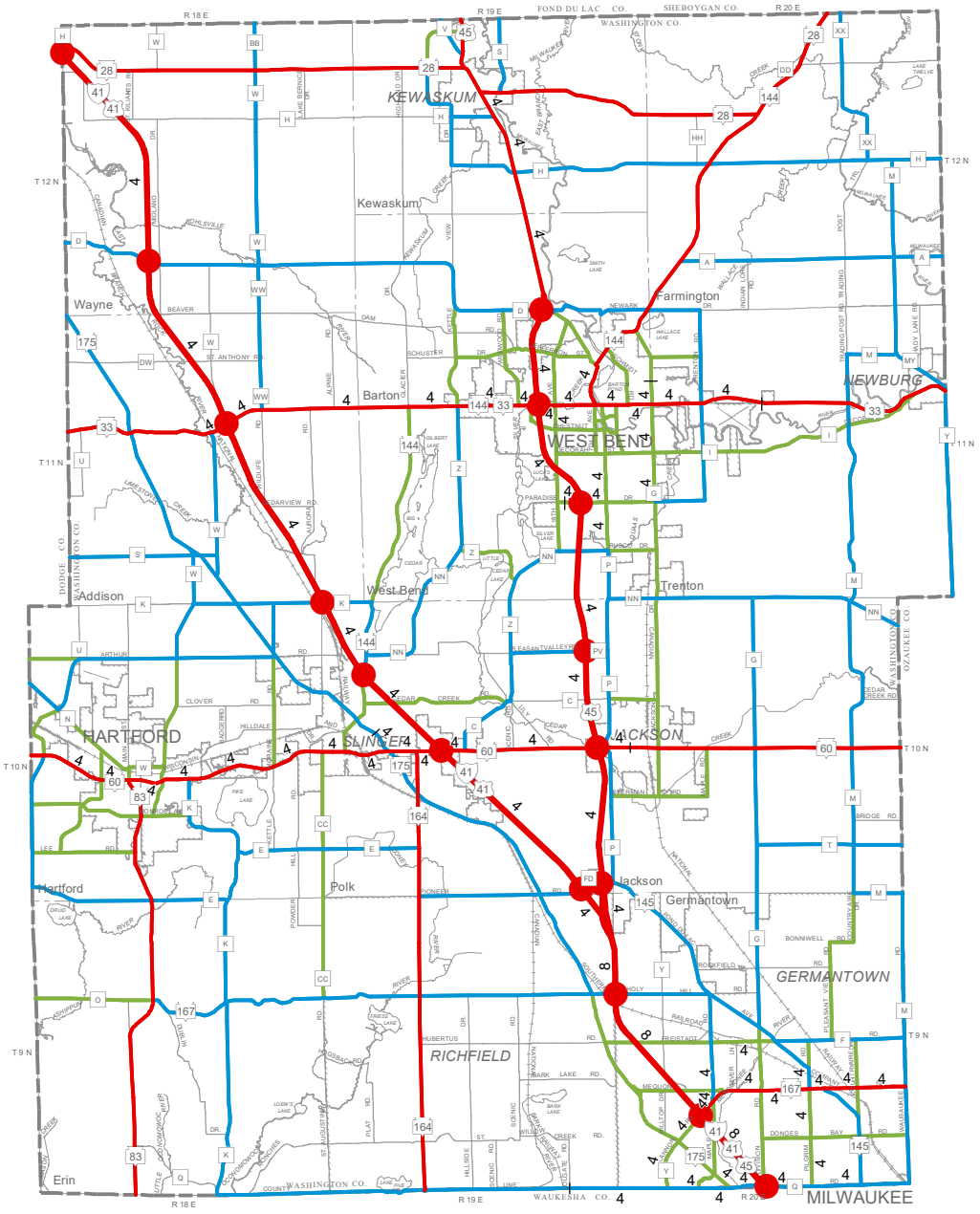
- STATE TRUNK HIGHWAY
- COUNTY TRUNK HIGHWAY
- LOCAL TRUNK HIGHWAY
- FREEWAY INTERCHANGE
- 4 NUMBER OF TRAFFIC LANES (2 LANES WHERE UNNUMBERED)

N

0 1 2 3 Miles

Source: SEWRPC

Map 3.7
Recommended Jurisdictional Highway System Plan for Washington County: 2050



ARTERIAL STREET OR HIGHWAY

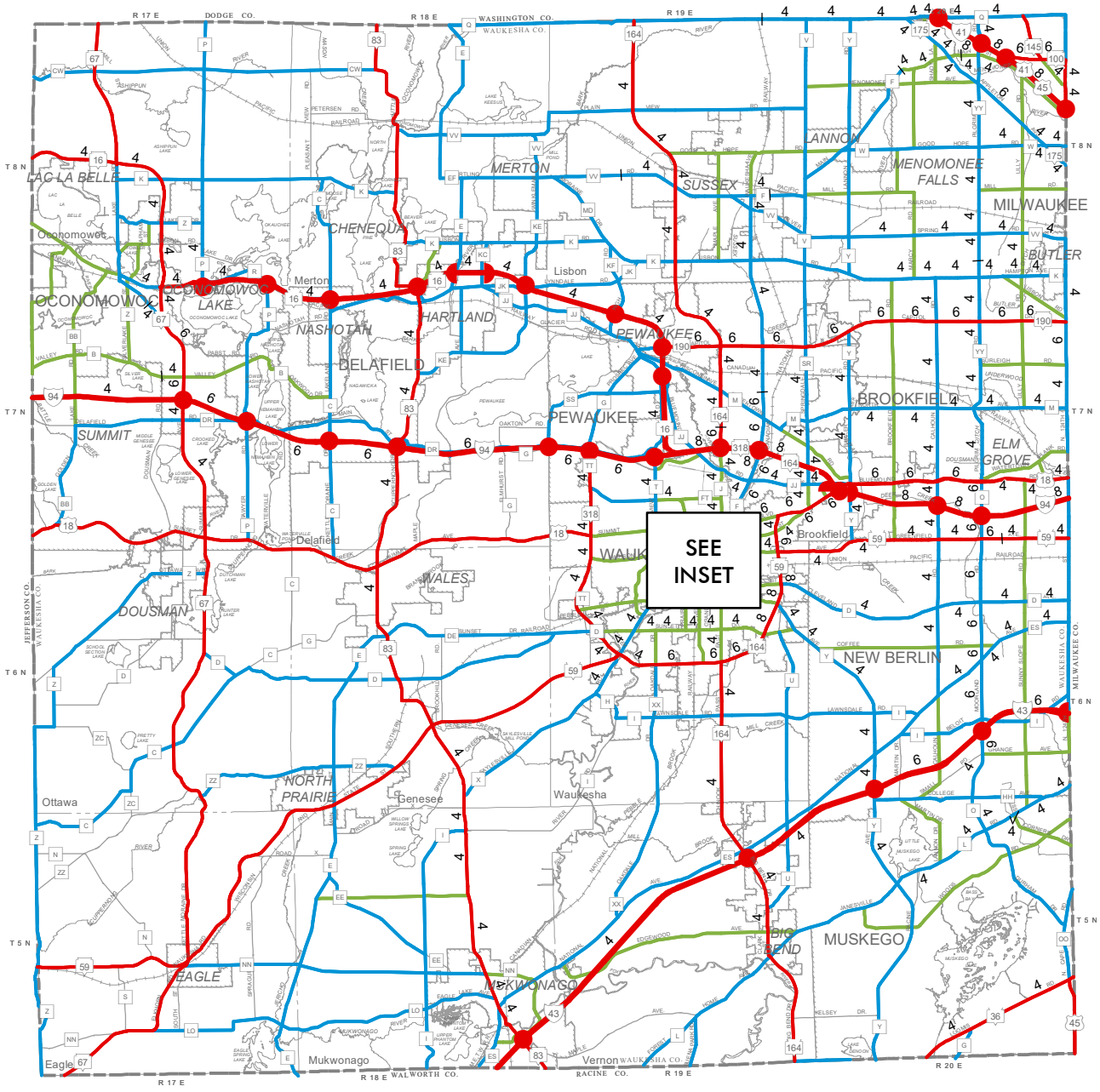
- STATE TRUNK HIGHWAY
- COUNTY TRUNK HIGHWAY
- LOCAL TRUNK HIGHWAY
- FREEWAY INTERCHANGE
- 4 NUMBER OF TRAFFIC LANES (2 LANES WHERE UNNUMBERED)

N

0 1 2 3 Miles

Source: SEWRPC

Map 3.8
Recommended Jurisdictional Highway System Plan for Waukesha County: 2050



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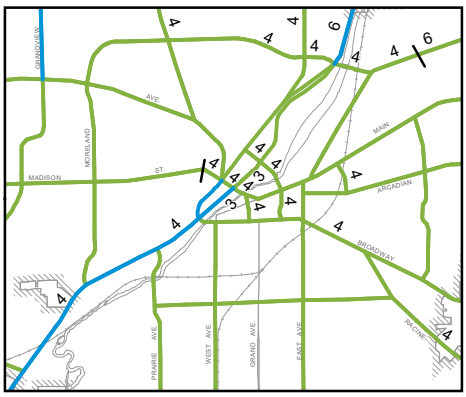

ARTERIAL STREET OR HIGHWAY

- STATE TRUNK HIGHWAY
- COUNTY TRUNK HIGHWAY
- LOCAL TRUNK HIGHWAY
- FREEWAY INTERCHANGE
- 4 NUMBER OF TRAFFIC LANES (2 LANES WHERE UNNUMBERED)

N

0 1 2 3 Miles

Source: SEWRPC

Table 3.9
Distribution of Arterial Street and Highway Mileage in the Region by County and Jurisdictional Classification: VISION 2050

	State		County		Local		Total	
County	Miles	Percent of Total	Miles	Percent of Total	Miles	Percent of Total	Miles	Percent of Total
Kenosha	108	9.5	200	13.2	57	5.6	365	10.0
Milwaukee	233	20.5	179	11.8	391	38.4	803	21.9
Ozaukee	79	7.0	161	10.6	72	7.1	312	8.5
Racine	161	14.2	154	10.2	138	13.6	453	12.3
Walworth	211	18.6	190	12.5	89	8.7	490	13.4
Washington	132	11.6	209	13.8	115	11.3	456	12.4
Waukesha	211	18.6	423	27.9	156	15.3	790	21.5
Region	1,135	100.0	1,516	100.0	1,018	100.0	3,669	100.0

Source: SEWRPC

was conducted concurrent with the development of VISION 2050. The jurisdictional recommendations from these efforts have been incorporated into VISION 2050.

Freight Transportation Element

The movement of freight is essential for maintaining and growing Southeastern Wisconsin's economy. Truck, rail, water, and air modes of transportation bring raw materials to the Region's manufacturers, and they carry finished goods to domestic and international markets. The Region's freight transportation system is used by the U.S. Postal Service and express parcel service providers, and it supports commerce in the Region by providing for the movement of goods that stock the Region's retail stores. The Region's freight transportation system also supports the movement of building materials needed to construct and maintain the Region's homes and businesses as well as the transportation system itself.

VISION 2050 recommends a multimodal freight transportation system designed to provide for the efficient and safe movement of raw materials and finished products to, from, and within Southeastern Wisconsin. To achieve this goal, VISION 2050 recommends improvements to the Region's transportation infrastructure as well as intergovernmental cooperation and other actions to preserve key transportation corridors, address regulatory inefficiencies, meet trucking industry workforce needs, and increase transportation safety and security. The specific recommendations for the freight transportation element are provided in Chapter 1 of this volume. Table 3.10 identifies the entities and their roles with regard to implementing the freight transportation recommendations of VISION 2050.

Following VISION 2050's adoption by the Commission in 2016, WisDOT completed a State Freight Plan, which was approved by the U.S. Department of Transportation in 2018. The Commission is a member, along with other public and private interests, of the advisory committee that guided this effort. As recommended by the State Freight Plan, the Commission and WisDOT staff worked together to identify Critical Urban Freight Corridors (CUFCs) and Critical Rural Freight Corridors (CRFCs) in the Region. The Commission staff has reviewed and updated the regional highway freight network to include the CUFCs and CRFCs. VISION 2050 recommends that Commission staff continue to regularly review and update the regional highway freight network to reflect future updates to the State Freight Plan. VISION 2050 further recommends that Commission staff continue to work with WisDOT

Table 3.10
Roles with Regard to Implementing the Freight Transportation Element of VISION 2050

Recommendation	Public Entities							Private Entities
	Local			Areawide	State			
	Municipal	Transit Agency	County	Regional Planning Commission	Wisconsin Department of Transportation	Wisconsin Department of Natural Resources	Wisconsin State Legislature	
7.1: Accommodate truck traffic on the regional highway freight network	P	--	P	S	P	--	--	--
7.2: Accommodate oversize/overweight shipments to, from, and within Southeastern Wisconsin	P	--	P	S	P	--	--	--
7.3: Pursue development of a new truck-rail intermodal facility in or near Southeastern Wisconsin	P	--	P	S	P	--	--	P
7.4: Develop truck size and weight regulations in Wisconsin consistent with neighboring states	--	--	--	--	P	--	E	--
7.5: Construct the Muskego Yard bypass	P	--	P	P	P	--	--	P
7.6: Address the potential need for truck drivers in Southeastern Wisconsin	--	--	--	S	P	--	--	P
7.7: Address safety needs related to freight transportation	P	--	P	S	P	--	--	--
7.8: Address security needs related to freight transportation	P	--	P	S	P	--	--	--
7.9: Support efforts in areas outside the Region that improve freight movement to and from the Region	--	--	--	S	P	--	--	--

Note: P = Primary entity or entities critical to the implementation of a plan recommendation.
S = Supporting entity responsible for providing data, participating in advisory committees, or at the request of a primary agency, the conduct of a study in support of a plan recommendation.
E = Enabling entity responsible for the enactment of laws to provide a primary agency the authority or funding to implement a plan recommendation.

Source: SEWRPC

staff to determine the additional elements of the State Freight Plan that would be appropriate to include in the regional freight transportation element.

In 2015, WisDOT created a workgroup to identify and work to preserve oversize/overweight (OSOW) corridors within Southeastern Wisconsin. This workgroup is made up of WisDOT and Commission staff and has representation from private and public entities primarily within the Milwaukee Urbanized Area. Any corridors and/or corridor improvements identified by this workgroup will be incorporated, as appropriate, into VISION 2050. VISION 2050 recommends that the Commission continue to work with this group in identifying and working toward preserving corridors for the movement of OSOW freight.

Detailed Implementation Planning

More detailed planning will be required prior to the programming of certain elements of VISION 2050. This includes more detailed State, county, and local planning efforts required to refine the basic transit, TSM, and highway improvement recommendations contained in VISION 2050.

Transit Development Planning

VISION 2050 recommends that each of the public transit operators in the Region, with the assistance of the Regional Planning Commission, undertake the preparation of transit development plans and programs as a basis

Each transit operator should work with the Commission to prepare transit development plans to refine and detail the VISION 2050 transit recommendations.

for refining and detailing the recommendations of VISION 2050 and for programming projects to implement the plan. Typically, such plans and programs are prepared with a relatively short-term, five-year time horizon. These plans and programs provide the basis for day-to-day decision making on initiating new transit service and modifying existing transit services. These plans provide the basis for each operator to program transit projects in their individual agency budgets.

In addition, VISION 2050 recommends that Commission staff work with public transit operators and human services organizations to periodically update county public transit-human services transportation coordination plans. These plans assess the existing transportation needs and services in each county, identify unmet needs or service gaps, and present a prioritized list of strategies to address those needs in a cost-effective manner to provide a framework to assist community leaders, human services agencies, and public transit agencies to improve transportation services in the Region.

The Commission staff should work with State and local governments on a more detailed study of coordinated traffic signal systems.

Transportation Systems Management Planning

VISION 2050 recommends that Commission staff work with State and local governments to document existing and planned arterial street and highway system traffic signals and traffic signal systems and develop recommendations (including prioritization) for improving and expanding coordinated signal systems. It also recommends preparing and implementing coordinated traffic signal plans along all surface arterial street and highway routes in the Region that have traffic signals located at one-half mile or less spacing. In addition, this measure recommends that agencies coordinate their efforts so that motorists do not experience unnecessary stops or delays due to changes in individual traffic signal jurisdiction authority. The recommended corridor and intersection plans would serve as a basis for prioritizing the corridor and intersection projects included in subsequent updates to the RTOP. First completed in 2012, the RTOP is a five-year program identifying candidate corridor and intersection TSM projects prioritized for implementation and funding, particularly with respect to FHWA CMAQ Program funding. VISION 2050 recommends that Commission staff work with State, county, and municipal governments to review and update the RTOP every four years.

Arterial Street and Highway Planning

County and local public works agencies may also undertake detailed implementation planning related to the recommended regional arterial street and highway system. Such planning can serve as a basis for amending VISION 2050, and provide for refining and detailing the plan, including identifying recommended arterial street and highway cross-sections and right-of-way requirements for each arterial segment. This work can be accomplished as part of jurisdictional highway system planning to be conducted subsequent to the Commission's adoption of VISION 2050.

Upon completion of county jurisdictional highway system plans, or other detailing and refinement of the arterial street and highway element of VISION 2050, including preliminary engineering studies, VISION 2050 recommends that, as appropriate, WisDOT, each county highway and public works agency, and each local public works agency take steps to reserve the required future rights-of-way by means of official mapping, building-setback-line ordinances, land division ordinances, and private deed restrictions. Such prior reservation of right-of-way serves as an expression of governmental intent to acquire land for highway purposes in advance of actual facility construction and thereby not only achieves economies in right-of-way acquisition, but also permits land adjacent to the right-of-way to be

privately purchased and developed or redeveloped with full knowledge of the future highway development proposals. The most effective and efficient means of prior reservation of right-of-way is the use of official mapping powers granted to WisDOT, as well as to counties, cities, villages, and towns in Wisconsin.

As available Federal, State, and local funding is limited, it is important that the timing and choice of rehabilitation and timing of reconstruction/replacement of various roadway features (pavement, bridges, and other roadway infrastructure) be done consistent with their life cycle in order to utilize the available funding effectively. Thus, sound asset management practices are necessary to effectively utilize the limited funding resources. In 2019, WisDOT developed and implemented an asset management plan for the pavement and bridges under the State's jurisdiction. VISION 2050 recommends that local governments within the Region also develop and implement asset management plans for the arterial and nonarterial roadways under their jurisdiction.

VISION 2050 recommends that the Commission, working with WisDOT and local governments, develop a Regional Safety Implementation Plan (RSIP) that will identify a list of intersections and corridors along the Region's arterial streets and highways with the most severe crash rates in each county. These intersections and corridors would be prioritized based on the nature of the crashes and frequency of the crashes resulting in fatalities and serious injuries. This prioritization would provide a basis for the State and local governments to identify intersections and corridors for further, more detailed safety studies and in the identification and prioritization of projects for Federal and State Highway Safety Improvement (HSIP) funds. The recommended study would also identify a list of corrective measures to reduce the number and severity of crashes.

VISION 2050 recommends that the Commission conduct a study to identify transportation facilities—streets, highways, and other transportation facilities (e.g., bus stops and park-ride lots)—located in low-lying areas (e.g., within 100-year and 500-year floodplains) that are susceptible to flooding, and identify potential improvements and adjacent roadway facilities that could serve as alternative routes when flooding occurs that would help the regional transportation system become more resilient to flooding. Improving the Region's transportation system resiliency to flooding is expected to become increasingly important given the projected increase in frequency of large storm events.

The Commission should conduct a study of the transportation facilities susceptible to flooding.

Monitoring of Plan Forecasts, Implementation, and Performance

The Commission has historically monitored the forecasts that underlie its regional land use and transportation plans, the progress made in implementation of these plans, and its forecasts of transportation system performance. Monitoring these forecasts assesses whether the forecasts and the facility plans designed to accommodate forecast conditions remain valid. This monitoring has historically been done annually,[52] or every four years as part of routine plan reviews and updates, or approximately every 10 years as part of a major reevaluation of plans. The timing of the monitoring of plan forecasts, implementation, and performance has been based on availability of data to permit this monitoring.

[52] *Commission monitoring activities are documented annually in the Commission's Annual Report.*

Plan Forecasts
The year 2050 forecasts used to develop and evaluate VISION 2050 include population, household, and employment levels; personal use vehicle availability; total internal person trips, vehicle trips, and transit trips on an average weekday; and average weekday vehicle-miles of travel. As data availability permits, VISION 2050 recommends that the Commission review these forecasts annually, during the update of VISION 2050 on a four-year cycle, or as part of a major plan update and reevaluation conducted about every 10 years with new census and travel survey data. The recommended frequency for evaluating the plan forecasts is presented in Table 3.11.

Plan Implementation
With regard to plan implementation, VISION 2050 recommends that monitoring be performed approximately every four years as part of a plan update, as well as approximately every 10 years as part of a major plan reevaluation. The Commission staff will monitor and present the extent of implementation of each of the six transportation plan elements: public transit, bicycle and pedestrian, TSM, TDM, arterial streets and highways, and freight transportation. The recommended elements and frequency for evaluating plan implementation are presented in Table 3.11.

Plan Performance
To evaluate the performance of VISION 2050, the Commission recommends a number of measures be considered and evaluated.[53] These measures relate to the condition and serviceability of the existing transportation infrastructure in Southeastern Wisconsin, managing congestion in Southeastern Wisconsin, and minimizing disruption of the natural and manmade environment in the Region. The method recommended for measuring the performance and effectiveness of the regional transportation system, and of VISION 2050 recommendations, is presented in Table 3.11 (whether the forecast performance of the regional transportation system in the year 2050 and in interim years will be achieved will be dependent on whether the regional plan is implemented and whether the forecasts underlying the plan remain valid—both of which will also be assessed as part of plan tracking).

The datasets collected for the monitoring of congestion and safety allow for the comparison of historical trends in traffic congestion and traffic safety on the arterial street and highway system in Southeastern Wisconsin. Over time these trends will allow the Commission to develop an assessment of the effectiveness of recommended actions in VISION 2050 that have been implemented. The datasets collected to monitor the impacts of planned improvements on the natural and manmade environment will allow for the comparison of historical trends and the assessment of the ability of the Commission to estimate impacts to the natural and manmade environment at the systems-planning level. In addition, as the Commission monitors the performance of the system, a few implemented recommendations of VISION 2050—including those projects funded through FHWA CMAQ funding—will periodically be selected for evaluation of their specific impact on system congestion and performance and impacts on the natural and built environment of the Region.

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[53] *These measures are in addition to the national performance measures established by FHWA and FTA related to transit asset management; highway and transit safety; pavement condition, bridge condition, and performance of the National Highway System; freight; and the CMAQ Program. The Commission, as the MPO for the Southeastern Wisconsin Region, is responsible for establishing and reporting some regionwide targets for these federal performance targets. The national performance measures and the targets established by the Commission are described in Appendix P. Progress made in achieving the performance targets, along with any change to the targets, will continue to be reported in subsequent VISION 2050 updates.*

Table 3.11
Recommended Frequency for Monitoring VISION 2050 Forecasts, Implementation, and Performance

Monitoring Element	Annually	Plan Update (Quadrennially)	Major Plan Reevaluation (Decennially)
Plan Forecasts			
Regional and county population forecasts	X	X	X
Regional and county household forecasts	X	X	X
Regional and county employment level forecasts	X	X	X
Regional and county vehicle availability forecasts	X	X	X
Regional and public transit system ridership forecasts	X	X	X
Regional vehicle-miles of travel forecasts	--	X	X
Regional internal person trips forecast	--	--	X
Regional internal vehicle trips forecast	--	--	X
Plan Implementation			
Level of revenue vehicle-miles of transit service provided on an average weekday	X	X	X
Level of transit passenger fares	X	X	X
Overall assessment of the degree of implementation of the rapid, express, and local transit components of the public transit element	--	X	X
Number of miles and location of off-street bicycle and pedestrian paths provided in the Region	--	X	X
Extent to which bicycle accommodation is being provided on the surface arterial street and highway system in the Region	--	X	X
Number and extent of coverage by variable message signs on the regional freeway system	--	X	X
Number and extent of coverage by closed-circuit television cameras on the regional freeway system	--	X	X
Number and location of ramp meters on the regional freeway system, including the number and location of those ramp meter locations that provide for high-occupancy vehicle bypass	--	X	X
Extent of coverage and spacing of freeway traffic detectors on the regional freeway system	--	X	X
Amount of information about current freeway traffic conditions provided by WisDOT through their website and monitoring deployment of additional methods to provide travel information to the public	--	X	X
Extent of coverage and location of enhanced reference markers on the regional freeway system	--	X	X
Extent and amount of coverage of freeway service patrols on the regional freeway system	--	X	X
Number and location of park-ride lots in the Region, including those served by public transit	X	X	X
Amount and location of reserved bus lanes in the Region	X	X	X
Number and location of transit signal priority systems in the Region	--	X	X
Number of miles and location of arterial street and highway widening to provide additional traffic capacity in the Region	--	X	X
Number of miles and location of new arterial streets and highways constructed in the Region	--	X	X
Plan Performance			
Pavement condition of the existing arterial street and highway system under State, county, and local jurisdiction	X	X	X
Condition of the structures in the Region	X	X	X
Extent of arterial street and highway system and regional highway freight network peak hour traffic congestion	--	X	X
Number of hours of congestion by level of congestion on each segment of the freeway	--	X	X
Peak hour travel times and speeds on selected surface arterial street and highway segments and on the freeway system	--	X	X
Current year and most recent five-year traffic crash history by county (fatal, injury, vehicular, nonmotorized, and transit)	X	X	X
Average weekday and average annual minutes of delay (automobile, transit, and commercial)	--	X	X
Public transit travel times	--	X	X
Transit service quality	--	X	X
Review actual impacts of a number of implemented actions on the natural and manmade environment	--	X	X
Review estimated transportation system air pollutant emissions on a hot summer average weekday	--	X	X

Source: SEWRPC

3.4 PLAN ADOPTION, ENDORSEMENT, AND INTEGRATION

Upon adoption of VISION 2050 by formal resolution of the Southeastern Wisconsin Regional Planning Commission, in accordance with Section 66.0309(10) of the *Wisconsin Statutes*, the Commission transmitted a certified copy of the resolution and adopted plan to all local legislative bodies within the Region and to all concerned local, areawide, State and Federal agencies. The Commission repeated this transmission following adoption of the 2020 Review and Update of VISION 2050. VISION 2050 recommends that each of the concerned agencies and units of government consider endorsing VISION 2050 and integrate the findings and recommendations of the plan into their planning, regulatory, and other activities related to land use and transportation.

The importance of integrating the regional plan into county and community planning efforts, in particular, cannot be overstated. The State comprehensive planning law enacted in 1999 effectively required that cities, villages, towns, and counties prepare and adopt long-range comprehensive plans—including nine prescribed plan elements[54]—and further specifies that, beginning in 2010, zoning, land subdivision regulations, and official mapping regulations must be consistent with such plans. VISION 2050 is intended to serve as a regional framework for the required planning. VISION 2050 includes recommendations that relate directly to a number of the required local comprehensive plan elements, including the land use element; the housing element; the agricultural, natural and cultural resources element; the utilities and community facilities element; and the transportation element. While the State comprehensive planning law does not mandate consistency between local comprehensive plans and the regional land use and transportation plan, it is, nonetheless, strongly recommended that cities, villages, towns, and counties use VISION 2050 as a framework for preparing their comprehensive plans, integrating the findings and recommendations of VISION 2050 into those plans as appropriate.[55] Additional guidance in this regard is provided throughout this chapter and specific plan adoption, endorsement, and integration responsibilities are listed in Table 3.1.

Cities, villages, towns, and counties should use VISION 2050 as a framework for preparing their comprehensive plans.

In addition, several particularly significant aspects of regional plan implementation warrant mention here in summary form. First, VISION 2050 as presented in this report is intended to comprise a guide to certain important aspects of the sound physical development of the Region. As such, the plan is advisory to the local, State, and Federal units and agencies of government concerned as these public bodies consider land use and transportation facility development matters in the Region. VISION 2050 should not be considered as an inflexible mold to which all future land use and transportation system development within the Region must precisely conform. Rather, it should be regarded as a point of departure against which land use and transportation system development proposals can be evaluated as they arise and in the light of which better development decisions can be made by all parties concerned.

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[54] *The nine required elements of a comprehensive plan as prescribed in the State comprehensive planning law include the following: issues and opportunities; housing; transportation; utilities and community facilities; agricultural, natural, and cultural resources; economic development; intergovernmental cooperation; land use; and implementation.*

[55] *Under the State comprehensive planning law, local comprehensive plans must incorporate regional transportation plans. This is the only consistency requirement between local comprehensive plans and regional plans specified in the State comprehensive planning law.*

As well, no plan can be permanent in all its aspects or precise in all its elements. The very definition and characteristics of "regional planning" suggest that a regional plan, to be viable and useful to local, State, and Federal units and agencies of government, be continually adjusted through formal amendments, extensions, additions, and refinements to reflect changing conditions. The Wisconsin State Legislature foresaw this when it gave regional planning commissions the power to "amend, extend or add to the master plan or carry any part or subject matter into greater detail" under Section 66.0309(9) of the *Wisconsin Statutes*. The regional plan is intended to be used as a framework for more detailed county and local planning. Amendments, extensions, and additions to VISION 2050 have occurred since the plan was originally adopted and more will be forthcoming, not only from the work of the Commission under the continuing regional planning program, but also from statewide plans and from Federal agencies as national policies are established or modified, new programs created, or existing programs expanded or curtailed. Adjustments will also come from State, subregional, district, and county and local planning programs which, of necessity, must be prepared in greater detail and result in refinement and adjustment of VISION 2050. All refinements and adjustments will require cooperation between local, areawide, State, and Federal agencies, as well as coordination by the Southeastern Wisconsin Regional Planning Commission, which is empowered under Section 66.0309(8) of the *Wisconsin Statutes* to act as a coordinating agency for programs and activities of the county and local units of government concerned. To achieve this coordination among local, areawide, State, and Federal programs most effectively and efficiently and, therefore, assure the timely adjustment of VISION 2050, it is recommended that all the aforementioned agencies having various plan and plan implementation powers transmit all subsequently prepared planning studies, plan proposals and amendments, and plan implementation products to the Southeastern Wisconsin Regional Planning Commission for consideration regarding integration into the adopted regional plan.

As local, areawide, State, and Federal agencies conduct more detailed studies, they should provide results to the Commission for integration into the regional plan as appropriate.

Second, the endorsement of VISION 2050 as a guide to the sound development of the Region by the local units of government and the various State and Federal agencies concerned is highly desirable. Indeed, in some cases, that endorsement is essential to ensure a common understanding of the areawide development objectives and to permit the necessary plan implementation work to be cooperatively programmed and jointly executed.

Third, plan implementation action policies and programs should not only be preceded by plan endorsement, but should also emphasize the most important and essential elements of the plan and those areas of action that will have the greatest impact on guiding and shaping land use and transportation system development in accordance with VISION 2050. Implementation of the regional transportation system component should focus on those facilities and activities having areawide significance. This implementation will be largely achieved if the rapid and express transit expansion and improvement recommendations are carried out, if the major TSM measures recommended in VISION 2050 are implemented (particularly the freeway system traffic management and surface arterial street and highway traffic management measures), if the freeway system is rebuilt to modern design standards and expanded as recommended, and if improvements to the major surface arterials are implemented.

Plan implementation policies and programs should emphasize the most important and essential areas of the plan.

Fourth, the importance of close coordination and cooperation between the local units of government and between those units of government and the State and Federal agencies concerned in plan implementation cannot

The regional transportation improvement program (TIP) provides the vehicle for the Commission's advisory review of proposed transportation facilities.

be overemphasized. Responsibilities for achieving such coordination and cooperation on a voluntary basis within the traditional framework of government in Wisconsin have been assigned to the Commission by the State Legislature through the regional planning enabling act. In addition, Federal transportation legislation provides a further basis for coordinating planning and plan implementation efforts by the Commission as the designated metropolitan planning organization. In its capacity as the coordinating agency under both State and Federal law, advisory review of proposed transportation facilities by the Commission is essential for the effective development over time of the regional transportation system. The proper vehicle for the review of proposed transportation facilities is the regional transportation improvement program compiled biannually by the Commission in accordance with the requirements of Federal transportation legislation.

Fifth, implementation of VISION 2050 will not be brought about by a single massive action on the part of one unit or agency of government. Rather, implementation of VISION 2050 will be brought about through many individual development decisions made on a day-to-day basis over a period of many years by public administrators and elected officials operating at the local, areawide, State, and Federal levels of government. It is extremely important that the individuals and agencies making these decisions be aware of and understand the development proposals set forth in VISION 2050 so that those proposals receive proper consideration as development decisions are made.

Finally, regional plan implementation can only be achieved within the context of a continuing, comprehensive areawide planning effort wherein the planning inventories and forecasts on which the Commission's regional plans are based are updated, monitored, and revised; in which the plans are reappraised and, as necessary, revised to accommodate changing conditions; and through which the plans are interpreted on a day-to-day basis to the local, State, and Federal units and agencies of government concerned as the need to make development decisions arises. In this respect, planning does not and cannot be constrained by anticipated future decisions. Rather, it must be recognized that decisions exist only in the present. Planning is necessary because, while decisions can only be made in the present, they should not be made for the present alone. The question, therefore, that faces elected officials and concerned residents throughout the Region regarding implementation of VISION 2050 is not what should be done tomorrow to bring about the plan, but, rather, what must be done today, in light of the plan, to be prepared for tomorrow.

APPENDICES

VISION 2050 LAND USE DESIGN GUIDELINES APPENDIX K

INTRODUCTION

VISION 2050 is intended to provide a guide, or overall framework, for future development within the Region. Implementation of the plan ultimately relies on the actions of local, county, State, and Federal agencies and units of government in conjunction with the private sector. The land use component design guidelines provide direction to these bodies to facilitate implementation of the VISION 2050 land use recommendations.

Residential Development Within Urban Service Areas

➤ **Recommendation 1.1: Develop urban service areas with a mix of housing types and land uses**

- **Design Guideline 1.1.1:** Residential infill development and redevelopment within urban service areas provides the opportunity to strengthen vibrant, walkable neighborhoods, particularly in the Region's highly urbanized areas. Infill and redevelopment may also be able to take advantage of existing infrastructure. Local governments should consider the following guidelines for residential infill and redevelopment proposals:
    - Sustain or increase existing residential densities to maintain walkability and neighborhood character.
    - Encourage a mix of uses in residential infill and redevelopment projects. Examples include dwellings above ground floor commercial/institutional uses and residential uses intermixed with commercial, institutional, civic, and recreational uses.
    - Preserve buildings or areas with historical and/or cultural significance to the greatest extent practicable. Examples include sites and districts listed on the National and State Registers of Historic Places and locally designated historic landmarks and districts.
- **Design Guideline 1.1.2:** Developing new residential neighborhoods within urban service areas presents an opportunity to create vibrant, walkable neighborhoods for people throughout the Region. Walkable neighborhoods should foster multiple travel modes and have a mix of uses, such as housing, parks, schools, and businesses. A walkable neighborhood could be achieved through the following allocation of land:

Land Use Category	Percent of Area in Land Use Category – Recommended Urban Residential Neighborhoods[56]		
	Mixed-Use City Center (18.0 or more dwelling units per net residential acre)	Mixed-Use Traditional Neighborhood (7.0-17.9 dwelling units per net residential acre)	Small Lot Traditional Neighborhood (4.4-6.9 dwelling units per net residential acre)
Residential	Varies	66.0	71.0
Streets and Utilities	Varies	25.0	23.0
Parks and Playgrounds	Varies	3.5	2.5
Public Elementary Schools	Varies	2.5	1.5
Other Governmental and Institutional	Varies	1.5	1.0
Retail and Service	Varies	1.5	1.0
Total	N/A	100.0	100.0

- **Design Guideline 1.1.3:** Local governments should consider limiting new lower-density residential neighborhoods to infill development in existing neighborhoods with similar residential densities, or where commitments have been made to such development through approved subdivision plats or certified survey maps. These neighborhoods could occur through the following allocation of land uses:

Land Use Category	Percent of Area in Land Use Category – Other Urban Residential Neighborhoods[57]	
	Medium Lot Neighborhood (2.3-4.3 dwelling units per net residential acre)	Large Lot Neighborhood (0.7-2.2 dwelling units per net residential acre)
Residential	71.0	76.5
Streets and Utilities	23.0	20.0
Parks and Playgrounds	2.5	1.5
Public Elementary Schools	1.5	0.5
Other Governmental and Institutional	1.0	1.0
Retail and Service	1.0	0.5
Total	100.0	100.0

[56] *Neighborhood sizes envisioned under this guideline are as follows: Mixed-Use Traditional Neighborhood – 160 acres and Small Lot Traditional Neighborhood – 640 acres. Development in Mixed-Use City Center would largely consist of infill and redevelopment projects in highly urbanized areas of the Region. Household sizes may vary between neighborhoods creating lower neighborhood population levels in some instances. This may require that an elementary school or retail and service area be provided to serve two or more contiguous neighborhoods rather than a single neighborhood. These guidelines are intended to be applied at a regional level of planning, and may be refined for application in county and community planning efforts. See footnote "59" on page 200 regarding dwelling units per net residential acre.*

[57] *Neighborhood sizes envisioned under this guideline are as follows: Medium Lot Neighborhood – 640 acres and Large Lot Neighborhood – 2,560 acres. Lower densities creating lower neighborhood population levels often require that an elementary school or retail and service area be provided to serve two or more contiguous neighborhoods rather than a single neighborhood. These guidelines are intended to be applied at a regional level of planning, and may be refined for application in county and community planning efforts.*

➤ Recommendation 1.2: Focus TOD near rapid transit and commuter rail stations

- **Design Guideline 1.2.1:** Focus transit-oriented development (TOD) within one-half mile of the rapid transit and commuter rail stations recommended under the VISION 2050 transportation component.

- **Design Guideline 1.2.2:** The following building types are typical of TOD:

  - High-rise: Typically 10+ stories and may include residential, office, or a mix of uses with retail and services on the ground floor. Most likely to be found in the Mixed-Use City Center land use category.

  - Mid-rise: 4 to 9 stories, commonly 4 to 6 stories and may include residential, office, or a mix of uses with retail and services on the ground floor. Most likely to be found in the Mixed-Use City Center and Mixed-Use Traditional Neighborhood land use categories.

  - Low-rise: 3 stories or less and may include residential, office, or a mix of uses with retail and services on the ground floor. Most likely to be found in the Mixed-Use Traditional Neighborhood and Small Lot Traditional Neighborhood land use categories.

  - Townhouse: Single-family attached units (shared walls) with direct outside entry. Most likely to be found in Mixed-Use Traditional Neighborhood and Small Lot Traditional Neighborhood land use categories.

  - Single-family home/duplex: Single-family or two-family structure on a small lot (typically 6,000 square feet or less). Most likely to be found in the Small Lot Traditional Neighborhood and Mixed-Use Traditional Neighborhood land use categories.

- **Design Guideline 1.2.3:** Include mixed-income housing within TODs. The following strategies can be used to encourage mixed-income housing within TODs:

  - Density bonus: A density bonus is a flexible zoning regulation that allows residential units beyond the maximum for which a parcel is zoned in exchange for a desirable public amenity, such as providing or preserving affordable housing units. Several local governments in the Region have adopted planned unit development (PUD) ordinances that allow increased density as an incentive to provide public amenities. Local governments with rapid transit or commuter rail stations should develop density bonus programs or update existing PUD regulations to allow increased density as an incentive for mixed-income housing.

  - Public/Private Partnerships: Public/private partnerships can be used as an incentive for developing mixed-income TOD through a number of options. Tax increment financing (TIF) can be used to publicly fund infrastructure such as parks, parking structures, and streetscape elements to encourage development. In addition, local governments can streamline rezoning and permitting processes. Land assembly and brownfields may be issues within

urban centers. Local governments can assist developers with land assembly and obtaining brownfield mitigation grants.

- Targeted Funding: Government funding for affordable housing could be targeted to areas with rapid transit and commuter rail stations to encourage mixed-income TOD. Creating a scoring category for the State (WHEDA) Qualified Allocation Plan that would provide an incentive to locate Low-Income Housing Tax Credit (LIHTC) developments in station areas is one example.

- Parking regulations: Reducing the amount of required parking can lower construction costs for residential projects, and possibly be used as an incentive for including affordable housing units. A Transit Cooperative Research Program review of TOD case studies found that lower housing-unit-to-parking ratios could result in an increase of 20 to 33 percent in the number of housing units and lower total construction costs, even with the additional units. Local governments should consider revising parking requirements as recommended in the following design guideline.

- **Design Guideline 1.2.4:** Manage parking through the following steps to aid in pedestrian friendly TOD design and reduce construction costs:

  - A Transit Cooperative Research Program review of TOD case studies found that parking to housing unit ratios could be lowered as much as 50 percent in TODs that have good transit connectivity to major employment centers. Local governments should review parking to housing unit ratios for residential use and parking to square footage ratios for commercial use within station areas. Local governments should consider revising zoning ordinances to remove minimum parking requirements and allow shared parking agreements within station areas. Car sharing services (such as Zipcar) may also reduce the demand for parking.

  - Locate parking facilities within station areas away from street frontages. This may be accomplished through subgrade structures or wrapping the ground floor of parking structures with other uses, such as commercial retail and service uses, for larger developments. Larger developments should also provide bicycle parking.

  - Use traditional neighborhood development (TND) in neighborhoods with single-family homes, duplexes, and townhomes, locating parking in the rear of the lot with alley access.

- **Design Guideline 1.2.5:** Provide convenient and safe access for walking and bicycling to the transit station within station areas through the following measures:

  - Interconnect streets to provide multiple opportunities for access and circulation, and provide sidewalks on both sides of streets.

  - Maximize pedestrian safety at street crossings through the timing of walk signal phases and the construction of curb extensions ("bulb-outs"). Provide pedestrian medians in wide or heavily traveled roadways.

- Design and construct all pedestrian facilities in accordance with the Federal Americans with Disabilities Act (ADA) and its implementing regulations. The ADA requires all pedestrian facilities that access public and commercial buildings and services to accommodate people with disabilities.

- Provide bicycle accommodations through on-street bicycle lanes or enhanced bicycle facilities.

- Provide bicycle storage facilities in transit stations and encourage bike and scooter share programs to locate stations or designated parking nearby.

- **Design Guideline 1.2.6:** Provide public spaces within transit station areas that are pedestrian friendly and welcoming for residents, workers, and transit riders.

  - Provide amenities in TOD public spaces such as comfortable places for sitting, shade and landscaping, attractive lighting, water features, and public art

  - Locate commercial-retail uses in a manner that is convenient and safe to access from public spaces in station areas

Public Plaza Near a Rapid Transit Station
Credit: SEWRPC

➤ Recommendation 1.3: Focus new development in areas that can be efficiently served by essential municipal facilities and services

- **Design Guideline 1.3.1:** Compact urban development allows for efficient and cost effective provision of urban services. Compact residential development can be achieved through the following allocations of land:

Recommended Urban Residential Development[58]		
Recommended Urban Residential Density Category	Residential Area (acres per 100 dwelling units)[59]	Residential Area Plus Supporting Land Uses (acres per 100 dwelling units)[60]
Mixed-Use City Center (18.0 or more dwelling units per net acre)	Less than 6.0	Less than 9.0
Mixed-Use Traditional Neighborhood (7.0 to 17.9 dwelling units per net acre)	6.0-14.9	9.0-19.9
Small Lot Traditional Neighborhood (4.4 to 6.9 dwelling units per net acre)	15.0-22.9	20.0-30.9

- **Design Guideline 1.3.2:** Conserving and revitalizing existing urban areas enhances their viability and desirability as places to live, work, recreate, and participate in cultural activities. Such efforts maximize the use of existing public infrastructure and public service systems and moderate the amount of agricultural and other open space land converted to urban use to accommodate growth in the Regional population and economy. To the extent practicable, the additional urban land necessary to accommodate this growth should be met by:
  - Redeveloping, as appropriate, older, underutilized urban areas that are in need of revitalization
  - Infilling undeveloped land within existing urban service areas

[58] *Residential densities are intended to be applied on an overall neighborhood, rather than parcel by parcel, basis for purposes of the regional plan. The categories represent overall densities that may be achieved within developing and redeveloping areas through various combinations of lot sizes and housing structure types over entire neighborhoods. The density ranges are broadly defined to provide flexibility to local units of government as they prepare local comprehensive plans and administer local land use regulations within the framework provided by the regional plan. Each community should determine at which point within the recommended density range that development should occur.*

[59] *Residential area is defined as the actual site area devoted to residential use, and consists of the ground floor site area occupied by housing units and accessory structures plus the required yards and site area, but excludes streets. This definition does not preclude communities from considering open space land to be preserved in the calculation of housing unit yields for development projects.*

[60] *Supporting land uses include streets and utilities, neighborhood parks and playgrounds, elementary schools, and neighborhood institutional and commercial uses.*

- **Design Guideline 1.3.3:** Local governments should consider limiting lower-density development as recommended under Design Guideline 1.1.3. If accommodated, lower urban residential densities could occur through the following allocations of land:

Other Urban Residential Development[58]		
Other Residential Density Category	Residential Area (acres per 100 dwelling units)[59]	Residential Area Plus Supporting Land Uses (acres per 100 dwelling units)[60]
Medium Lot Neighborhood (2.3 to 4.3 dwelling units per net acre)	23.0-44.9	31-59.9
Large Lot Neighborhood (0.7 to 2.2 dwelling units per net acre)	45.0-144.0	60.0-179.0

Residential Development Outside Urban Service Areas

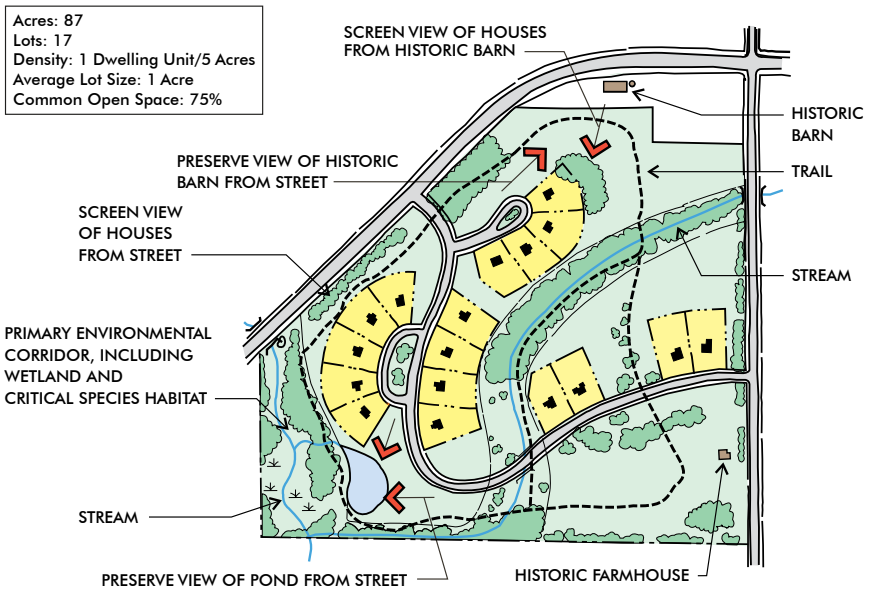
➤ Recommendation 1.4: Consider cluster subdivision design in residential development outside urban service areas

- **Design Guideline 1.4.1:** Rural Estate development (residential development at a density of no more than one dwelling unit per five acres) should be located and designed to minimize impacts on the natural resource base, minimize impacts on the scenic beauty and character of rural areas, and minimize the loss of farmland covered by agricultural soil suitability Class I and II soils (prime agricultural land). This should be achieved using cluster subdivision design in Rural Estate development to the greatest extent practicable as follows:

  - Locate homes in clusters surrounded by open space, thereby achieving the overall desired density for the site.

  - Layout individual lots and supporting streets to preserve the most significant natural resource features to the greatest extent practicable. Cluster subdivisions can include agricultural lands as part of the preserved open space area in a rural setting.

  - Do not use more than one acre of residential land (house and yard area) for each dwelling while maintaining an overall density of one home per five acres.



Example of Cluster Subdivision Design
Credit: SEWRPC

➤ Recommendation 1.5: Limit low-density development outside urban service areas

- **Design Guideline 1.5.1:** Large Lot Exurban residential development (0.2 to 0.6 dwelling unit per acre or 1.5 to 4.9 acres per unit) is neither truly urban nor rural in character. Development at this density generally precludes the provision of centralized sanitary sewer and water supply facilities and other urban amenities. It also places excessive demands on streets and highways and public safety services in otherwise rural areas and results in the loss of rural character. Avoid new Large Lot Exurban residential development.

Commercial and Industrial Land

➤ Recommendation 1.6: Provide a mix of housing types near employment supporting land uses

➤ Recommendation 1.7: Encourage and accommodate economic growth

- **Design Guideline 1.6-7.1:** Producing and selling goods and services are principal determinants of the economic vitality of the Region. Industrial, retail, and office uses should meet the following guidelines to strengthen the Region's economy:

    - Locate a variety of housing types in proximity to employment-generating land uses to provide opportunities for living in proximity to work, including adequate multifamily housing in areas with a concentration of retail and other lower-wage jobs.[61]

    - Have available water supply, sanitary sewer service, stormwater drainage facilities, and power supply

    - Have ready access to the arterial street and highway system

    - Have properly located points of ingress and egress controlled to prevent congestion on adjacent arterial streets

    - Use site design emphasizing integrated nodes or centers, rather than linear strips

    - Use site design appropriately integrating the site with adjacent land uses

    - Be served by local transit service, including bus routes, flexible shuttles, or shared-ride taxis

[61] *The job/housing balance analysis presented in the regional housing plan and subsequent updates identifies areas of the Region that may have a potential shortage of multifamily housing compared to lower-wage jobs and/or modest single-family housing compared to moderate wage jobs. The regional housing plan is documented in SEWRPC Planning Report No. 54,* A Regional Housing Plan for Southeastern Wisconsin: 2035, *March 2013*.

- **Design Guideline 1.6-7.2:** Allocate approximately 12 acres of industrial land for each additional 100 industrial jobs to be accommodated in the Region.[62, 63]

- **Design Guideline 1.6-7.3:** Allocate approximately six acres of land for each additional 100 commercial jobs to be accommodated in retail and service settings within the Region.[63]

- **Design Guideline 1.6-7.4:** Allocate approximately 2.5 acres of commercial office land for each additional 100 commercial jobs to be accommodated in office settings within the Region. The ratio of land area allocated for office use to the related office job would be significantly lower in situations where high-rise office buildings are common, such as areas within the Mixed-Use City Center land use category and TODs.[63]

- **Design Guideline 1.7.5:** Major centers accommodating industrial, retail, and office development[64] should meet the following guidelines in addition to those presented under the previous commercial and industrial land design guidelines:

    - Served by robust transit service, including frequent bus routes and services that connect to numerous population centers

    - Access within two miles of the freeway system for developing major centers

    - Access to a commercial service, large general aviation, or medium general aviation airport facility within a maximum travel time of 30 minutes (for a major office and industrial center)[65]

    - Reasonable access to railway and major port facilities (for a major industrial development)

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[62] *The industrial standard is intended to represent a typical new single-story industrial development. The number of industrial jobs per acre can vary considerably from site to site, depending on the nature of the manufacturing activity, the level of automation, the extent of warehousing and office function located at the site, and other factors.*

[63] *Commercial, industrial, and governmental and institutional area includes the area devoted to the given use, consisting of the ground floor site area occupied by any building, required yards and open space, and parking and loading areas, but excludes streets.*

[64] *A major economic activity center is defined as a concentrated area of commercial and/or industrial land having a minimum of 3,500 total employees or 2,000 retail employees. Major economic activity centers are further classified according to the following employment levels, recognizing that a major center may meet more than one of the indicated thresholds:*

Major industrial center*: Accommodates at least 3,500 industrial employees*
Major office center*: Accommodates at least 3,500 office employees*
Major retail center*: Accommodates at least 2,000 retail employees*
General purpose major center*: A center that accommodates a total of at least 3,500 employees, but does not meet any of the individual major center thresholds*

[65] *Commercial service airports support regularly-scheduled year-round commercial airline service. Large general aviation airports support all general aviation aircraft that include daily operations of all types of business jets. Medium general aviation airports support most single- and multi-engine general aviation aircraft, including those commonly used by businesses. Existing and proposed commercial service, large general aviation, and medium general aviation airports are identified in the* Wisconsin State Airport System Plan: 2030.

Governmental and Institutional Land

➤ Recommendation 1.8: Provide new governmental and institutional developments in mixed-use settings

- **Design Guideline 1.8.1:** Allocate approximately 12 acres of governmental and institutional land for each additional 1,000 people to be accommodated within the Region.[63] Some governmental and institutional uses, such as libraries, can be located on the ground floor of mixed-use buildings.

Library Located on the Groundfloor of an Apartment Building
Credit: SEWRPC

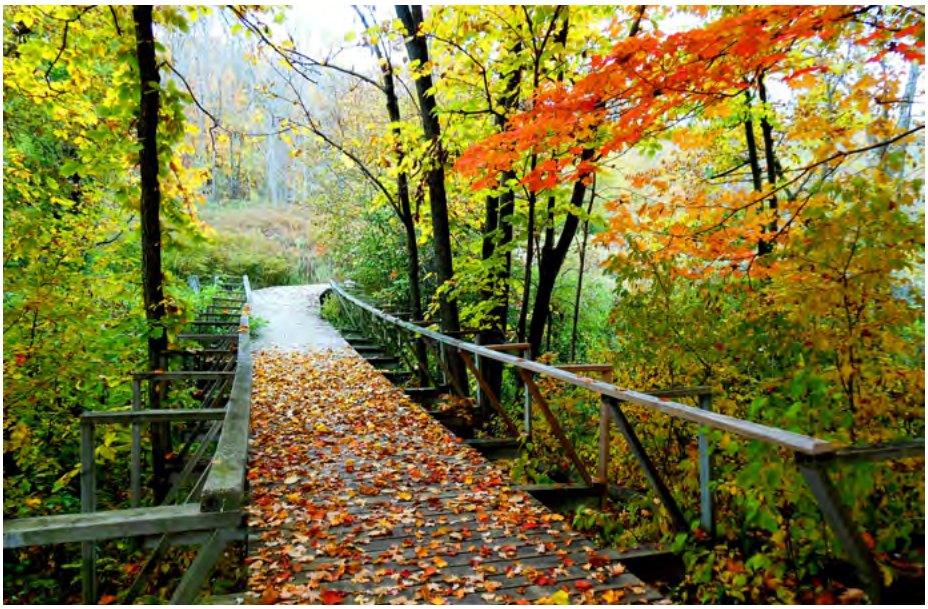
Recreational Land

➤ Recommendation 1.9: Provide parks in developing residential areas

- **Design Guideline 1.9.1:** Providing open space[66] is fundamental to preserving natural resources such as soil, water, woodlands, wetlands, native vegetation, and wildlife habitat. Open space may also enhance the economic and aesthetic value of urban development and provide outdoor physical activity, recreational, and educational opportunities. Meeting the following guidelines will ensure an integrated system of open space lands in the Region:

[66] *Open space is defined as areas of land or water that are generally undeveloped for urban residential, commercial, or industrial uses and are considered relatively permanent in character. It includes areas devoted to park and recreational uses, large land-consuming institutional uses, and resource conservation. Open space can be publicly or privately owned.*

- Provide major park and recreation sites with a minimum gross site area of 250 acres and opportunities for a variety of resource-oriented outdoor recreational activities within a 10-mile service radius of every dwelling unit in the Region.



Recreational Trail, an Example of a Resource-Oriented Outdoor Facility
Credit: Riveredge Nature Center

- Provide other park and recreation sites with a minimum gross site area of five acres within a maximum service radius of one mile of every dwelling unit in an urban area.

- Provide park and recreation sites and associated facilities as identified in local and neighborhood plans.

Playground in a Community Park
Credit: SEWRPC

- Do not locate urban or agricultural uses in areas having unique scientific, cultural, or educational value. Retain adjacent areas in open space, such as agricultural or limited recreational uses.

- **Design Guideline 1.9.2:** Allocate at least five acres of land in major parks of at least 250 acres in size, and allocate at least nine acres of land in other public parks for every 1,000 people living in the Region.

Environmentally Significant Land

➤ **Recommendation 1.10: Preserve primary environmental corridors**

➤ **Recommendation 1.11: Preserve secondary environmental corridors and isolated natural resource areas**

- **Design Guideline 1.10-11.1:** Preserve primary environmental corridors in essentially natural, open uses. In addition, preserve secondary environmental corridors and isolated natural resource areas in essentially natural, open uses to the greatest extent practicable as determined by county and local plans.[67,68] Preserving environmental corridors and isolated natural resource areas in essentially natural, open use has many benefits, including:

  - Recharge and discharge of groundwater
  - Maintaining surface water and groundwater quality
  - Reducing flood flows and flood stages
  - Maintaining base flows of streams and watercourses
  - Reducing soil erosion
  - Abating air and noise pollution
  - Providing wildlife habitat

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[67] *Environmental corridors are elongated areas in the landscape that contain concentrations of natural resource features (lakes, rivers, streams, and their associated riparian buffers and floodplains; wetlands; woodlands; prairies; wildlife habitat areas; wet, poorly drained, and organic soils; and rugged terrain and high-relief topography) and natural resource-related features (existing and potential park and open space sites, historic sites, scenic areas and vistas, and natural areas and critical species habitat sites). Primary environmental corridors include a variety of these features and are at least 400 acres in size, two miles long, and 200 feet wide. Secondary environmental corridors also contain a variety of these features and are at least 100 acres in size and one mile in length, unless connecting primary environmental corridors. Isolated natural resource areas are smaller concentrations of natural resource features that are physically separated from environmental corridors by intensive urban or agricultural uses. They are at least five acres in size and 200 feet wide.*

[68] *The term "preserve" generally means to retain existing conditions. However, certain types of uses can be accommodated while maintaining the overall integrity of the existing resources when used in relation to environmental corridors or isolated natural resource areas (shown in Table K.1 at the end of this Appendix). The design guidelines presented in this Appendix indicate certain areas should be preserved; however, they do not indicate the measures that may be used to assure preservation. These measures may include public interest ownership, conservation easements, or land use regulations. Such measures are discussed in Chapter 3 of Volume III.*

- Protecting plant and animal diversity
- Protecting rare and endangered species
- Maintaining scenic beauty
- Providing opportunities for recreational, educational, and scientific pursuits
- Avoiding serious and costly development problems because these areas are frequently poorly suited for urban development

Primary Environmental Corridor Along a Stream
Credit: SEWRPC

➤ Recommendation 1.12: Preserve natural areas and critical species habitat sites

- **Design Guideline 1.10-12.2:** Carefully locate urban and rural development in relation to natural areas, critical species habitat sites, and other environmentally sensitive areas to help maintain the overall environmental quality of the Region and avoid developmental problems as follows:

Natural Area Including Southern Dry-Mesic Forest
Credit: SEWRPC

- Preserve wetlands in accordance with applicable regulations
- Preserve small woodlands and prairies not identified as part of an environmental corridor or isolated natural resource area to the greatest extent practicable, as determined in county and local plans[69]
- Preserve all natural areas and critical species habitat sites identified in the regional natural areas and critical species habitat management and protection plan[70]

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[69] *The following definitions are used throughout this report:*

Wetlands are areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.

Woodlands are upland areas having 17 or more deciduous trees per acre each measuring at least four inches in diameter at breast height and having at least 50 percent canopy cover. In addition, coniferous tree plantations and reforestation projects are defined as woodlands. Lowland wooded areas, such as tamarack swamps, are defined as wetlands because the water table in such areas is located at, near, or above the land surface and because such areas are generally characterized by hydric soils that support hydrophitic trees and shrubs.

Prairies are open, generally treeless areas that are dominated by native grasses. There are three types of prairies in the Region corresponding to soil moisture conditions: dry prairies, mesic prairies, and wet prairies. Savannas, which are defined as areas dominated by native grasses but having between one and 17 trees per acre, are classified as prairies for the purposes of this report.

[70] *Natural areas are tracts of land or water so little modified by human activity, or that have sufficiently recovered from effects of such activity, that they contain intact native plant and animal communities believed to be representative of the pre-European-settlement landscape. Critical species habitat sites consist of areas, located outside natural areas, that support endangered, threatened, or rare plant or animal species.*

- Do not locate any development that would cause or be subject to flood damage during the 1-percent-annual-probability (100-year recurrence interval) flood; and do not allow any unauthorized structures to encroach upon and obstruct the flow of water in perennial stream channels

- Direct urban and rural development away from areas that are covered by soils with severe limitations for the use concerned, to the greatest extent practicable

Agricultural Land

➤ Recommendation 1.13: Preserve productive agricultural land

- **Design Guideline 1.13.1:** Agricultural areas contribute to the economy and ecological balance of the Region. Preserving agricultural lands also contributes to the scenic beauty and cultural heritage of the Region. Preserve to the greatest extent practicable agricultural uses in areas with soils designated by the U.S. Natural Resources Conservation Service as agricultural capability Classes I and II to protect the agricultural production, scenic beauty, and cultural heritage of the Region through measures such as:

  - Minimizing the conversion of productive agricultural land by redeveloping existing urban areas and using compact development designs when agricultural land is converted to urban uses at the edge of an existing urban area

  - Using cluster subdivision design to minimize the impact of Rural Estate development on agricultural land

  - Locating Rural Estate development to minimize conflicts with dust, odors, and noise associated with farming

  - Following best practices for all aspects of farming, such as those in farm management plans (including nutrient and insect management plans), while preserving sensitive natural resources

➤ Recommendation 1.14: Preserve productive agricultural land through farmland preservation plans

- **Design Guideline 1.14.1:** Restrict nonagricultural development in farmland preservation areas identified in county farmland preservation plans.

➤ Recommendation 1.15: Develop a regional food system

- **Design Guideline 1.15.1:** Ensure zoning ordinances do not create barriers to urban agriculture on vacant or underutilized land. Maintaining agricultural land near and within urban areas may improve food accessibility in the Region. Urban agriculture may also bring activity to vacant and blighted land. Urban agriculture can include less intensive uses such as community gardens. Community gardens typically use land for growing crops, plants, or other vegetation by a group of individuals, public organization, or non-profit organization. Urban agriculture can also include more intensive agricultural activities operated by a commercial, public, or

Community Garden
Credit: Town of Lake Community Garden

non-profit farming enterprise. These activities may include the use of land for crop production, greenhouses, nurseries, and vertical farming.

- **Design Guideline 1.15.2:** Ensure zoning ordinances do not create barriers to alternative sources of healthy foods such as farmers markets, produce stands, and other mobile vendors.

- **Design Guideline 1.15.3:** Work with local non-governmental organizations (NGO) to implement innovative urban agriculture techniques and public outreach to connect food production, distribution, and land use policy. Southeastern Wisconsin NGOs can provide expertise in areas such as:

    - Working with property owners to implement urban gardens on vacant or underutilized land

    - Implementing innovative and sustainable urban agriculture projects to increase urban agricultural production

    - Providing outlets for fresh, healthy foods in underserved areas, such as farmers markets and retail stores

    - Educating business owners on providing fresh, healthy foods

    - Educating residents on urban agricultural practices and resources for obtaining fresh, healthy foods

Water Supply

➤ Recommendation 1.16: Preserve areas with high groundwater recharge potential

- **Design Guideline 1.16.1:** Design land use development patterns and stormwater management practices to preserve areas of high and very high groundwater recharge potential identified in the regional water supply plan and maintain the natural surface and groundwater hydrology to the greatest extent practicable. Additional design recommendations are set forth in the regional water supply plan, documented in SEWRPC Planning Report No. 52, *A Regional Water Supply Plan for Southeastern Wisconsin,* December 2010.

- **Design Guideline 1.16.2:** Do not locate potentially contaminating land uses in areas where the potential for groundwater contamination is the highest (areas of the Region that are potentially vulnerable to groundwater contamination are presented on Map 15 of the regional water supply plan).

Sustainable Land Use

➤ Recommendation 1.17: Manage stormwater through compact development and sustainable development practices

- **Design Guideline 1.17.1:** Use environmentally sustainable development practices to the maximum extent practicable in new development and redevelopment projects. These practices include, but are not limited to, arranging land uses and site features (i.e., lots, buildings, and infrastructure) to preserve natural features and productive farmland; minimizing total impervious surface in the Region; and locating near services, employment centers, and alternative transportation systems such as public transit, sidewalks, and bicycle facilities.

Traditional Neighborhood Development
Credit: SEWRPC

The following promote the environmentally sustainable development concept: TOD, traditional neighborhood development (TND), redeveloping underutilized urban areas or remediating and redeveloping contaminated sites, cluster subdivisions, and areas with high residential density and/or mixed use development.

- **Design Guideline 1.17.2:** Use environmentally sustainable construction concepts to integrate techniques that contribute to managing stormwater, sustainability, and reducing carbon footprint. These concepts should be used to the maximum extent practicable in new development and re-development projects. They include, but are not limited to:

    - Installing stormwater quality control mechanisms such as bioswales and bioinfiltration trenches or basins in parking lots and along roadways; rain gardens and barrels or cisterns; rooftop and wall vertical gardens; landscaping for cooling, wind protection, and conserving water through drought resistant plants; and native plantings or mulch versus traditional turf/grass.

Bioswale Promoting Native Plant Species that Requires Management to Protect Against Invasive Species
Credit: SEWRPC

Rooftop Garden
Credit: SEWRPC

- Using permeable pavement; however, the use of alternatives to applying chloride (salt) compounds for ice and snow removal should be considered for areas with permeable pavement. Such alternatives could include substituting plowing for salting of collector and land access streets and minimizing the use of chlorides. Anti-icing or deicing salt should not be applied to areas of permeable pavement. Permeable pavement and bioinfiltration facilities should not receive runoff from paved areas where chlorides are routinely applied for winter maintenance.

- Studying methods to reduce impacts of chlorides on groundwater and implementing those methods that are determined to be most effective.

- Considering underground stormwater storage and/or infiltration where there are site constraints to conventional storage.

- Providing opportunities to make use of renewable energy sources, such as south-oriented buildings to capture passive solar radiation or orienting buildings to capture wind for natural air ventilation.

- Using sun, wind, and/or earth for natural lighting, ventilation, heating, cooling, and other purposes (i.e., solar panels, wind turbines, and geothermal systems).

- Using local, reused, recycled, recyclable, and/or energy efficient construction materials and energy efficient appliances.

- Incorporating emerging energy and water conservation and efficiency measures into site and building designs, taking cost into consideration.

- Using "green-related" certification programs, such as Leadership in Energy and Environmental Design (LEED), Energy Star Qualified

Homes, Green Built Home, Sustainable Tools for Assessing and Rating (STAR) Communities, and the Sustainable Sites Initiative (SITES) that provide assistance and initiatives that certify new buildings and redevelopment projects that meet environmentally sustainable building and energy standards.

➤ Recommendation 1.18: Target brownfield sites for redevelopment

- **Design Guideline 1.18.1:** The Southeastern Wisconsin Region, like many urbanized regions throughout the Country, has experienced an increase in vacant or underutilized land once devoted to industrial, commercial, and related uses. Brownfields are sites whose reuse is frequently constrained by contamination problems created by past industrial and commercial activities. Redevelopment of brownfields is often hindered by high cleanup costs that tend to reduce private-sector interest in these sites. Redeveloping these sites would promote the implementation of other VISION 2050 land use recommendations. Assist the private sector in redeveloping brownfields through tax increment financing (TIF) and securing State and Federal financial assistance.

Table K.1
Guidelines for Development Considered Compatible with Environmental Corridors and Isolated Natural Resource Areas

Component Natural Resource and Related Features within Environmental Corridors[a]	Permitted Development (see General Development Guidelines below)																
	Transportation and Utility Facilities				Recreational Facilities											Rural Density Residential Development	Other Development
	Streets and Highways	Utility Lines and Related Facilities	Engineered Stormwater Management Facilities	Engineered Flood Control Facilities[b]	Trails[c]	Picnic Areas	Family Camping[d]	Swimming Beaches	Boat Access	Ski Hills	Golf	Playfields	Hard-Surface Courts	Parking	Buildings		
Lakes, Rivers, and Streams	--[e]	--[f,g]	--	--[h]	--[i]	--	--	X	X	--	--	--	--	--	--	--	--
Riparian Buffer[j]	X	X	X	X	X	X	--	X	X	--	X	--	--	X	X	--	--
Floodplain[k]	--[l]	X	X	X	X	X	--	X	X	--	X	X	--	X	X	--	--
Wetland[m]	--[l]	X	--	--	X[n]	--	--	--	X	--	--[o]	--	--	--	--	--	--
Wet Soils	X	X	X	X	X	--	--	X	X	--	X	--	--	X	--	--	--
Woodland	X	X	X[p]	--	X	X	X	--	X	X	X	X	X	X	X[q]	X	X
Wildlife Habitat	X	X	X	--	X	X	X	--	X	X	X	X	X	X	X	X	X
Steep Slope	X	X	--	--	--[r]	--	--	--	--	X[s]	X	--	--	--	--	--	--
Prairie	--	--[g]	--	--	--[r]	--	--	--	--	--	--	--	--	--	--	--	--
Park	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	--	--
Historic Site	--	--[g]	--	--	--[r]	--	--	--	--	--	--	--	--	X	--	--	--
Scenic Viewpoint	X	X	--	--	X	X	X	--	X	X	X	--	--	X	X	X	X
Natural Area or Critical Species Habitat Site	--	--	--	--	--[q]	--	--	--	--	--	--	--	--	--	--	--	--

Note: An "X" indicates that facility development is permitted within the specified natural resource feature. In those portions of the environmental corridors having more than one of the listed natural resource features, the natural resource feature with the most restrictive development limitation should take precedence.

APPLICABILITY

These guidelines indicate the types of development that can be accommodated within primary and secondary environmental corridors and isolated natural resource areas while maintaining the basic integrity of those areas. Throughout this table, the term "environmental corridors" refers to primary and secondary environmental corridors and isolated natural resource areas.

Under VISION 2050:

- As regionally significant resource areas, primary environmental corridors should be preserved in essentially natural, open use—in accordance with the guidelines in this table.
- Secondary environmental corridors and isolated natural resource areas warrant consideration for preservation in essentially natural open use, as determined in county and local plans and in a manner consistent with State and Federal regulations. County and local units of government may choose to apply the guidelines in this table to secondary environmental corridors and isolated natural resource areas.

GENERAL DEVELOPMENT GUIDELINES

- Transportation and Utility Facilities: All transportation and utility facilities proposed to be located within the important natural resources should be evaluated on a case-by-case basis to consider alternative locations for such facilities. If it is determined that such facilities should be located within natural resources, development activities should be sensitive to, and minimize disturbance of, these resources, and, to the extent possible following construction, such resources should be restored to preconstruction conditions.

  The above table presents development guidelines for major transportation and utility facilities. These guidelines may be extended to other similar facilities not specifically listed in the table.

Table continued on next page.

Table K.1 (Continued)

- Recreational Facilities: In general, no more than 20 percent of the total environmental corridor area should be developed for recreational facilities. Furthermore, no more than 20 percent of the environmental corridor area consisting of upland wildlife habitat and woodlands should be developed for recreational facilities. It is recognized, however, that in certain cases these percentages may be exceeded in efforts to accommodate needed public recreational and game and fish management facilities within appropriate natural settings. In all cases however, the proposed recreational development should not threaten the integrity of the remaining corridor lands nor destroy particularly significant resource elements in that corridor. Each such proposal should be reviewed on a site-by-site basis.

  The above table presents development guidelines for major recreational facilities. These guidelines may be extended to other similar facilities not specifically listed in the table.

- Rural Density Residential Development: Rural density residential development may be accommodated in upland environmental corridors, provided that buildings are kept off steep slopes. The maximum number of housing units accommodated at a proposed development site within the environmental corridor should be limited to the number determined by dividing the total corridor acreage within the site, less the acreage covered by surface water and wetlands, by five. The permitted housing units may be in single-family or multifamily structures. When rural residential development is accommodated, cluster subdivision designs are strongly encouraged.

- Other Development: In lieu of recreational or rural density residential development, up to 10 percent of the upland corridor area in a parcel may be disturbed in order to accommodate urban residential, commercial, or other urban development under the following conditions: 1) the area to be disturbed is compact rather than scattered in nature; 2) the disturbance area is located on the edge of a corridor or on marginal resources within a corridor; 3) the development does not threaten the integrity of the remaining corridor; 4) the development does not result in significant adverse water quality impacts; and 5) development of the remaining corridor lands is prohibited by a conservation easement or deed restriction. Each such proposal must be reviewed on a site-by-site basis.

  Under this arrangement, while the developed area would no longer be part of the environmental corridor, the entirety of the remaining corridor would be permanently preserved from disturbance. From a resource protection point of view, preserving a minimum of 90 percent of the environmental corridor in this manner may be preferable to accommodating scattered homesites and attendant access roads at an overall density of one dwelling unit per five acres throughout the upland corridor areas.

- Pre-Existing Lots: Single-family development on existing lots of record should be permitted as provided for under county or local zoning at the time of adoption of the regional land use plan.

  All permitted development presumes that sound land and water management practices are utilized.

FOOTNOTES

[a] *The natural resource and related features are defined as follows:*

Lakes, Rivers, and Streams: Includes all lakes greater than five acres in area and all perennial and intermittent streams as shown on U. S. Geological Survey quadrangle maps.

Riparian Buffer: Includes a band 50 feet in depth along both sides of intermittent streams; a band 75 feet in depth along both sides of perennial streams; a band 75 feet in depth around lakes; and a band 200 feet in depth along the Lake Michigan shoreline.

Floodplain: Includes areas, excluding stream channels and lake beds, subject to inundation by the 1 percent annual probability flood event.

Wetlands: Includes areas that are inundated or saturated by surface water or groundwater at a frequency, and with a duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.

Wet Soils: Includes areas covered by wet, poorly drained, and organic soils.

Woodlands: Includes areas one acre or more in size having 17 or more deciduous trees per acre with at least a 50 percent canopy cover as well as coniferous tree plantations and reforestation projects; excludes lowland woodlands, such as tamarack swamps, which are classified as wetlands.

Wildlife Habitat: Includes areas devoted to natural open uses of a size and with a vegetative cover capable of supporting a balanced diversity of wildlife.

Steep Slope: Includes areas with land slopes of 12 percent or greater.

Prairies: Includes open, generally treeless areas that are dominated by native grasses; also includes savannas.

Park: Includes public and nonpublic park and open space sites.

Historic Site: Includes sites listed on the National Register of Historic Places. Most historic sites located within environmental corridors are archaeological features such as American Indian settlements and effigy mounds and cultural features such as small, old cemeteries. On a limited basis, small historic buildings may also be encompassed within delineated corridors.

Scenic Viewpoint: Includes vantage points from which a diversity of natural features such as surface waters, wetlands, woodlands, and agricultural lands can be observed.

Natural Area and Critical Species Habitat Sites: Includes natural areas and critical species habitat sites as identified in the regional natural areas and critical species habitat protection and management plan.

Table continued on next page.

Table K.1 (Continued)

[b] *Includes such improvements as stream channel modifications and such facilities as dams.*

[c] *Includes trails for such activities as hiking, bicycling, cross-country skiing, nature study, and horseback riding, and excludes all motorized trail activities. It should be recognized that trails for motorized activities such as snowmobiling that are located outside the environmental corridors may of necessity have to cross environmental corridor lands. Proposals for such crossings should be evaluated on a case-by-case basis, and if it is determined that they are necessary, such trail crossings should be designed to ensure minimum disturbance of the natural resources.*

[d] *Includes areas intended to accommodate camping in tents, trailers, or recreational vehicles that remain at the site for short periods of time, typically ranging from an overnight stay to a two-week stay.*

[e] *Certain transportation facilities such as bridges may be constructed over such resources.*

[f] *Utility facilities such as sanitary sewers may be located in or under such resources.*

[g] *Electric power transmission lines and similar lines may be suspended over such resources.*

[h] *Certain flood control facilities such as dams and channel modifications may need to be provided in such resources to reduce or eliminate flood damage to existing development.*

[i] *Bridges for trail facilities may be constructed over such resources.*

[J] *Previous editions of these guidelines identified this category as "Shoreland," rather than "Riparian Buffer." Riparian buffers, as defined in footnote "a" of this table, typically would be located within a State-defined shoreland area (see Chapters NR 115 and NR 117 of the* Wisconsin Administrative Code*).*

[k] *Consistent with Chapter NR 116 of the* Wisconsin Administrative Code.

[l] *Streets and highways may cross such resources. Where this occurs, there should be no net loss of flood storage capacity or wetlands. Guidelines for mitigation of impacts on wetlands by Wisconsin Department of Transportation facility projects are set forth in Chapter Trans 400 of the* Wisconsin Administrative Code.

[m] *Any development affecting wetlands must adhere to the water quality standards for wetlands established under Chapter NR 103 of the* Wisconsin Administrative Code.

[n] *Only an appropriately designed boardwalk/trail should be permitted.*

[o] *Wetlands may be incorporated as part of a golf course, provided there is no disturbance of the wetlands.*

[p] *Generally excludes detention, retention, and infiltration basins. Such facilities should be permitted only if no reasonable alternative is available.*

[q] *Only if no alternative is available.*

[r] *Only appropriately designed and located hiking and cross-country ski trails should be permitted.*

[s] *Only an appropriately designed, vegetated, and maintained ski hill should be permitted.*

Source: SEWRPC

EQUITY ANALYSIS OF THE VISION 2050 LAND USE COMPONENT

APPENDIX L

INTRODUCTION

This appendix documents an evaluation of the potential impacts of the VISION 2050 land use recommendations on the Region's minority populations, low-income populations, and people with disabilities (environmental justice populations). Each of the VISION 2050 land use recommendations was evaluated based on the degree to which the Region's environmental justice populations (see Maps L.1 through L.5) would receive a proportionate share of benefits or a disproportionate share of adverse impacts compared to the Region's population as a whole.

FINDINGS

The land use recommendations focus on compact development within urban service areas, preserving environmentally significant lands, and preserving highly productive agricultural lands. The recommended plan would have numerous benefits to the Region's population, including:

- Encouraging and accommodating economic growth
- Positioning the Region to attract potential workers and employers
- Minimizing the cost of public infrastructure and services
- Minimizing impacts on natural and agricultural resources
- Minimizing impacts to water resources and air quality
- Promoting a variety of housing options near employment
- Promoting walkable neighborhoods that encourage active lifestyles and a sense of community
- Meeting the needs of the Region's aging population
- Increasing racial and economic integration throughout the Region
- Reducing the distance needed to travel between destinations
- Supporting public transit connections between housing and employment

The equity analysis concluded that all of the land use recommendations would have a positive impact on the Region's population as a whole and none of the recommendations would have an adverse impact on environmental justice populations. In addition, a number of recommendations would have

a positive impact on environmental justice populations. Findings regarding each of the 18 land use recommendations follow:

- **Recommendation 1.1: Develop urban service areas with a mix of housing types and land uses**

  VISION 2050 envisions that almost 90 percent of new residential development would occur in the Mixed-Use City Center, Mixed-Use Traditional Neighborhood, and Small Lot Traditional Neighborhood land use categories, which would support a mix of housing types, land uses, and public transit. The plan recommends that all local governments in urban service areas include these land use categories in their comprehensive plans as shown on Map L.6. This would allow for the development of multifamily housing and single-family homes on smaller lots that tend to be more affordable to a wider range of households than single-family homes on larger lots in areas of the Region that may have a shortage of affordable workforce housing. This would increase access to new job opportunities for low- and moderate-income households, which would have a positive impact on the Region's environmental justice populations.

- **Recommendation 1.2: Focus TOD near rapid transit and commuter rail stations**

  A significant number of jobs are envisioned to occur in TOD areas that would be in proximity to high-quality transit, providing increased access to job opportunities for populations that rely on public transit. TOD would also promote walkable neighborhoods and increase access to amenities for populations that do not drive. These characteristics of TOD would have a positive impact on the Region's environmental justice populations; however, there are concerns regarding gentrification associated with TOD. Local governments and developers are encouraged to employ mixed-income housing strategies to avoid adverse impacts on environmental justice populations (see Table L.1).

- **Recommendation 1.3: Focus new urban development in areas that can be efficiently served by essential municipal facilities and services**

  VISION 2050 recommends compact development within urban service areas because it can be served efficiently and cost-effectively with essential municipal services, which would have a positive impact on the Region's population has a whole. The compact development pattern would also support multifamily and modest single-family housing in areas of the Region that may have a shortage of affordable workforce housing, which would have a positive impact on the Region's environmental justice populations.

- **Recommendation 1.4: Consider cluster subdivision design in residential development outside of urban service areas**

  VISION 2050 envisions accommodating the demand for homes in an open space setting on a limited basis through Rural Estate development where there would be no more than one home per five acres. Cluster subdivision design is recommended for Rural Estate development to minimize impacts on natural and agricultural resources, which would have a positive impact on the Region's population as a whole.

- **Recommendation 1.5: Limit low-density development outside of urban service areas**

  VISION 2050 recommends limiting Large Lot Neighborhood and Large Lot Exurban development outside of urban service areas to commitments

Table L.1
Mixed-Income Housing Strategies for TOD

Strategy	Description
Density Bonus	A density bonus is a flexible zoning regulation that allows additional residential units beyond the maximum for which a parcel is zoned in exchange for providing or preserving affordable housing units. Several local governments in the Region have adopted planned unit development (PUD) ordinances that allow for increased density as an incentive to provide public amenities. Local governments with rapid transit or commuter rail stations should develop density bonus programs or update existing PUD regulations to allow for increased density as an incentive for mixed-income housing.
Parking Regulations	Reducing the amount of required parking can lower construction costs for residential projects, and possibly be used as an incentive for including affordable housing units. A Transit Cooperative Research Program review of TOD case studies[a] found that personal vehicle trip generation was lower and transit use was higher than average for residents of TODs with high-quality transit service. The study found that the parking to housing unit ratios could be lowered as much as 50 percent in TODs that have good transit connectivity to major employment centers. Lower parking ratios could result in an increase of 20 to 33 percent in the number of housing units and lower total construction costs, even with the additional units. Local governments should review parking to housing unit ratio requirements for residential buildings, and consider alternatives such as shared parking with other uses in station areas.
Public/Private Partnerships	Public/private partnerships can be used as an incentive for developing mixed-income housing TOD through a number of options. Tax increment financing (TIF) can be used to publicly fund infrastructure such as parks, parking structures, and streetscape elements to encourage development. In addition, local governments can streamline rezoning and permitting processes. Land assembly and brownfields may also be issues within urban centers. Local governments can assist developers with land assembly and obtaining brownfield mitigation grants.
Targeted Funding	Government funding for affordable housing could be targeted to areas with rapid transit and commuter rail stations to encourage mixed-income TOD. An example would be to create a scoring category for the State (WHEDA) Qualified Allocation Plan that would provide an incentive to locate Low-Income Housing Tax Credit (LIHTC) developments in station areas.

[a] *Transit Cooperative Research Program Report 128.*

Source: SEWRPC

made to such development through subdivision plats and certified survey maps approved at the beginning of the VISION 2050 planning process. Development of this nature is neither truly urban nor rural in character and generally precludes the provision of centralized sewer and water supply service and other urban amenities. Limiting this type of development would have a positive impact on the Region's population as a whole.

➤ Recommendation 1.6: Provide a mix of housing types near employment supporting land uses

VISION 2050 recommends developing commercial land and business parks in mixed-use settings where compatible, or near a mix of housing types to avoid job-worker mismatches. This recommendation would promote accessibility between affordable workforce housing and jobs, which would have a positive impact on environmental justice populations.

➤ Recommendation 1.7: Encourage and accommodate economic growth

Major economic activity centers are defined as areas containing concentrations of commercial and/or industrial land with at least 3,500 total employees or 2,000 retail employees. Over 60 centers have been identified that have either reached major center status or are anticipated to by 2050 based on existing employment levels and input from local governments (see Map L.7). VISION 2050 recommends continued development of the major economic activity centers in the Region to encourage economic growth, which would have a positive impact on the Region's population as a whole.

A focus of this recommendation includes continued development and redevelopment of long-established major centers located in areas of the Region with concentrations of environmental justice populations.

Continued development and redevelopment of these centers would increase job opportunities in areas of the Region with concentrations of low-income households and high unemployment levels, which would have a positive impact on environmental justice populations. The plan also recommends a mix of housing types near outlying major centers to promote accessibility between affordable workforce housing and jobs. This would increase the potential for affordable workforce housing in areas with job opportunities that may have shortages of such housing, which would also have a positive impact on the Region's environmental justice populations.

- **Recommendation 1.8: Provide new governmental and institutional developments in mixed-use settings**
  VISION 2050 envisions new governmental and institutional developments occurring in mixed-use settings to the greatest extent possible. This would increase access to populations that do not drive, which would have a positive impact on the Region's environmental justice populations.

- **Recommendation 1.9: Provide neighborhood parks in developing residential areas**
  VISION 2050 recommends reserving land for parks as new residential neighborhoods are developed within urban service areas, which would have a positive impact on the Region's population as a whole.

- **Recommendation 1.10: Preserve primary environmental corridors**
  The Region's most important natural resources, such as lakes, rivers, streams, wetlands, and woodlands, among others, occur in linear patterns in the landscape. The largest and most well-connected of these linear patterns have been identified as primary environmental corridors. Preserving these corridors contributes to the health of the Region's natural resource base, which would have a positive impact on the Region's population as a whole.

- **Recommendation 1.11: Preserve secondary environmental corridors and isolated natural resource areas**
  Other concentrations of natural resources have been identified as secondary environmental corridors or isolated natural resource areas. Preserving these areas also contributes to the health of the Region's natural resource base, which would have a positive impact on the Region's population as a whole.

- **Recommendation 1.12: Preserve natural areas and critical species habitat sites**
  Natural areas are tracts of land or water that contain plant and animal communities believed to be representative of the pre-European settlement landscape. Critical species habitat sites are other areas outside of natural areas that support endangered, threatened, or rare plant or animal species. The vast majority of natural areas and critical species habitat sites are located within environmental corridors and isolated natural resource areas. Preserving these areas would have a positive impact on the Region's population as a whole.

- **Recommendation 1.13: Preserve productive agricultural land**
  Preserving productive agricultural lands has several benefits, including maintaining an important component of the Region's economic base, minimizing conflicts between farming operations and urban uses, and maintaining the cultural heritage of the Region. The compact development

pattern recommended by VISION 2050 minimizes the conversion of agricultural land to urban uses, which would have a positive impact on the Region's population as a whole.

- **Recommendation 1.14: Protect productive agricultural land through farmland preservation plans**

  The Farmland Preservation tax credit program provides an incentive for landowners to maintain lands in agricultural use. State law requires counties to adopt farmland preservation plans that identify farmland preservation areas for landowners to participate in the tax credit program. VISION 2050 recommends that areas identified in county plans as farmland preservation areas remain in agricultural use, which would have a positive impact on the Region's population as a whole.

- **Recommendation 1.15: Develop a regional food system**

  A number of census tracts in the Region with concentrations of environmental justice populations are "food deserts" where residents do not have access to a large grocery store. VISION 2050 recommends developing a regional food system that connects food producers, distributors, and consumers to ensure access to healthy foods throughout the entire Region. In addition to encouraging supermarkets and grocery stores near residential areas, the plan recommends that local governments consider allowing urban agriculture, such as community gardens on vacant lots, and support farmers markets as alternative sources of healthy foods. This would have a positive impact on the Region's environmental justice populations.

- **Recommendation 1.16: Preserve areas with high groundwater recharge potential**

  VISION 2050 recommends preserving areas with high groundwater recharge potential because there are several benefits. Groundwater is the water supply source for about 40 percent of the Region's population. Over half of those with a groundwater supply obtain that supply from the shallow aquifer, which is directly replenished by recharge from precipitation. Replenishment of the groundwater in the shallow aquifer directly benefits those supplied by that groundwater source. In addition, groundwater benefits all parts of the Region by contributing cool water to the base flow of streams, rivers, and lakes, improving water quality and aquatic habitat. The regional water supply plan, adopted by the Commission in 2010, found that preserving areas with high groundwater recharge potential may largely be achieved through implementing the year 2035 regional land use plan. This is because the year 2035 regional land use plan recommended preserving primary environmental corridors, secondary environmental corridors, isolated natural resource areas, and prime agricultural land. VISION 2050 carries forward these recommendations, which would have a positive impact on the Region's population as a whole.

- **Recommendation 1.17: Manage stormwater through compact development and sustainable development practices**

  The compact development pattern recommended by VISION 2050 would minimize total impervious surface coverage of new development in the Region. This development pattern in combination with required stormwater management measures would reduce future loads of pollutants delivered to the Region's streams, rivers, and lakes. This would have a positive impact on the Region's population as a whole.

➤ **Recommendation 1.18: Target brownfield sites for redevelopment**
The redevelopment of underutilized land can sometimes be constrained by contamination problems created by past industrial and commercial activities. This has given rise to the term "brownfields," which are underutilized or abandoned properties known or suspected to be environmentally contaminated. Brownfields sites, particularly abandoned properties, may have negative impacts on surrounding properties and tend to be concentrated in areas of the Region with concentrations of environmental justice populations. The focus of VISION 2050 on infill and redevelopment in these areas, including brownfield sites, would serve to revitalize underutilized or vacant properties, which would have a positive impact on the Region's environmental justice populations.

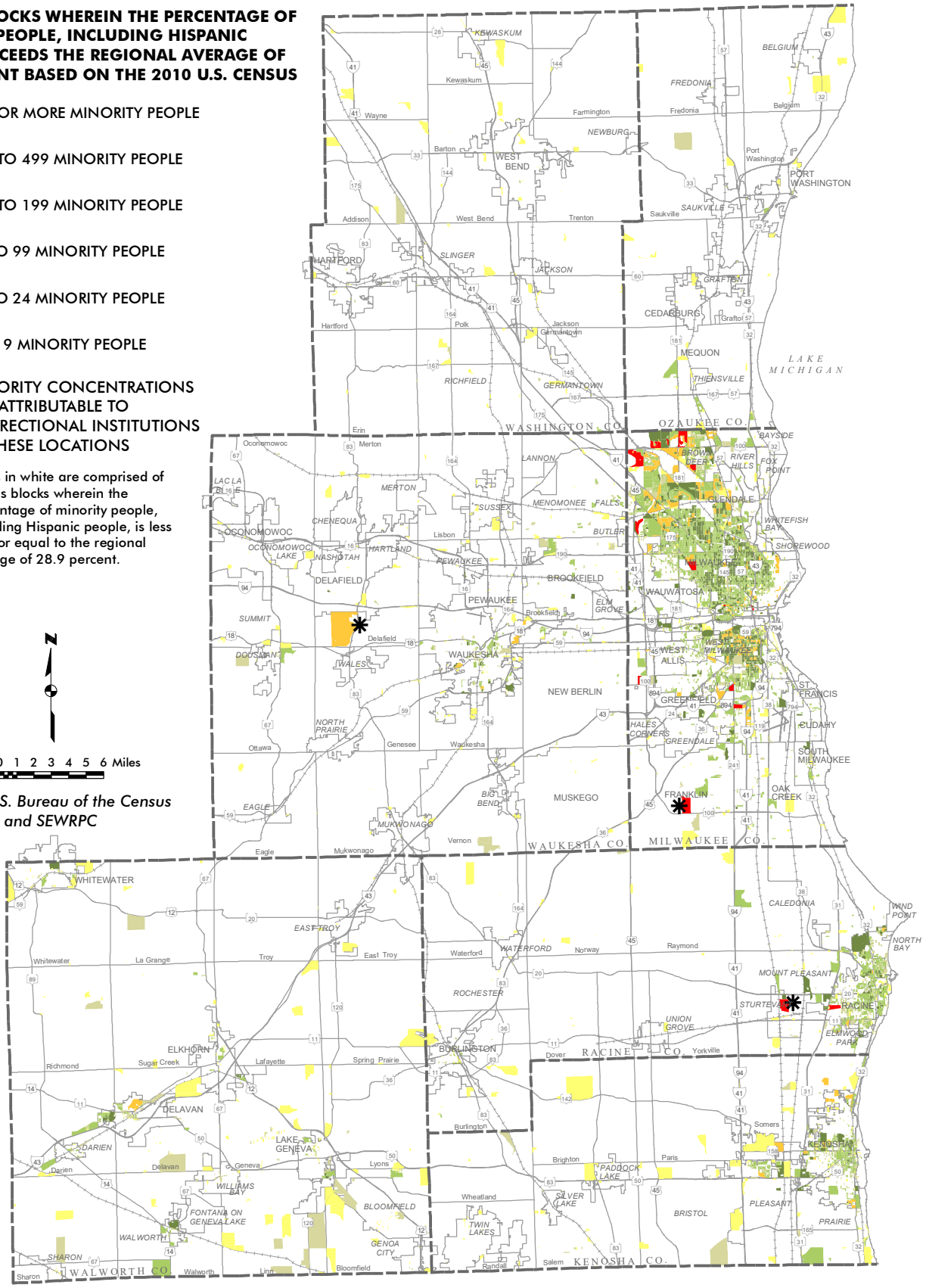
Map L.1
Concentrations of Total Minority Population in the Region: 2010

CENSUS BLOCKS WHEREIN THE PERCENTAGE OF MINORITY PEOPLE, INCLUDING HISPANIC PEOPLE, EXCEEDS THE REGIONAL AVERAGE OF 28.9 PERCENT BASED ON THE 2010 U.S. CENSUS

- 500 OR MORE MINORITY PEOPLE
- 200 TO 499 MINORITY PEOPLE
- 100 TO 199 MINORITY PEOPLE
- 25 TO 99 MINORITY PEOPLE
- 10 TO 24 MINORITY PEOPLE
- 1 TO 9 MINORITY PEOPLE
- * MINORITY CONCENTRATIONS ARE ATTRIBUTABLE TO CORRECTIONAL INSTITUTIONS IN THESE LOCATIONS

Note: Areas in white are comprised of census blocks wherein the percentage of minority people, including Hispanic people, is less than or equal to the regional average of 28.9 percent.

Source: U.S. Bureau of the Census and SEWRPC

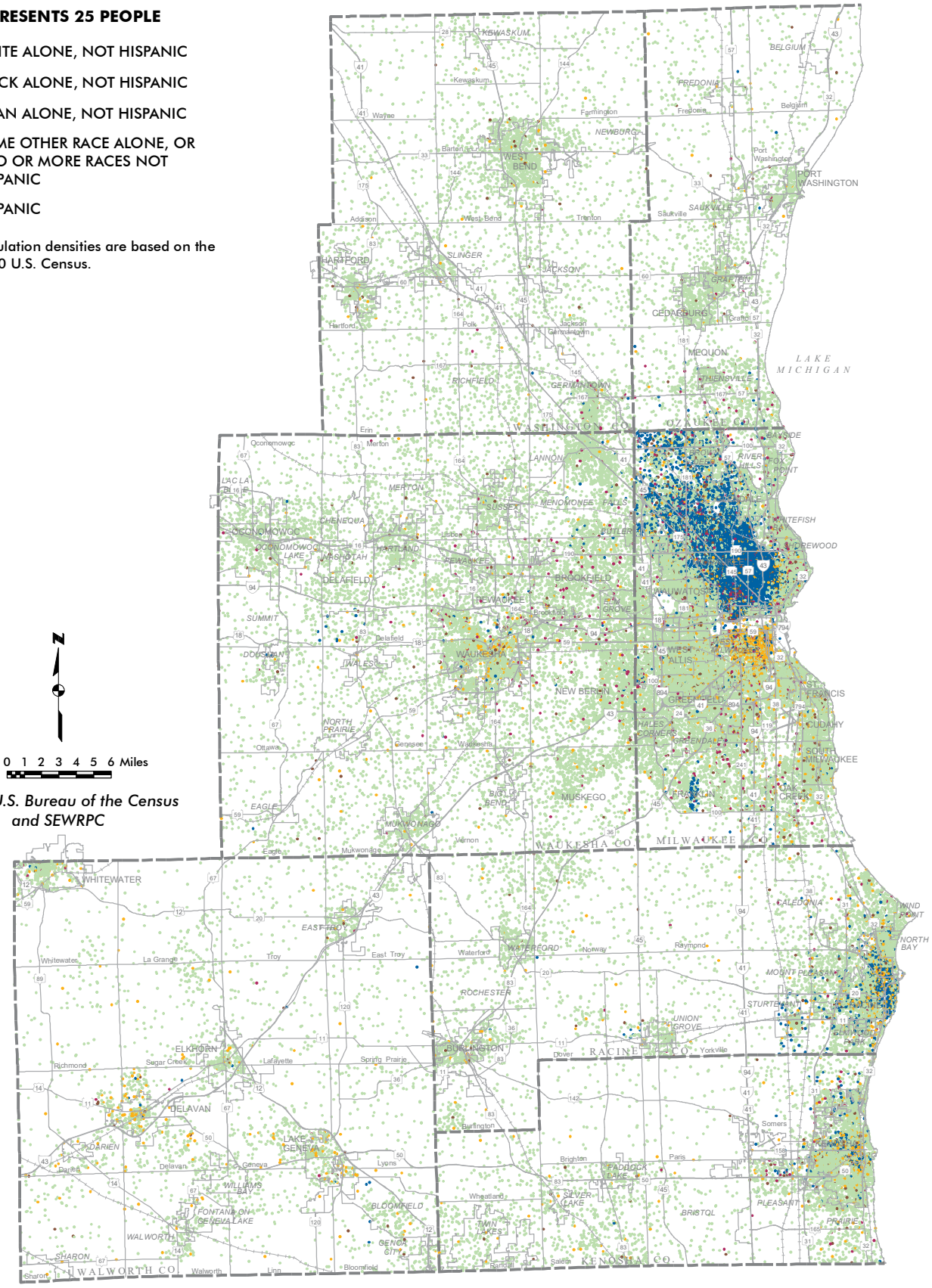


Map L.2
Population by Race and Ethnicity in the Region: 2010

1 DOT REPRESENTS 25 PEOPLE

- WHITE ALONE, NOT HISPANIC
- BLACK ALONE, NOT HISPANIC
- ASIAN ALONE, NOT HISPANIC
- SOME OTHER RACE ALONE, OR TWO OR MORE RACES NOT HISPANIC
- HISPANIC

Note: Population densities are based on the 2010 U.S. Census.



Source: U.S. Bureau of the Census and SEWRPC

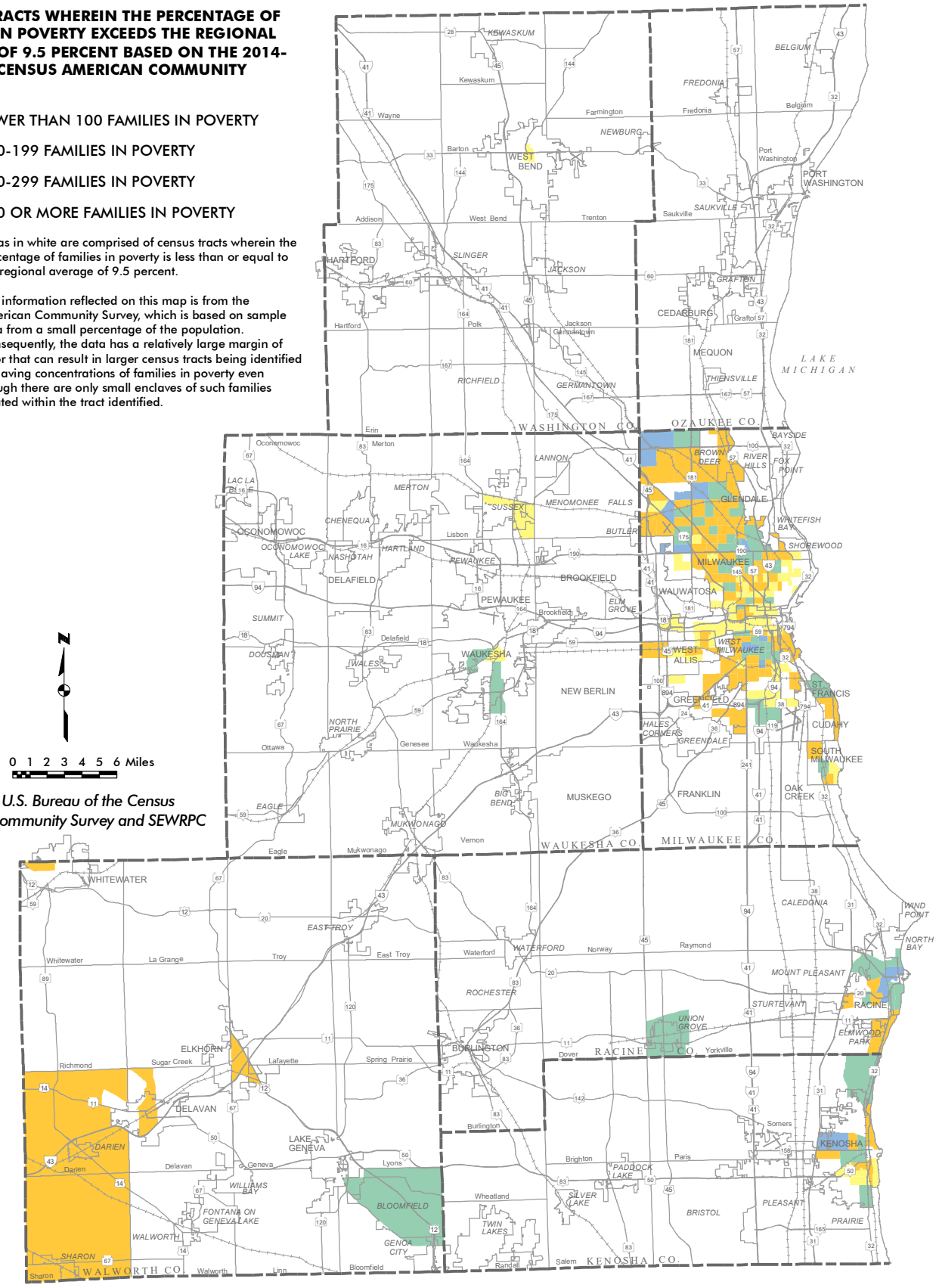
Map L.3
Concentrations of Families in Poverty in the Region: 2014-2018

CENSUS TRACTS WHEREIN THE PERCENTAGE OF FAMILIES IN POVERTY EXCEEDS THE REGIONAL AVERAGE OF 9.5 PERCENT BASED ON THE 2014-2018 U.S. CENSUS AMERICAN COMMUNITY SURVEY

- FEWER THAN 100 FAMILIES IN POVERTY
- 100-199 FAMILIES IN POVERTY
- 200-299 FAMILIES IN POVERTY
- 300 OR MORE FAMILIES IN POVERTY

Notes: Areas in white are comprised of census tracts wherein the percentage of families in poverty is less than or equal to the regional average of 9.5 percent.

The information reflected on this map is from the American Community Survey, which is based on sample data from a small percentage of the population. Consequently, the data has a relatively large margin of error that can result in larger census tracts being identified as having concentrations of families in poverty even though there are only small enclaves of such families located within the tract identified.



Source: U.S. Bureau of the Census American Community Survey and SEWRPC

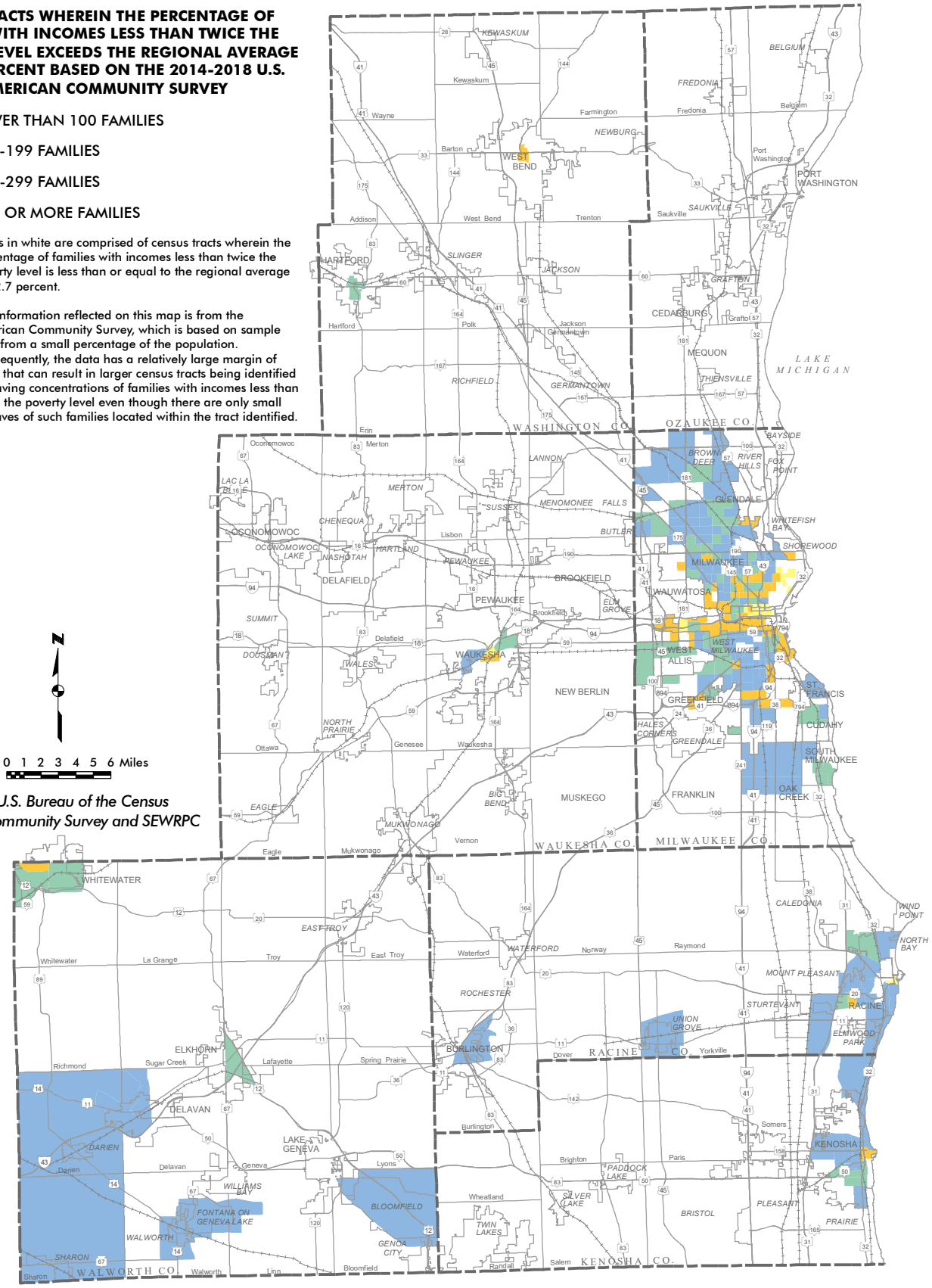
Map L.4
Concentrations of Families with Incomes Less Than Twice the Poverty Level: 2014-2018

CENSUS TRACTS WHEREIN THE PERCENTAGE OF FAMILIES WITH INCOMES LESS THAN TWICE THE POVERTY LEVEL EXCEEDS THE REGIONAL AVERAGE OF 22.7 PERCENT BASED ON THE 2014-2018 U.S. CENSUS AMERICAN COMMUNITY SURVEY

- FEWER THAN 100 FAMILIES
- 100-199 FAMILIES
- 200-299 FAMILIES
- 300 OR MORE FAMILIES

Notes: Areas in white are comprised of census tracts wherein the percentage of families with incomes less than twice the poverty level is less than or equal to the regional average of 22.7 percent.

The information reflected on this map is from the American Community Survey, which is based on sample data from a small percentage of the population. Consequently, the data has a relatively large margin of error that can result in larger census tracts being identified as having concentrations of families with incomes less than twice the poverty level even though there are only small enclaves of such families located within the tract identified.



Source: U.S. Bureau of the Census American Community Survey and SEWRPC

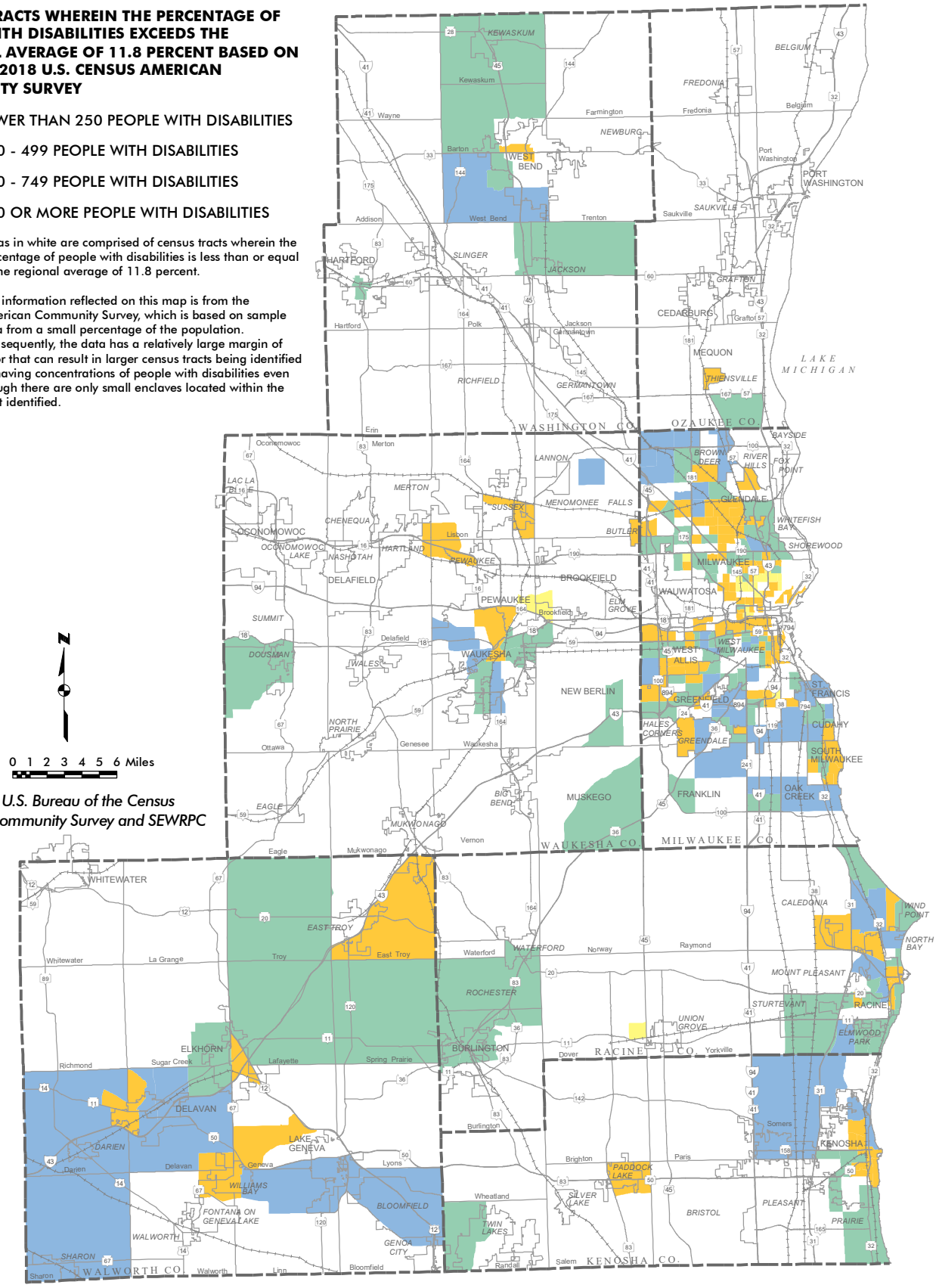
Map L.5
Concentrations of People with Disabilities: 2014-2018

CENSUS TRACTS WHEREIN THE PERCENTAGE OF PEOPLE WITH DISABILITIES EXCEEDS THE REGIONAL AVERAGE OF 11.8 PERCENT BASED ON THE 2014-2018 U.S. CENSUS AMERICAN COMMUNITY SURVEY

- FEWER THAN 250 PEOPLE WITH DISABILITIES
- 250 - 499 PEOPLE WITH DISABILITIES
- 500 - 749 PEOPLE WITH DISABILITIES
- 750 OR MORE PEOPLE WITH DISABILITIES

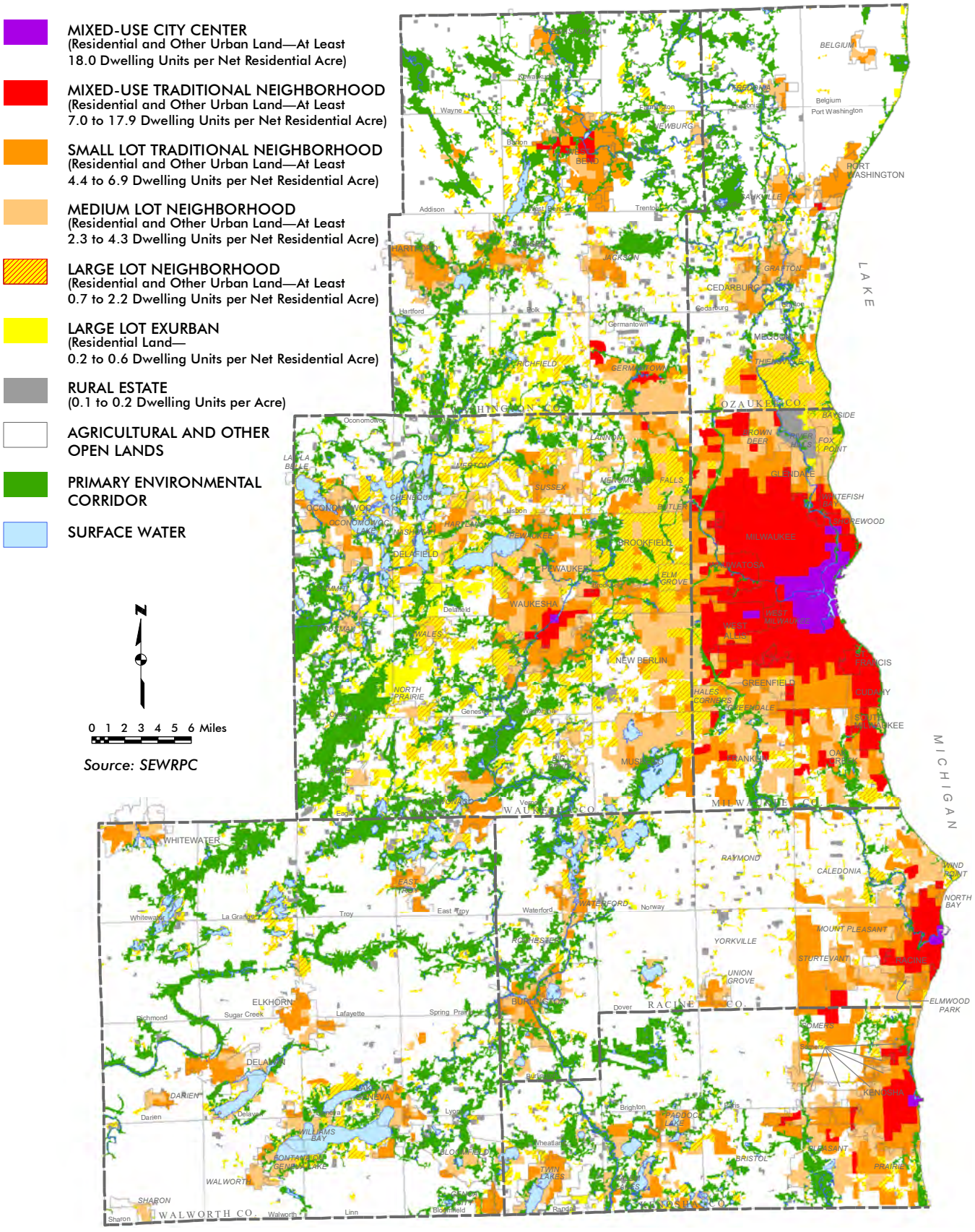
Notes: Areas in white are comprised of census tracts wherein the percentage of people with disabilities is less than or equal to the regional average of 11.8 percent.

The information reflected on this map is from the American Community Survey, which is based on sample data from a small percentage of the population. Consequently, the data has a relatively large margin of error that can result in larger census tracts being identified as having concentrations of people with disabilities even though there are only small enclaves located within the tract identified.



Source: U.S. Bureau of the Census American Community Survey and SEWRPC

Map L.6
Land Use Development Pattern: VISION 2050



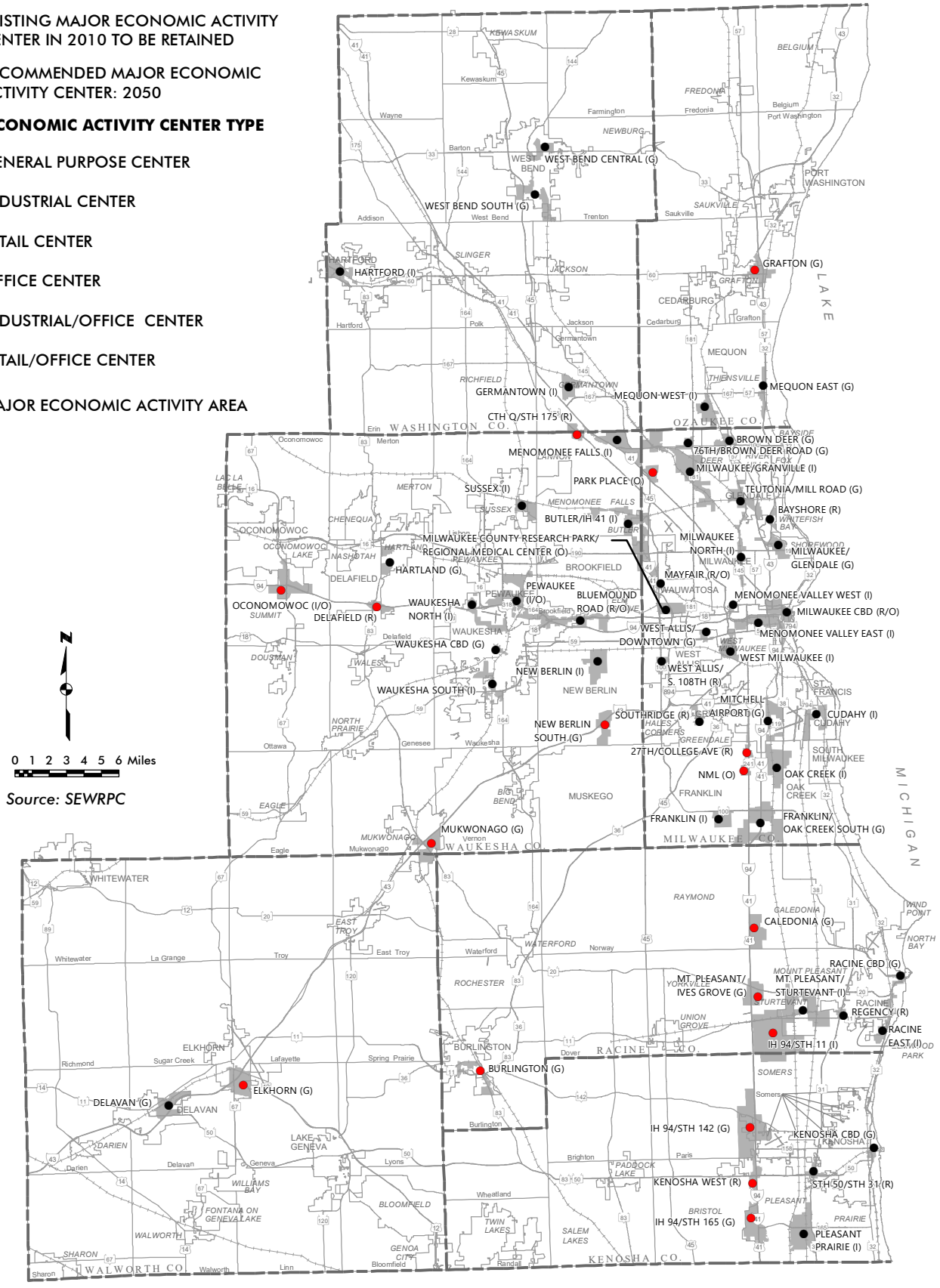
Map L.7
Major Economic Activity Centers: VISION 2050

- EXISTING MAJOR ECONOMIC ACTIVITY CENTER IN 2010 TO BE RETAINED
- RECOMMENDED MAJOR ECONOMIC ACTIVITY CENTER: 2050

MAJOR ECONOMIC ACTIVITY CENTER TYPE

G	GENERAL PURPOSE CENTER
I	INDUSTRIAL CENTER
R	RETAIL CENTER
O	OFFICE CENTER
I/O	INDUSTRIAL/OFFICE CENTER
R/O	RETAIL/OFFICE CENTER

MAJOR ECONOMIC ACTIVITY AREA



Source: SEWRPC

APPENDIX M

VISION 2050 PLAN RECOMMENDATIONS FOR THE JEFFERSON COUNTY PORTION OF THE MILWAUKEE URBANIZED AREA

INTRODUCTION

Following the 2010 U.S. Census,[71] the Milwaukee urbanized area boundary extends beyond the Southeastern Wisconsin Region across the boundary line between Waukesha and Jefferson Counties, comprising a 2.7 square mile area immediately west of the City of Oconomowoc. The year 2010 census and adjusted boundary of the Jefferson County portion of the Milwaukee urbanized area is shown on Map M.1. Being designated an urbanized area brings with it Federal requirements for metropolitan, or areawide, transportation planning and programming for the urbanized area, including preparation of a long-range regional transportation plan (RTP) and short-range regional transportation improvement program (TIP). These requirements must be met for Federal highway and transit funds to continue to be used for local, County, and State transportation improvement projects within the urbanized area. Since the Commission currently serves as the areawide, or metropolitan, transportation planning organization for the Milwaukee urbanized area and four other urbanized areas within the seven-county Southeastern Wisconsin Region (the Kenosha, Racine, Wisconsin portion of the Round Lake Beach, and West Bend urbanized areas), the Commission and Jefferson County entered into a cooperative agreement to provide the necessary transportation planning and programming services for the County's portion of the Milwaukee urbanized area, including the inclusion of this area in the RTP. This appendix summarizes the existing transportation systems of regional significance and transportation-related recommendations within the portion of Jefferson County in the Milwaukee urbanized area in VISION 2050.

EXISTING TRANSPORTATION FACILITIES

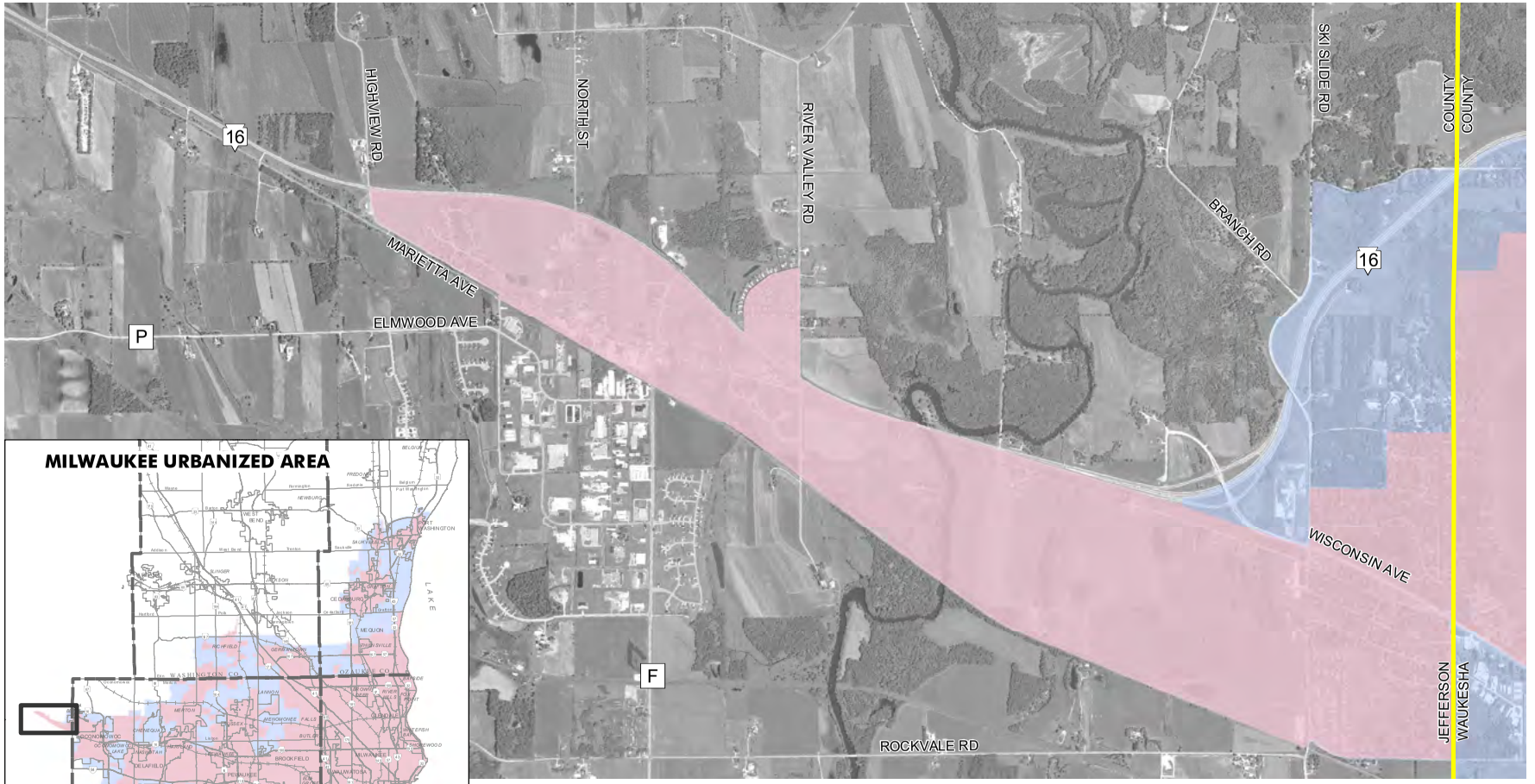
This section describes the transportation system of the Jefferson County portion of the Milwaukee urbanized area in 2020, including streets and highways, public transit, and bicycle facilities. This inventory provides the base year conditions for use in the development of the transportation-related recommendations under VISION 2050 for the Jefferson County portion of the urbanized area.

Arterial Streets and Highways

Arterial streets and highways are that portion of the total street and highway system principally intended to provide travel mobility, serving the through

[71] *After each decennial U.S. Census, the U.S. Census Bureau delineates the urbanized areas of the nation. The U.S. Census Bureau defines an urbanized area as an inner core of census blocks or tracts that have a total land area of less than three square miles and minimum population density of 1,000 persons per square mile surrounded by contiguous, densely settled census tracts and blocks having a minimum population density of 500 persons per square mile, along with adjacent non-contiguous densely settled blocks and block groups that together encompass a population of at least 50,000.*

Map M.1
Jefferson County Portion of the Milwaukee Urbanized Area



Source: U.S. Bureau of the Census and SEWRPC

movement of traffic and providing transportation service between major subareas of a region and also through the region. Access to abutting property may be a secondary function of some types of arterial streets and highways, but the primary function of arterial streets and highways is traffic movement. 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. Based on these considerations, the existing arterial street and highway system for the Jefferson County portion of the Milwaukee urbanized area was identified, as shown on Map M.2. The existing arterial street and highway system for the Jefferson County portion of the urbanized area totals 5.9 miles.

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. Of the 5.9 total miles, the facilities under State jurisdiction (shown as red lines on Map M.2) in 2020 consist of 4.5 miles (or 76 percent), the facilities under County jurisdiction consist of 1.0 mile (or 17 percent), and the facilities under local jurisdiction consist of 0.4 miles (or 7 percent).

Transit Service

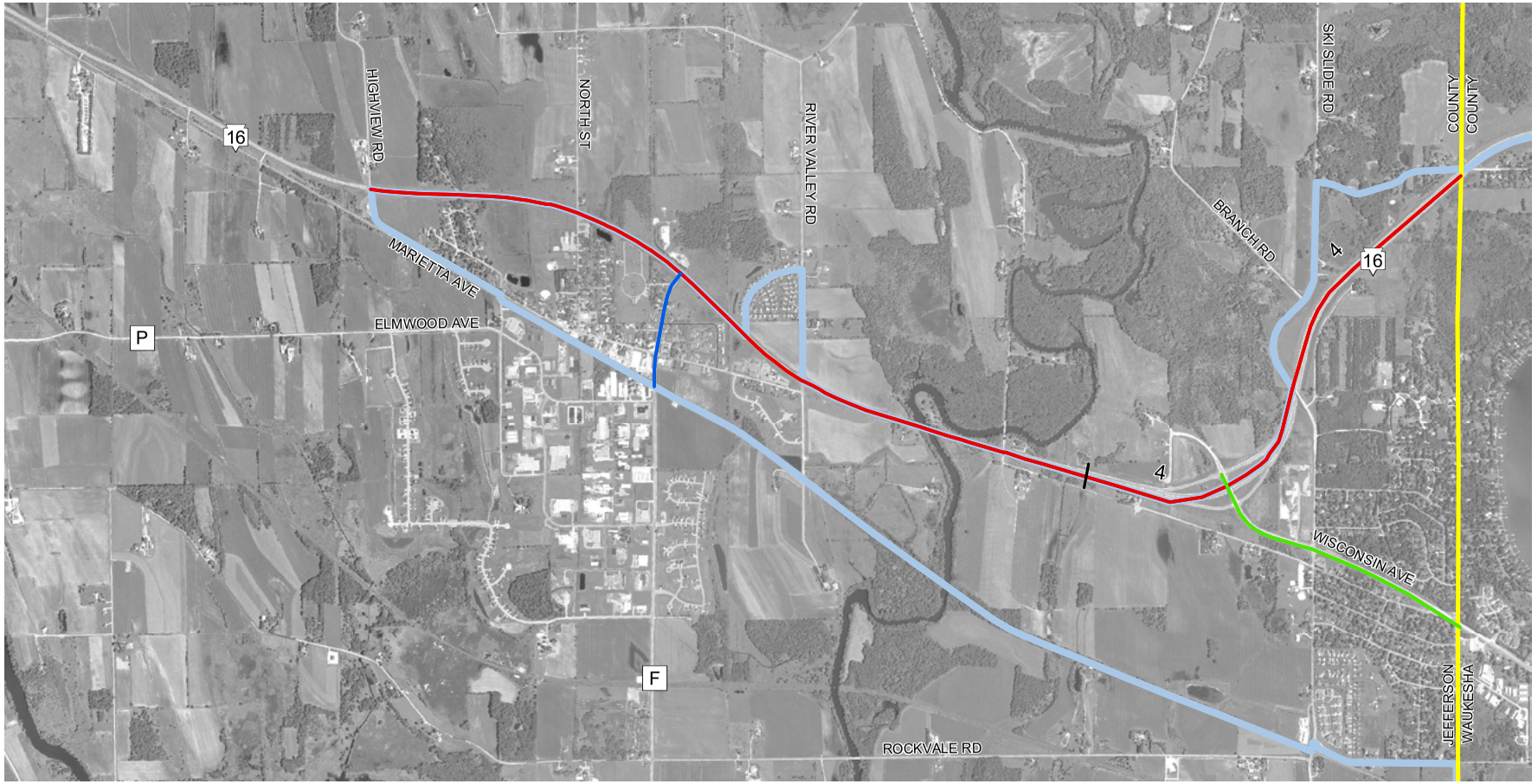
Commuter bus service was provided in 2020 between the City of Oconomowoc in Waukesha County and the City of Milwaukee central business district in Milwaukee County. This service operates primarily over the freeway system and is operated for Waukesha County by Wisconsin Coach Lines, Inc. The service has a stop at the Collins Street Parking Lot in the City of Oconomowoc, just east of the Jefferson County portion of the Milwaukee urbanized area. Local fixed-route transit service is currently not provided in the Jefferson County portion of the Milwaukee urbanized area.

Bicycle Facilities

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 M.3 identifies the 0.5 miles of arterial streets and highways that provided accommodation through paved shoulders in 2020.

In addition, bicycle accommodations can be provided on separate off-street bicycle paths. As part of VISION 2050, 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. Currently, there are no existing off-street bicycle facilities within the Jefferson County portion of the Milwaukee urbanized area.

Map M.2
Existing Arterial Street and Highway System in the Jefferson County Portion of the Milwaukee Urbanized Area: 2020



ARTERIAL STREET OR HIGHWAY

- STATE TRUNK HIGHWAY
- COUNTY TRUNK HIGHWAY
- LOCAL TRUNK HIGHWAY
- 4 NUMBER OF TRAFFIC LANES (2 LANES WHERE UNNUMBERED)

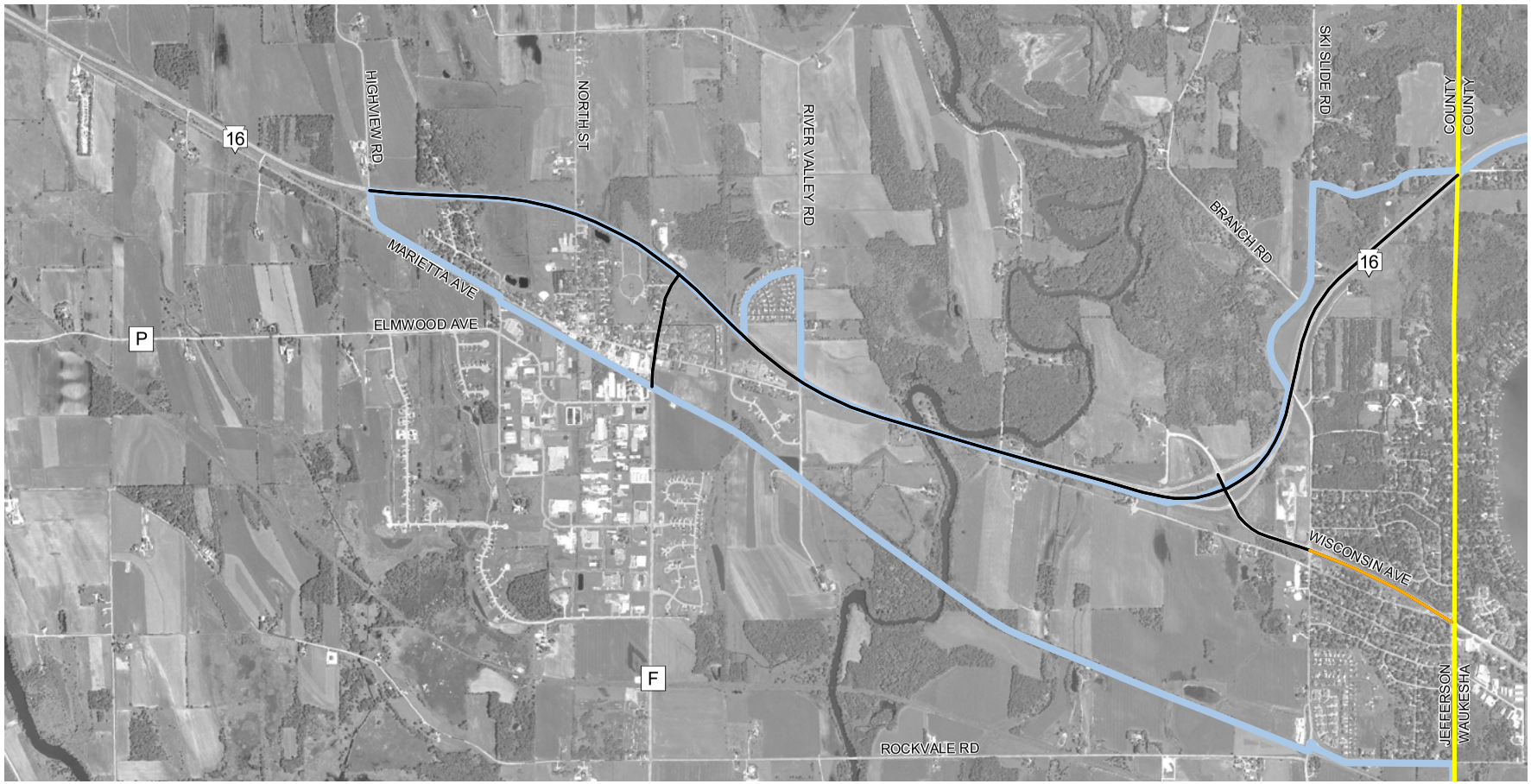
YEAR 2010 ADJUSTED MILWAUKEE URBANIZED AREA BOUNDARY

N

0 0.25 0.5 Miles

Source: U.S. Bureau of the Census and SEWRPC

Map M.3
Existing Bicycle Accommodations on the Arterial Streets and Highways in the Jefferson County Portion of the Milwaukee Urbanized Area



ARTERIAL STREET OR HIGHWAY

PAVED SHOULDER

ARTERIAL STREET OR HIGHWAY WITHOUT BICYCLE ACCOMMODATION

YEAR 2010 ADJUSTED MILWAUKEE URBANIZED AREA BOUNDARY

N

0 0.25 0.5 Miles

Source: U.S. Bureau of the Census and SEWRPC

VISION 2050 PLAN RECOMMENDATIONS FOR THE JEFFERSON COUNTY PORTION OF THE MILWAUKEE URBANIZED AREA

This section describes the transportation-related recommendations under VISION 2050 for the Jefferson County portion of the Milwaukee urbanized area with respect to transit service, bicycle accommodations, and arterials streets and highways.

Public Transit Element

VISION 2050 recommends that the existing commuter bus service be replaced with a commuter rail service between the City of Oconomowoc and downtown Milwaukee. The Jefferson County portion of the Milwaukee urbanized area would be served by a station proposed to be located in the City of Oconomowoc. Transit service to the industrial areas in the Town of Ixonia from the commuter rail station could be provided through fixed-route shuttles, flexible and demand-responsive vans, or shared-use automobiles through partnerships with transportation network companies like Uber and Lyft. Map 1.8 in Chapter 1 of Volume III shows how the commuter rail line recommended to serve the City of Oconomowoc connects with the other components of the recommended transit element of VISION 2050.

Bicycle Element

As shown on Map M.4, VISION 2050 recommends that as the 5.9 miles of arterial streets and highways in the Jefferson County portion of the Milwaukee urbanized area are resurfaced and reconstructed segment-by-segment, bicycle accommodation be considered and implemented, if feasible, through bicycle lanes, paved shoulders, widened outside travel lanes, or enhanced bicycle facilities, such as a separate path within the road right-of-way.[72]

VISION 2050 also recommends that a system of off-street bicycle paths be provided between the Kenosha, Milwaukee, Racine, Round Lake Beach, and West Bend urbanized areas. These off-street bicycle paths would be located in natural resource and utility corridors and are intended to provide reasonably direct connections between the Region's urbanized and small urban areas on safe and aesthetically attractive routes with separation from motor vehicle traffic. While such an off-street bicycle path is not proposed within the Jefferson County portion of the Milwaukee urbanized area, the plan does recommend an interurban recreational trail south of the Jefferson County portion of the Milwaukee urbanized area that would connect the City of Oconomowoc in Waukesha County and the City of Watertown in Jefferson County. As shown on Map M.5, this interurban recreational trail would be constructed within the existing WE Energies right-of-way corridor and would connect with the existing Lake Country Trail in Waukesha County. The recommended interurban recreational trail could serve as the bicycle accommodation for the STH 16 corridor between the Cities of Watertown and Oconomowoc. Since 2016, the portion of the bicycle trail between Humboldt Street and River Road has been implemented.

Arterial Streets and Highways Element

As shown on Map M.6, VISION 2050 recommends that the 5.9 miles of roadway within the Jefferson County portion of the Milwaukee urbanized area be resurfaced or reconstructed to provide essentially the same capacity.

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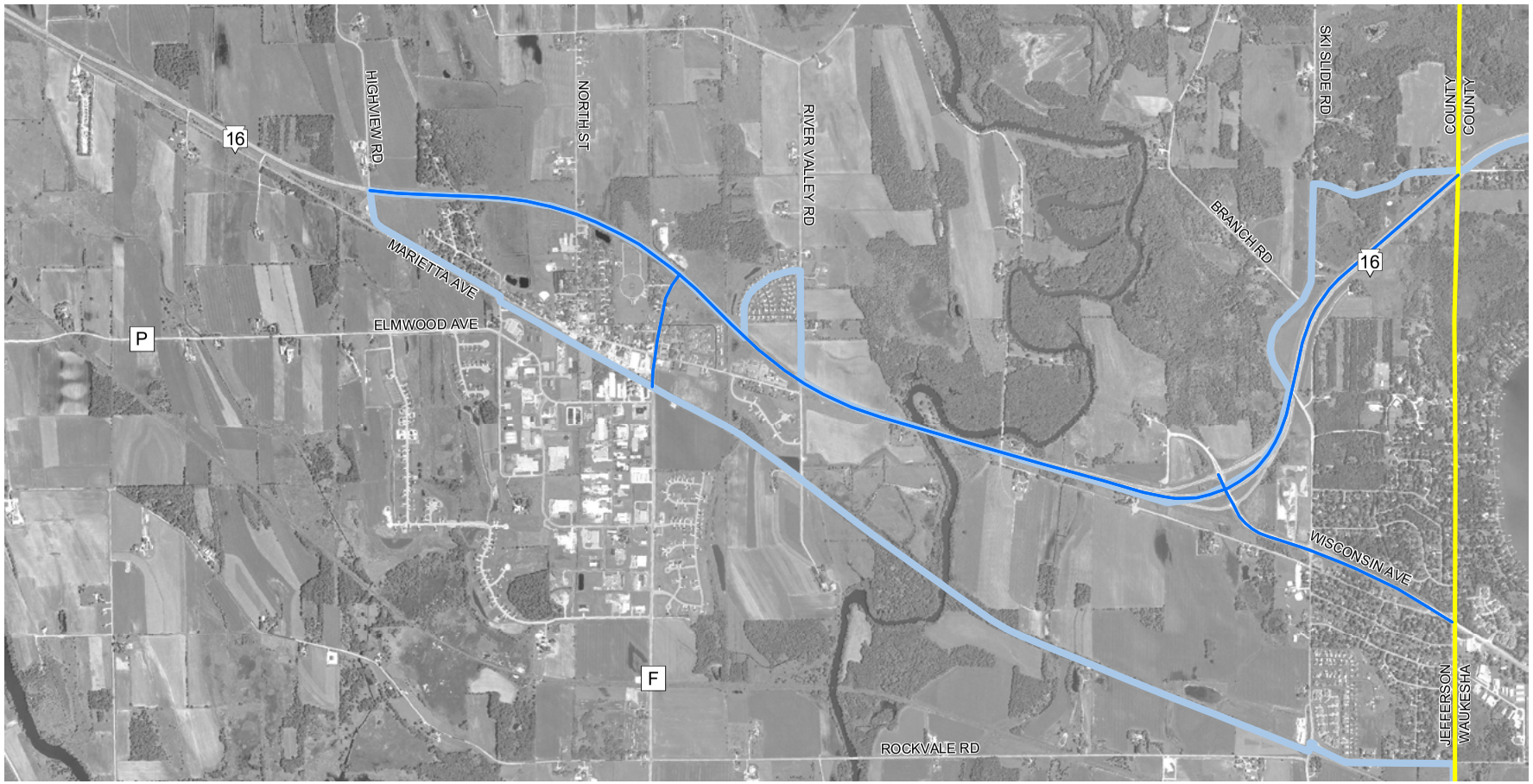
[72] *The only location where on-street bicycle accommodations may not be possible is along a 1.7-mile segment of STH 16 between the STH 16 interchange at Wisconsin Avenue and the Jefferson/Waukesha County line. This segment of STH 16 is part of the Oconomowoc Bypass, which is a controlled access highway.*

Map M.4
Bicycle Accommodations on the Arterial Streets and Highways in the Jefferson County Portion of the Milwaukee Urbanized Area: VISION 2050



ARTERIAL STREET OR HIGHWAY

ARTERIAL STREET OR HIGHWAY WITH BICYCLE ACCOMMODATION (IF FEASIBLE)

YEAR 2010 ADJUSTED MILWAUKEE URBANIZED AREA BOUNDARY

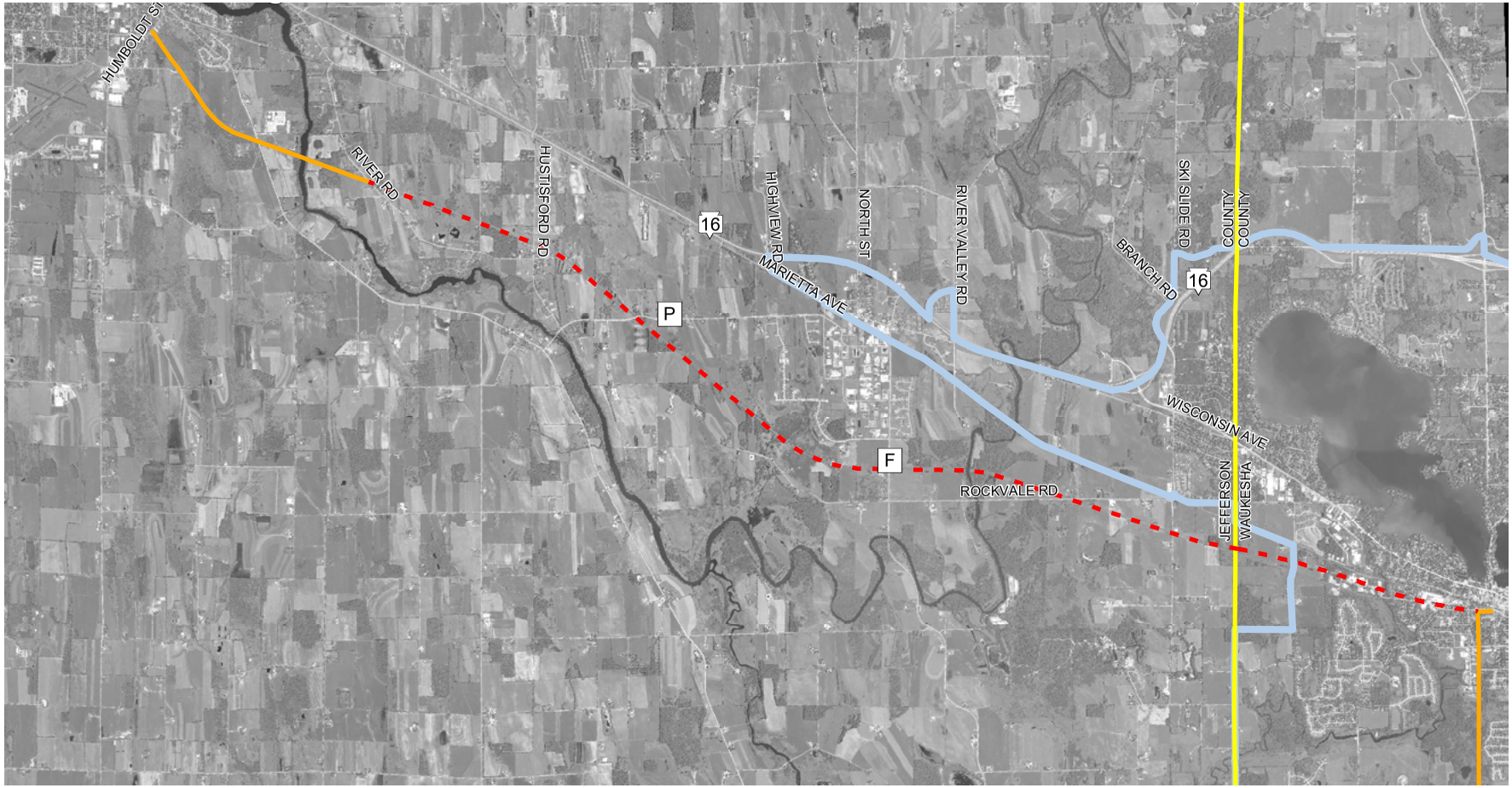
Note: The only location where on-street bicycle accommodations may not be possible is along a 1.7-mile segment of STH 16 between the STH 16 interchange at Wisconsin Avenue and the Jefferson/ Waukesha County line. This segment of STH 16 is part of the Oconomowoc Bypass, which is a controlled access highway.

N

0 0.25 0.5 Miles

Source: U.S. Bureau of the Census and SEWRPC

Map M.5
Recommended Interurban Trail Between the City of Oconomowoc in Waukesha County and the City of Watertown in Jefferson County



BICYCLE FACILITY

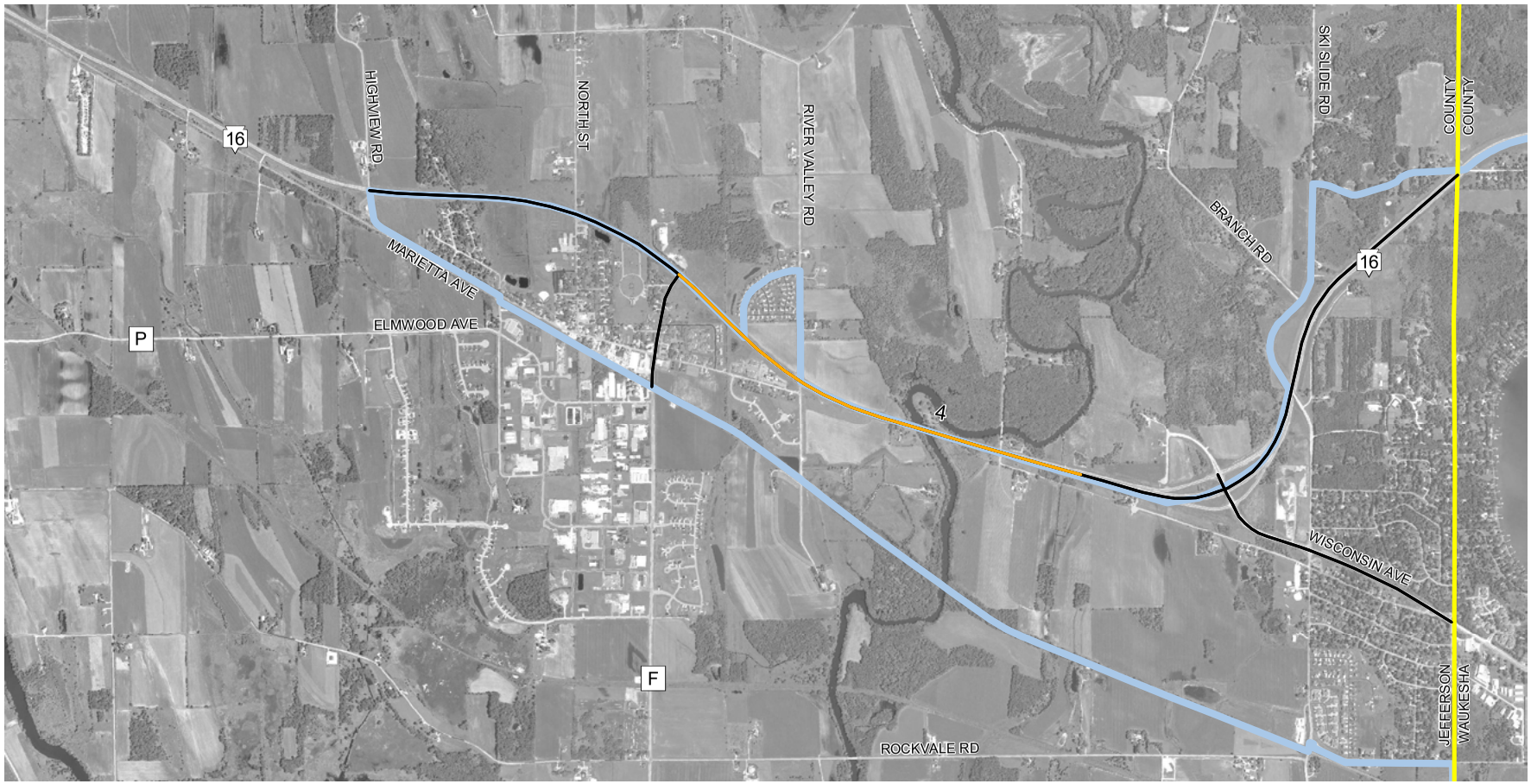
- RECOMMENDED INTERURBAN TRAIL
- EXISTING OFF-STREET BICYLE PATH
- YEAR 2010 ADJUSTED MILWAUKEE URBANIZED AREA BOUNDARY

N

0 0.5 1 Miles

Source: U.S. Bureau of the Census and SEWRPC

Map M.6
Functional Improvements to the Arterial Street and Highway System in the Jefferson County Portion of the Milwaukee Urbanized Area: VISION 2050



ARTERIAL STREET OR HIGHWAY

- RESURFACING OR RECONSTRUCTION TO PROVIDE ESSENTIALLY THE SAME CAPACITY
- RESERVE RIGHT-OF-WAY TO ACCOMMODATE FUTURE IMPROVEMENT (ADDITIONAL LANES)
- 4 NUMBER OF TRAFFIC LANES FOR NEW OR WIDENED AND/OR IMPROVED FACILITY

YEAR 2010 ADJUSTED MILWAUKEE URBANIZED AREA BOUNDARY

N

0 0.25 0.5 Miles

Source: U.S. Bureau of the Census and SEWRPC

As the existing and future forecast year 2050 traffic volumes approach, but do not exceed, the design capacity of STH 16 between CTH F and the terminus of the STH 16 Oconomowoc Bypass, just west of Wisconsin Avenue, VISION 2050 recommends the reservation of right-of-way along this section of STH 16 to accommodate possible improvement of the facility beyond the plan design year of 2050. This recommendation would be revisited as the Commission monitors traffic counts taken by the Wisconsin Department of Transportation (WisDOT) on a three-year cycle, and as the Commission reviews and updates the RTP every four years.

Additionally, it is recommended that the VISION 2050 recommendations under the arterial streets and highways element presented in Chapter 1 of Volume III be implemented in the Jefferson County portion of the Milwaukee urbanized area, if applicable, including addressing safety needs for arterial streets and highways. Safety improvements identified in the STH 16 corridor study completed by WisDOT in 2014 should be considered for implementation, as appropriate, when the segment of STH 16 within the Milwaukee urbanized area is resurfaced or reconstructed.

FINANCIAL ANALYSIS OF EXPECTED PLAN COSTS AND REVENUES

The costs associated with the implementation of the VISION 2050 plan recommendations within the Jefferson County portion of the Milwaukee urbanized area are included in the expected costs of the VISION 2050 transportation system, as described in Chapter 1 of Volume III. The expected funding gap to fully implement the highway and transit element of the plan would potentially affect the timing of needed reconstruction of the surface arterials in Jefferson County, and the implementation of the expanded and improved transit service recommended under VISION 2050, including the recommended commuter rail service between the City of Oconomowoc and downtown Milwaukee. However, it is expected that there may be sufficient existing and reasonably expected revenues to continue the operation of the commuter bus service between the City of Oconomowoc and downtown Milwaukee, with the Jefferson County portion of the Milwaukee urbanized area continuing to be served by the Collins Street Parking Lot in the City of Oconomowoc. The "fiscally constrained" portion of VISION 2050, called the Fiscally Constrained Transportation System (FCTS), is described in Chapter 2 of Volume III.

APPENDIX N

EQUITY ANALYSIS OF THE VISION 2050 TRANSPORTATION COMPONENT

INTRODUCTION

Significant disparities exist between minority populations and non-minority populations in the Region, particularly in the Milwaukee metropolitan area, with respect to educational attainment levels, per capita income, and poverty.[73] These disparities are long-standing, and are more pronounced than in almost all other metro areas. Reducing these disparities requires significant action on many fronts. With respect to the development of the transportation component of the original VISION 2050 plan (adopted in July 2016), equity evaluations were conducted at different stages in the planning process to ensure that the benefits and impacts of investments in the Region's transportation system are shared fairly and equitably and serve to reduce existing disparities between white and minority populations. Specifically, an equitable access evaluation was conducted on the VISION 2050 alternative plans,[74] the Preliminary Recommended Plan,[75] and the original Fiscally Constrained Transportation Plan (FCTP)[76] with respect to 1) accessibility for minority populations and low-income populations by transit and automobile to jobs and other activity centers, 2) minority populations and low-income populations served by transit, 3) transit service quality for minority populations and low-income populations, 4) benefits and impacts of new and widened arterial streets and highways on minority populations and low-income populations, and 5) transportation-related air quality impacts on minority populations and low-income populations. An updated equitable access evaluation was conducted as part of the second amendment to VISION 2050, which was completed in December 2018. This amendment incorporated land use changes to accommodate additional residents and jobs associated with, and transportation improvements to serve, the Foxconn development area. The amendment also reviewed and revised the FCTP based on changes in funding for transportation projects

[73] *These disparities are documented in SEWRPC Memorandum No. 221,* A Comparison of the Milwaukee Metropolitan Area to Its Peers, which was updated as part of the 2020 Review and Update of VISION 2050.

[74] *The equitable access evaluation of the VISION 2050 alternative plans is documented in Appendix F of Volume II of the VISION 2050 plan report.*

[75] *The equitable access evaluation of the VISION 2050 Preliminary Recommended Plan is documented in Appendix H of Volume II of the VISION 2050 plan report.*

[76] *Federal regulations require the Region's transportation plan to only include projects that can be funded with existing and reasonably expected revenues. Therefore, only the funded portion of the final plan would be considered for purposes of air-quality conformity and for inclusion in the regional transportation improvement program. The equitable access evaluation of the original VISION 2050 Fiscally Constrained Transportation Plan is documented in Appendix N of the First Edition of Volume III of the VISION 2050 plan report.*

in the 2017-2019 State budget, particularly with respect to reconstructing freeways in the Region.[77]

This appendix documents the equitable access evaluation conducted when VISION 2050 was reviewed and updated in 2020 and includes analysis for both the recommended and fiscally constrained transportation components. It is important to note that in this Second Edition of Volume III, the title of the funded portion of the recommended system, previously referred to as the "Fiscally Constrained Transportation Plan (FCTP)," has been changed to the "Fiscally Constrained Transportation System (FCTS)." Staff changed the title to better make the importation distinction that the portion of the recommended transportation system that can be implemented with reasonably expected revenues does not represent a desired "plan." Rather, it represents the "system" expected to occur without sufficient funding levels to maintain and improve the transportation system as recommended in VISION 2050.

Based on the results of this evaluation, it was concluded that no area of the Region, including areas with higher-than-average proportions of minority populations and low-income populations, would disproportionately bear the impact of the planned freeway and surface arterial capacity improvements. As the segments of freeway to be widened under either VISION 2050 or the FCTS would directly serve areas of minority populations and low-income populations, these populations would benefit from the expected modest improvement in highway accessibility to employment associated with the freeway widenings, with the improvement under VISION 2050 being greater than under the FCTS. With respect to public transit, implementing the more than doubling of transit service recommended under VISION 2050 would significantly improve the transit access of minority populations, low-income populations, and people with disabilities to jobs, healthcare, education, and other activities.

However, the 35 percent reduction in transit service and minimal addition of higher-quality transit service under the FCTS would result in significantly less access to jobs, healthcare, education, and other daily needs, and an overall reduction in transit service quality when compared to both VISION 2050, and the transit system that exists today. For the 1 in 10 households in the Region without access to an automobile, households that are more likely to be minority or low income than the overall proportion of the Region's population, mobility and access to jobs and activities within the Region would be limited. Therefore, should the reasonably available and expected funding that dictates what portions of VISION 2050 are included in the FCTS remain unchanged, a disparate impact on the Region's minority populations, low-income populations, and people with disabilities is likely to occur. Given current limitations at the State level on local government revenue generation and on the Wisconsin Department of Transportation's ability to allocate funds between different programs, the ability for the Region to avoid such a disparate impact is dependent on the State Legislature and Governor providing additional State funding for transit services, or allowing local units of government and transit operators to generate such funds on their own. Not addressing this funding shortage limits access to jobs, education, and other opportunities for households without, or with limited access to, an automobile, perpetuating the Region's

[77] *The equitable access evaluation of the VISION 2050 and FCTP transportation components as amended in December 2018 is documented in Appendix C of the report documenting the second amendment of VISION 2050.*

racial and economic segregation and the long-standing disparities that are at least partially attributed to that segregation.[78]

LOCATION AND TRAVEL PATTERNS OF MINORITY POPULATIONS AND LOW-INCOME POPULATIONS IN SOUTHEASTERN WISCONSIN

Maps N.1 through N.7 and Table N.1 show the magnitude and location of the minority populations in the Region estimated from data available from the most recent decennial U.S. Census of population, which was conducted in 2010. The magnitude and location of the low-income populations within Southeastern Wisconsin, based upon the 2014-2018 U.S. Census American Community Survey (ACS), are summarized in Table N.2 and shown on Map N.8. The low-income population was defined as families with incomes below 2018 federally defined poverty levels, shown in Table N.3.

Although the automobile is the dominant mode of travel for the Region's minority population, minority residents utilize public transit at a higher percentage relative to other modes of travel than the white population. Based on data from the 2017 National Household Travel Survey (NHTS), the Region's minority population utilizes public transit for more of its travel (6 percent) than the Region's white population (less than 1 percent). Automobile travel is the dominant mode of travel by both the Region's minority population (76 percent) and white population (86 percent). In addition, based on the transit travel survey conducted as part of the Commission's 2011 travel survey for Southeastern Wisconsin, the minority population represents a greater proportion of total transit ridership than it does of total population, as shown in Table N.4.

More robust and detailed data available by county from the year 2014-2018 ACS indicate a similar pattern by race and ethnic group for work trips in Southeastern Wisconsin as for all travel, as shown in Table N.5. As these data only include travel to and from work, they exclude those without employment who are more likely to be among the poorest people in the Region. Nonetheless, the data indicate that, in Milwaukee County, between 4 and 13 percent of the minority population uses public transit to travel to and from work, with the highest proportion (13 percent) by the African-American population. Only about 3 percent of the white population uses public transit for travel to and from work. Similarly, about 13 percent of the low-income population (residing in a family with an income below the poverty level) uses public transit to travel to and from work, compared to 5 percent of the population with higher wages. Regarding automobile use in Milwaukee County, minority populations use the automobile for 80 to 89 percent of their travel to and from work. This compares to 87 percent of the white population. Similarly, about 70 percent of travel by low-income populations to and from work is by automobile, compared to 89 percent for populations of higher income. Data as robust as the 2014-2018 ACS data are not available for modes of travel for non-work trips within Southeastern Wisconsin by race and ethnicity.

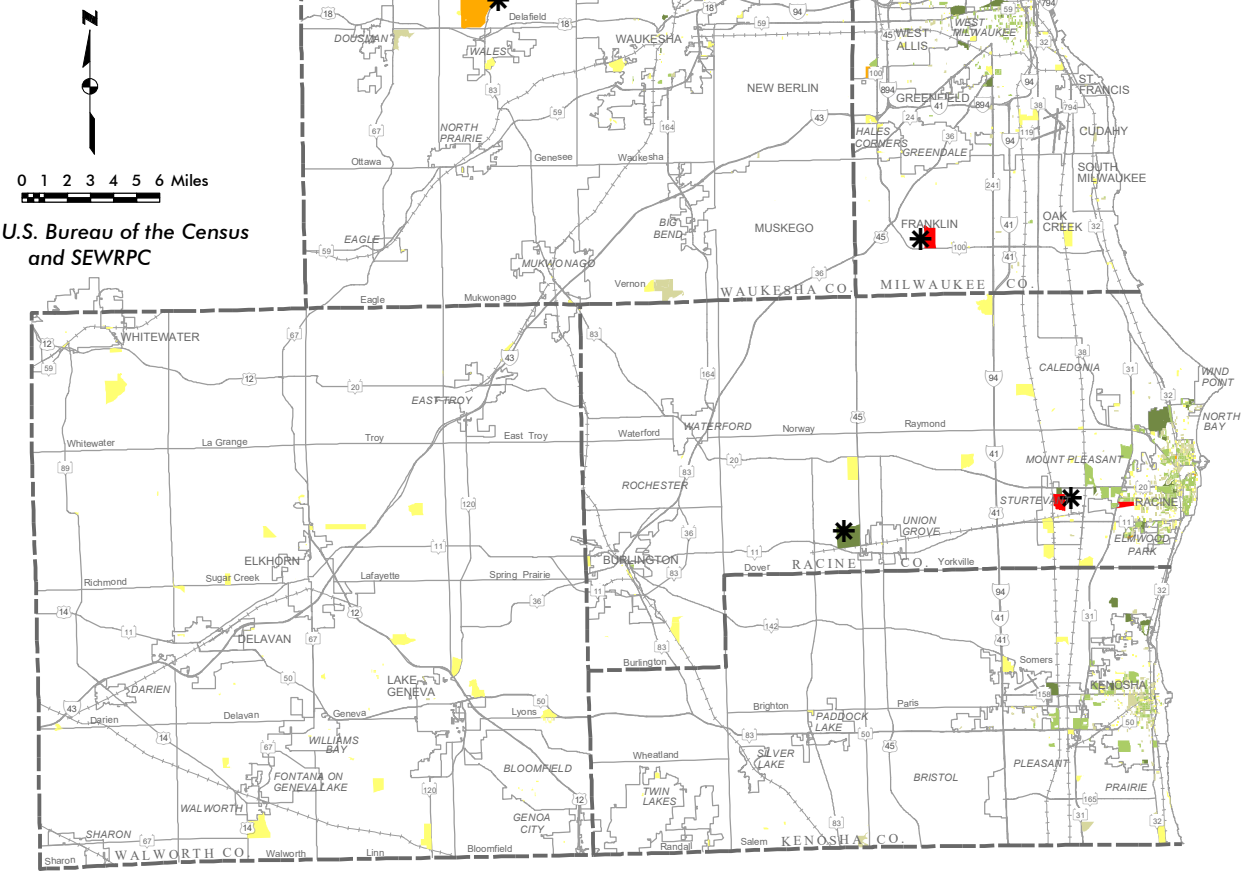
[78] *A summary of the adverse effects of segregation on minority populations and low-income populations in Southeastern Wisconsin, and on the regional economy, can be found in SEWRPC Planning Report No. 54,* A Regional Housing Plan for Southeastern Wisconsin: 2035*, March 2013, (p. 327)*.

Map N.1
Concentrations of Black/African American People in the Region: 2010

CENSUS BLOCKS WHEREIN THE PERCENTAGE OF BLACK/AFRICAN AMERICAN PEOPLE EXCEEDS THE REGIONAL AVERAGE OF 15.8 PERCENT BASED ON THE 2010 U.S. CENSUS

- 500 OR MORE BLACK/AFRICAN AMERICAN PEOPLE
- 200 TO 499 BLACK/AFRICAN AMERICAN PEOPLE
- 100 TO 199 BLACK/AFRICAN AMERICAN PEOPLE
- 25 TO 99 BLACK/AFRICAN AMERICAN PEOPLE
- 10 TO 24 BLACK/AFRICAN AMERICAN PEOPLE
- 1 TO 9 BLACK/AFRICAN AMERICAN PEOPLE
- * MINORITY CONCENTRATIONS ARE ATTRIBUTABLE TO CORRECTIONAL INSTITUTIONS IN THESE LOCATIONS

Note: Areas in white are comprised of census blocks wherein the percentage of Black/African American people is less than or equal to the regional average of 15.8 percent.



Source: U.S. Bureau of the Census and SEWRPC

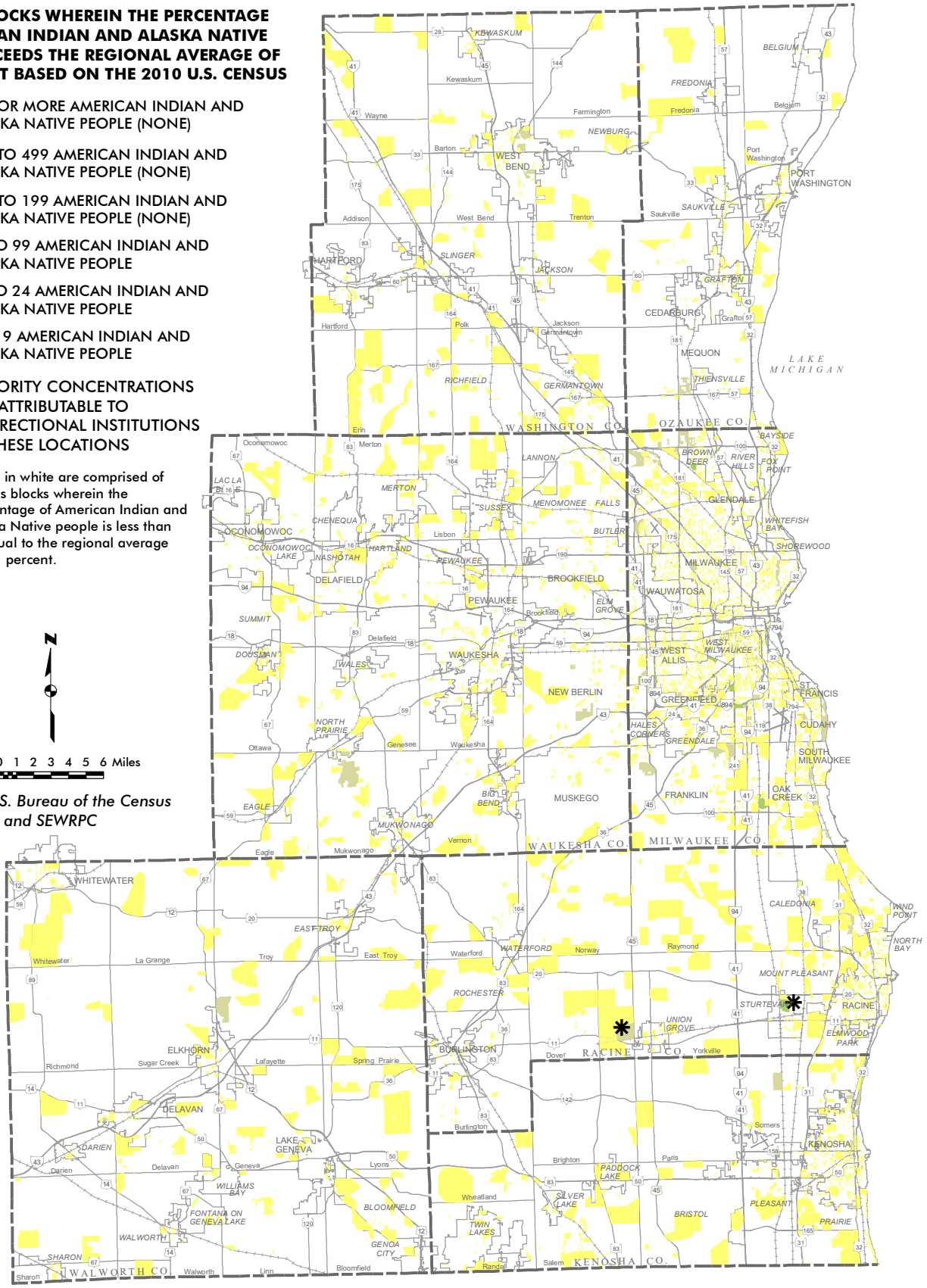
Map N.2
Concentrations of American Indian and Alaska Native People in the Region: 2010

CENSUS BLOCKS WHEREIN THE PERCENTAGE OF AMERICAN INDIAN AND ALASKA NATIVE PEOPLE EXCEEDS THE REGIONAL AVERAGE OF 1.1 PERCENT BASED ON THE 2010 U.S. CENSUS

- 500 OR MORE AMERICAN INDIAN AND ALASKA NATIVE PEOPLE (NONE)
- 200 TO 499 AMERICAN INDIAN AND ALASKA NATIVE PEOPLE (NONE)
- 100 TO 199 AMERICAN INDIAN AND ALASKA NATIVE PEOPLE (NONE)
- 25 TO 99 AMERICAN INDIAN AND ALASKA NATIVE PEOPLE
- 10 TO 24 AMERICAN INDIAN AND ALASKA NATIVE PEOPLE
- 1 TO 9 AMERICAN INDIAN AND ALASKA NATIVE PEOPLE
- * MINORITY CONCENTRATIONS ARE ATTRIBUTABLE TO CORRECTIONAL INSTITUTIONS IN THESE LOCATIONS

Note: Areas in white are comprised of census blocks wherein the percentage of American Indian and Alaska Native people is less than or equal to the regional average of 1.1 percent.

Source: U.S. Bureau of the Census and SEWRPC

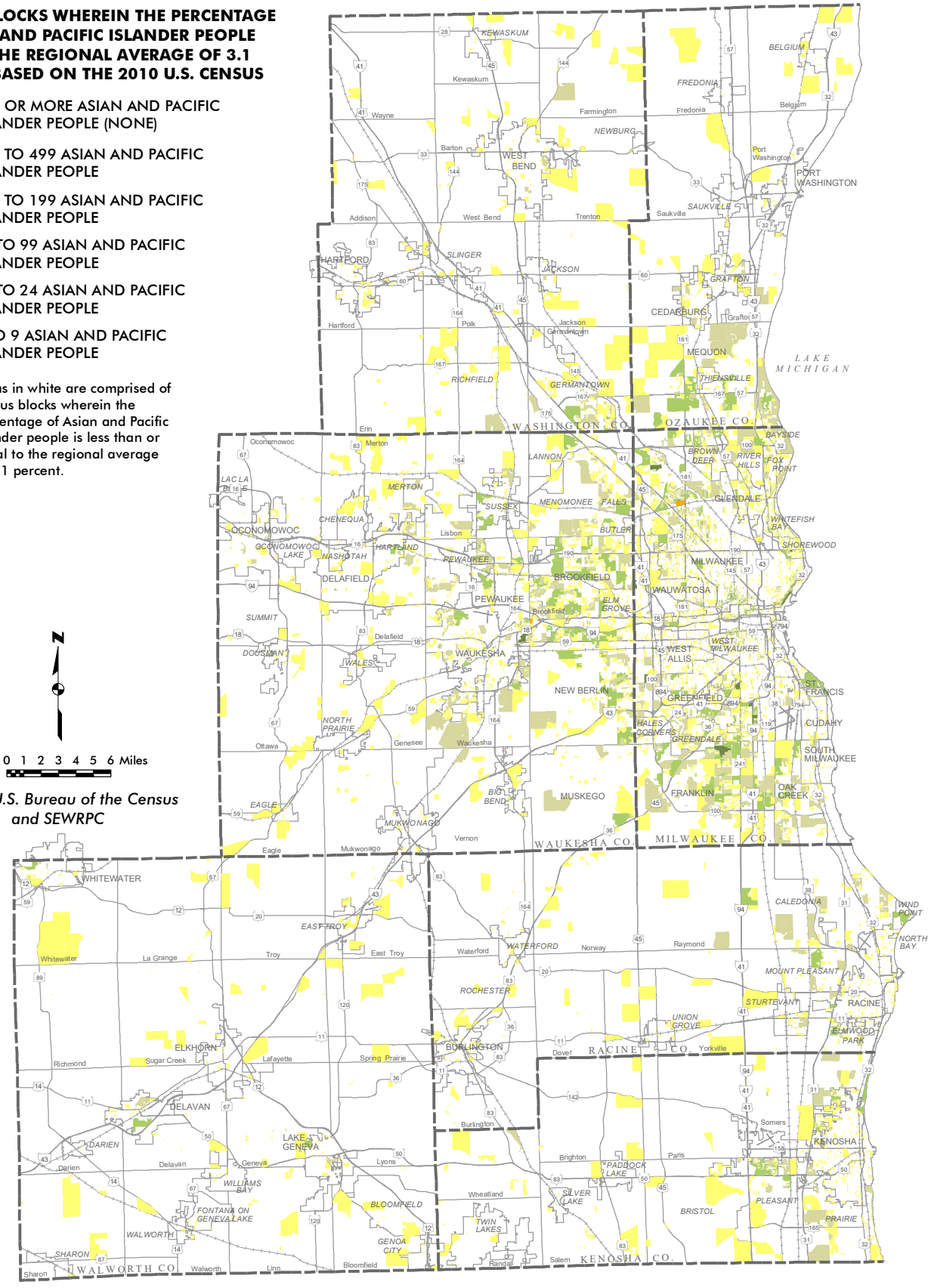


Map N.3
Concentrations of Asian and Pacific Islander People in the Region: 2010

CENSUS BLOCKS WHEREIN THE PERCENTAGE OF ASIAN AND PACIFIC ISLANDER PEOPLE EXCEEDS THE REGIONAL AVERAGE OF 3.1 PERCENT BASED ON THE 2010 U.S. CENSUS

- 500 OR MORE ASIAN AND PACIFIC ISLANDER PEOPLE (NONE)
- 200 TO 499 ASIAN AND PACIFIC ISLANDER PEOPLE
- 100 TO 199 ASIAN AND PACIFIC ISLANDER PEOPLE
- 25 TO 99 ASIAN AND PACIFIC ISLANDER PEOPLE
- 10 TO 24 ASIAN AND PACIFIC ISLANDER PEOPLE
- 1 TO 9 ASIAN AND PACIFIC ISLANDER PEOPLE

Note: Areas in white are comprised of census blocks wherein the percentage of Asian and Pacific Islander people is less than or equal to the regional average of 3.1 percent.



Source: U.S. Bureau of the Census and SEWRPC

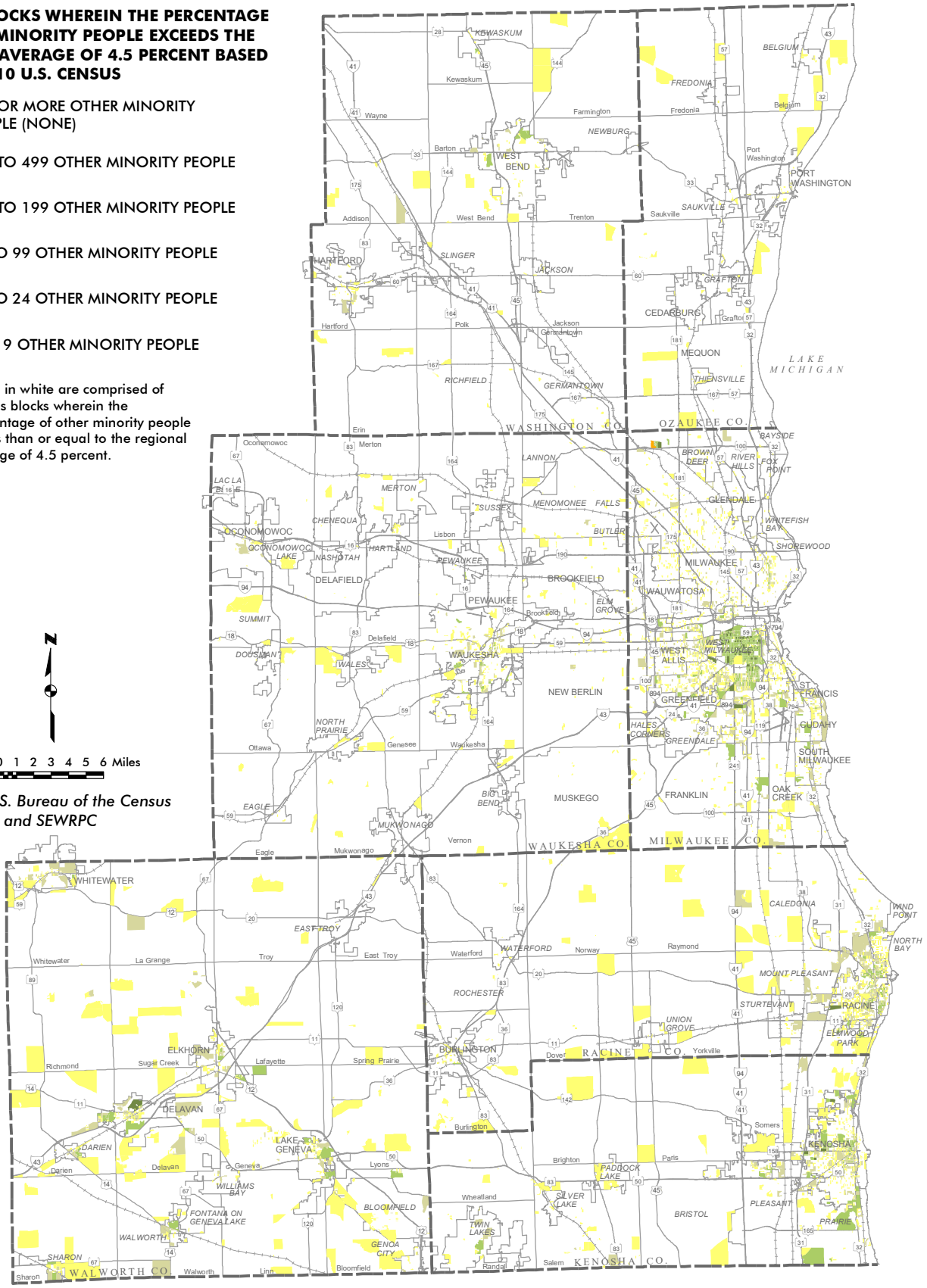
Map N.4
Concentrations of Other Minority People in the Region: 2010

CENSUS BLOCKS WHEREIN THE PERCENTAGE OF OTHER MINORITY PEOPLE EXCEEDS THE REGIONAL AVERAGE OF 4.5 PERCENT BASED ON THE 2010 U.S. CENSUS

- 500 OR MORE OTHER MINORITY PEOPLE (NONE)
- 200 TO 499 OTHER MINORITY PEOPLE
- 100 TO 199 OTHER MINORITY PEOPLE
- 25 TO 99 OTHER MINORITY PEOPLE
- 10 TO 24 OTHER MINORITY PEOPLE
- 1 TO 9 OTHER MINORITY PEOPLE

Note: Areas in white are comprised of census blocks wherein the percentage of other minority people is less than or equal to the regional average of 4.5 percent.

Source: U.S. Bureau of the Census and SEWRPC



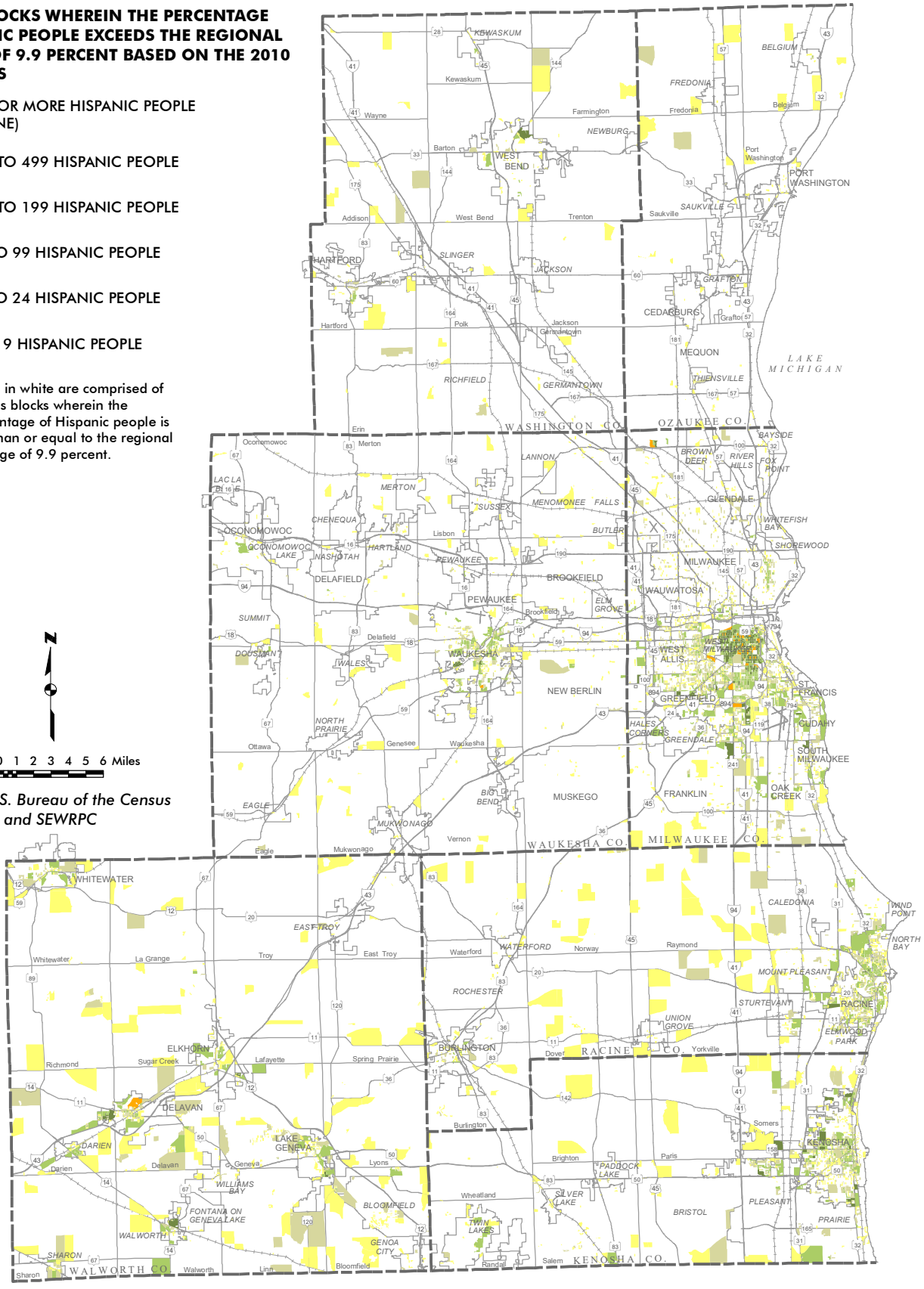
Map N.5
Concentrations of Hispanic People in the Region: 2010

CENSUS BLOCKS WHEREIN THE PERCENTAGE OF HISPANIC PEOPLE EXCEEDS THE REGIONAL AVERAGE OF 9.9 PERCENT BASED ON THE 2010 U.S. CENSUS

- 500 OR MORE HISPANIC PEOPLE (NONE)
- 200 TO 499 HISPANIC PEOPLE
- 100 TO 199 HISPANIC PEOPLE
- 25 TO 99 HISPANIC PEOPLE
- 10 TO 24 HISPANIC PEOPLE
- 1 TO 9 HISPANIC PEOPLE

Note: Areas in white are comprised of census blocks wherein the percentage of Hispanic people is less than or equal to the regional average of 9.9 percent.

Source: U.S. Bureau of the Census and SEWRPC



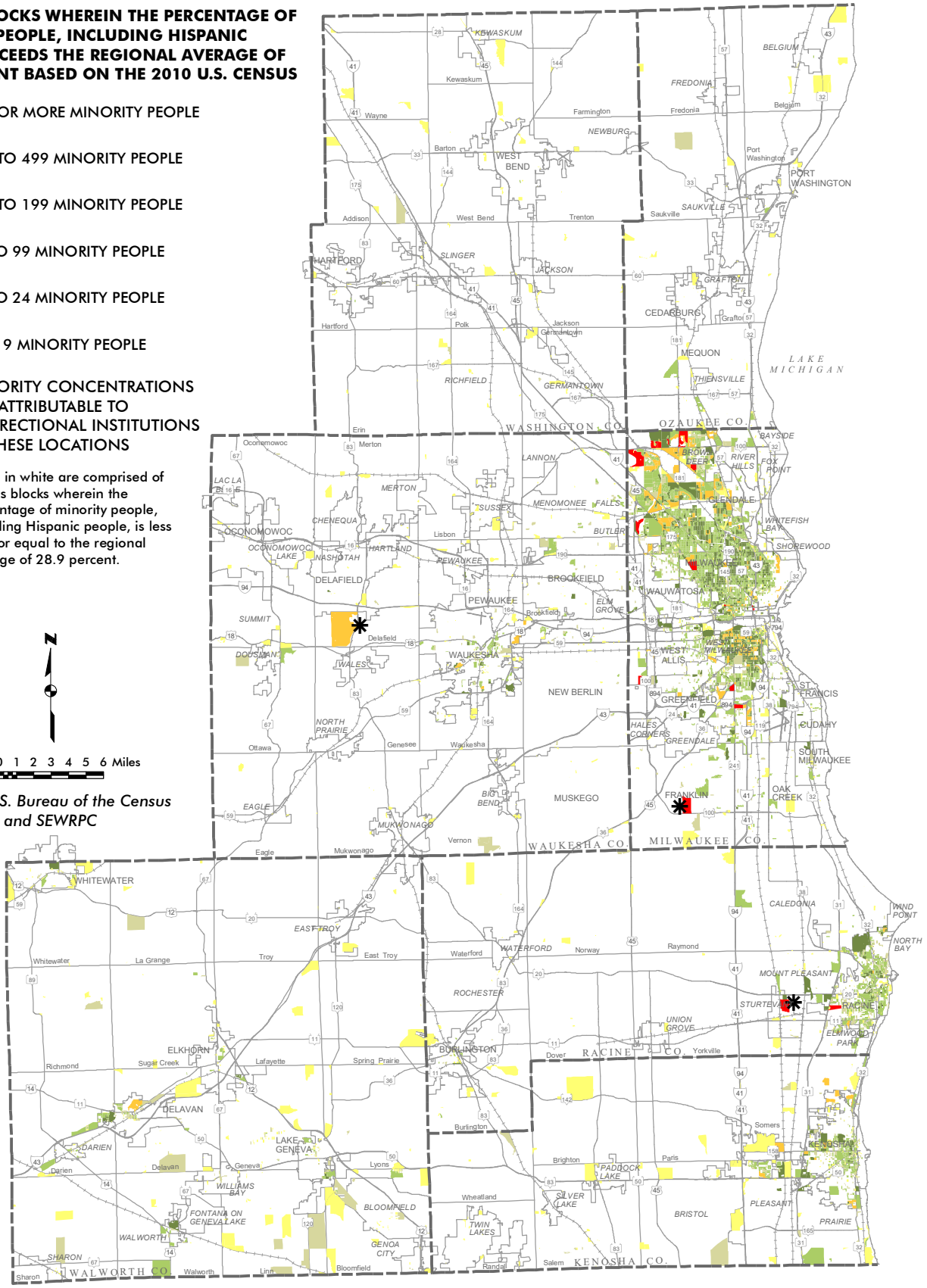
Map N.6
Concentrations of Total Minority Population in the Region: 2010

CENSUS BLOCKS WHEREIN THE PERCENTAGE OF MINORITY PEOPLE, INCLUDING HISPANIC PEOPLE, EXCEEDS THE REGIONAL AVERAGE OF 28.9 PERCENT BASED ON THE 2010 U.S. CENSUS

- 500 OR MORE MINORITY PEOPLE
- 200 TO 499 MINORITY PEOPLE
- 100 TO 199 MINORITY PEOPLE
- 25 TO 99 MINORITY PEOPLE
- 10 TO 24 MINORITY PEOPLE
- 1 TO 9 MINORITY PEOPLE
- * MINORITY CONCENTRATIONS ARE ATTRIBUTABLE TO CORRECTIONAL INSTITUTIONS IN THESE LOCATIONS

Note: Areas in white are comprised of census blocks wherein the percentage of minority people, including Hispanic people, is less than or equal to the regional average of 28.9 percent.

Source: U.S. Bureau of the Census and SEWRPC

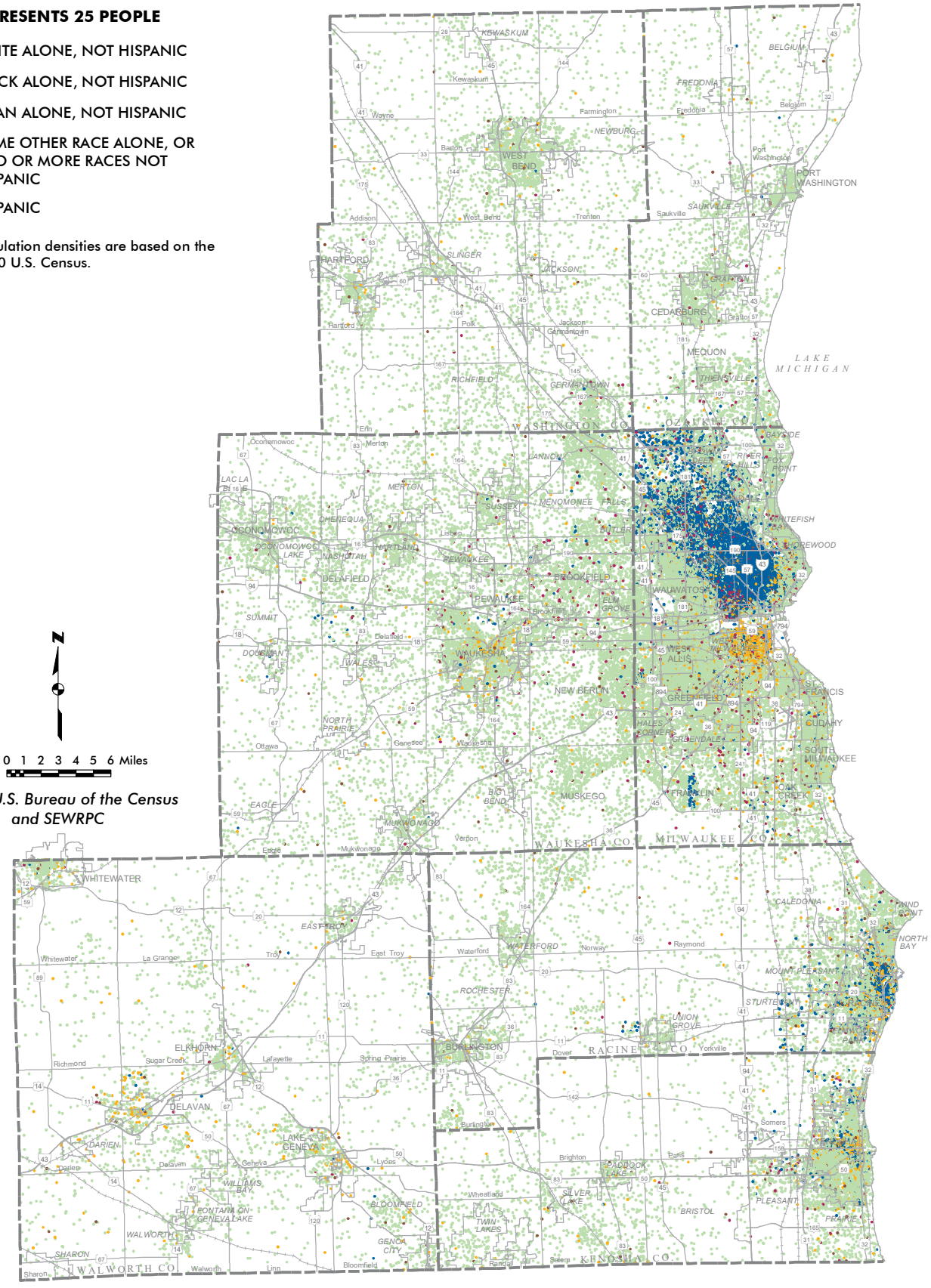


Map N.7
Concentrations of Year 2010 Races/Ethnicities

1 DOT REPRESENTS 25 PEOPLE

- WHITE ALONE, NOT HISPANIC
- BLACK ALONE, NOT HISPANIC
- ASIAN ALONE, NOT HISPANIC
- SOME OTHER RACE ALONE, OR TWO OR MORE RACES NOT HISPANIC
- HISPANIC

Note: Population densities are based on the 2010 U.S. Census.



Source: U.S. Bureau of the Census and SEWRPC

Table N.1
Population by Race and Hispanic Ethnicity in the Region by County: 2010

County	White Alone, Non-Hispanic		Minority										Total Population
			Black/African American		American Indian and Alaska Native		Asian and Pacific Islander		Other Race		Hispanic		
	Number	Percent of Total	Number	Percent of Total	Number	Percent of Total	Number	Percent of Total	Number	Percent of Total	Number	Percent of Total	
Kenosha	129,892	78.0	13,336	8.0	1,849	1.1	3,549	2.1	9,160	5.5	19,592	11.8	166,426
Milwaukee	514,958	54.3	269,246	28.4	13,729	1.4	38,642	4.1	58,663	6.2	126,039	13.3	947,735
Ozaukee	80,689	93.4	1,518	1.8	467	0.5	1,957	2.3	597	0.7	1,956	2.3	86,395
Racine	145,414	74.4	24,471	12.5	1,806	0.9	2,898	1.5	11,363	5.8	22,546	11.5	195,408
Walworth	88,690	86.8	1,436	1.4	738	0.7	1,215	1.2	5,098	5.0	10,578	10.3	102,228
Washington	124,348	94.3	1,740	1.3	798	0.6	1,889	1.4	1,327	1.0	3,385	2.6	131,887
Waukesha	353,114	90.6	6,528	1.7	2,205	0.6	12,852	3.3	4,955	1.3	16,123	4.1	389,891
Region	1,437,105	71.1	318,275	15.8	21,592	1.1	63,002	3.1	91,163	4.5	200,219	9.9	2,019,970

Note: As part of the 2010 Federal census, individuals could be reported as being of more than one race. In addition, people of Hispanic ethnicity can be of any race or combination of races. The figures in this table indicate the number of people reported as being white alone and non-Hispanic (non-minority) and those of a given minority race or Hispanic ethnicity (as indicated by the column heading), including those who were reported as that race exclusively and those who were reported as that race and one or more other races. Accordingly, the population figures by race and Hispanic ethnicity sum to more than the total population for each county and the Region.

Source: U.S. Bureau of the Census and SEWRPC

Table N.2
Families with Incomes Below the Poverty Level in the Region by County: 2014-2018

County	Families with Incomes Below the Poverty Level		
	Total Families	Number	Percent of Families
Kenosha	41,876	4,027	9.6
Milwaukee	215,024	32,691	15.2
Ozaukee	25,144	866	3.4
Racine	52,243	4,559	8.7
Walworth	26,787	1,801	6.7
Washington	38,089	1,178	3.1
Waukesha	110,394	3,454	3.1
Region	509,557	48,576	9.5

Source: U.S. Bureau of the Census American Community Survey and SEWRPC

IDENTIFYING THE TRANSPORTATION NEEDS OF MINORITY POPULATIONS AND LOW-INCOME POPULATIONS

During the development of the original VISION 2050 plan, staff identified the needs of minority populations and low-income populations, in large part, based on obtaining comments as part of public outreach to minority populations and low-income populations. As part of the extensive public outreach during the initial VISION 2050 process, the Commission partnered with eight community organizations specifically targeted at reaching and engaging minority populations, low-income populations, and people with disabilities.[79] Each of these partner organizations hosted five of their own workshops, which corresponded to the five rounds of workshops open to the general public. The participants of the workshops sponsored by the partner organizations were specifically asked to identify their transportation needs. Input at these workshops, including the identification of transportation needs, was documented and considered in developing VISION 2050. Following the initial VISION 2050 process, the Commission continued to

[79] *The eight original partner organizations included: Common Ground, Ethnically Diverse Business Coalition, Hmong American Friendship Association, IndependenceFirst, the Milwaukee Urban League, Southside Organizing Center, Urban Economic Development Association of Wisconsin, and the Urban League of Racine and Kenosha.*

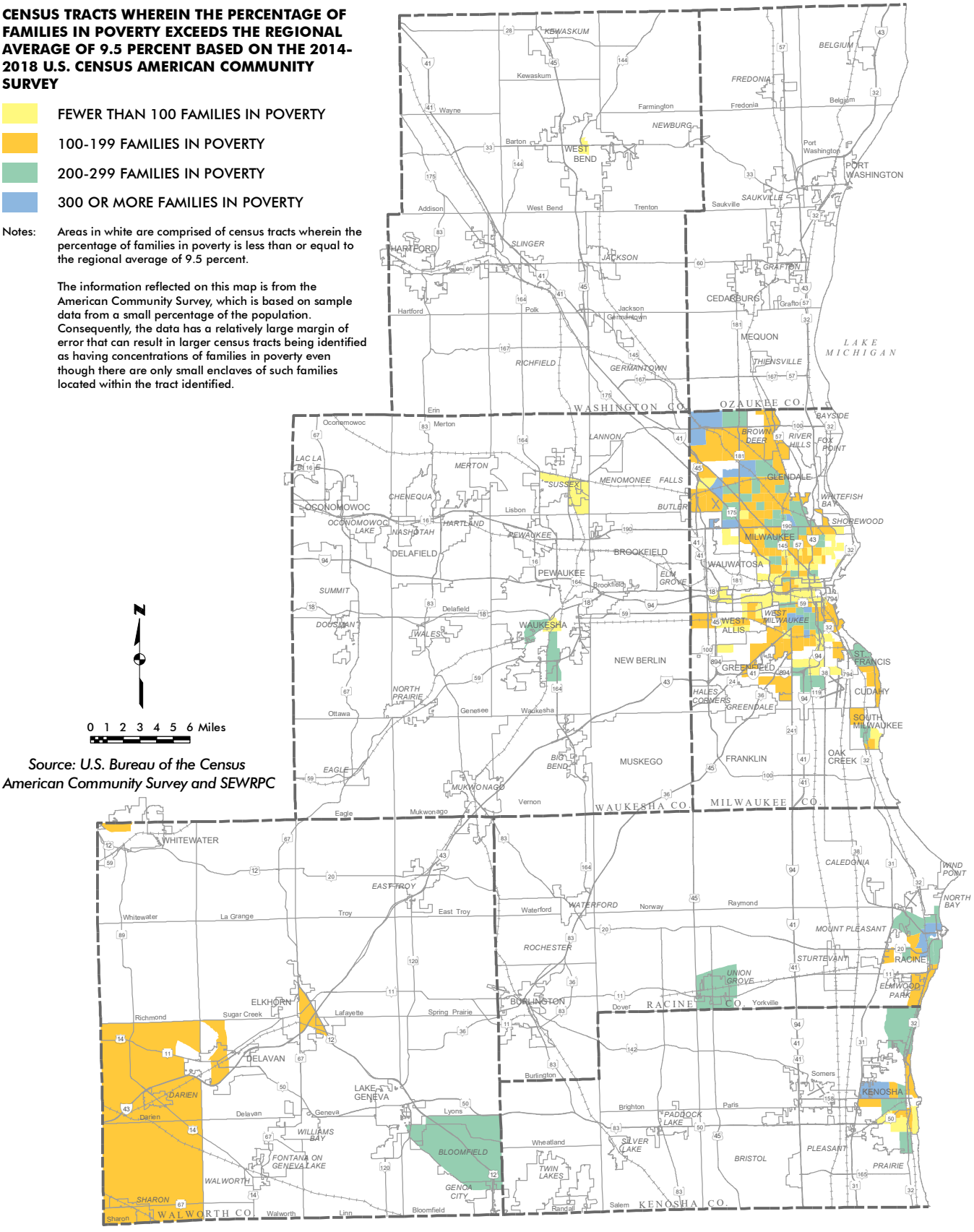
Map N.8
Concentrations of Families in Poverty in the Region: 2014-2018

CENSUS TRACTS WHEREIN THE PERCENTAGE OF FAMILIES IN POVERTY EXCEEDS THE REGIONAL AVERAGE OF 9.5 PERCENT BASED ON THE 2014-2018 U.S. CENSUS AMERICAN COMMUNITY SURVEY

- FEWER THAN 100 FAMILIES IN POVERTY
- 100-199 FAMILIES IN POVERTY
- 200-299 FAMILIES IN POVERTY
- 300 OR MORE FAMILIES IN POVERTY

Notes: Areas in white are comprised of census tracts wherein the percentage of families in poverty is less than or equal to the regional average of 9.5 percent.

The information reflected on this map is from the American Community Survey, which is based on sample data from a small percentage of the population. Consequently, the data has a relatively large margin of error that can result in larger census tracts being identified as having concentrations of families in poverty even though there are only small enclaves of such families located within the tract identified.



Source: U.S. Bureau of the Census American Community Survey and SEWRPC

Table N.3
Poverty Thresholds by Size of Family and Number of Children Under 18 Years of Age: 2018 Average

Size of Family Unit	Related Children Under 18 Years								
	None	One	Two	Three	Four	Five	Six	Seven	Eight or More
One Person (Unrelated Individual)									
Under 65 Years	$13,064	--	--	--	--	--	--	--	--
65 Years and Over	12,043	--	--	--	--	--	--	--	--
Two People									
Under 65 Years	16,815	$17,308	--	--	--	--	--	--	--
65 Years and Over	15,178	17,242	--	--	--	--	--	--	
Three People	19,642	20,212	$20,231	--	--	--	--	--	--
Four People	25,900	26,324	25,465	$25,554	--	--	--	--	--
Five People	31,234	31,689	30,718	29,967	$29,509	--	--	--	--
Six People	35,925	36,068	35,324	34,612	33,553	$32,925	--	--	--
Seven People	41,336	41,594	40,705	40,085	38,929	37,581	$36,102	--	--
Eight People	46,231	46,640	45,800	45,064	44,021	42,696	41,317	$40,967	--
Nine People or More	55,613	55,883	55,140	54,516	53,491	52,082	50,807	50,491	$48,546

Source: U.S. Bureau of the Census and SEWRPC

Table N.4
Distribution of Employed People by County of Residence, Race, and Mode of Travel to Work: 2014-2018

Race	Mode of Travel	County of Residence						
		Kenosha	Milwaukee	Ozaukee	Racine	Walworth	Washington	Waukesha
White Alone, Non-Hispanic	Drive Alone	85.8	80.4	85.6	86.4	82.4	86.7	87.5
	Carpool	7.3	6.8	5.3	6.4	7.2	6.1	5.4
	Bus	0.9	3.0	0.7	0.7	0.5	0.6	0.5
	Other	2.7	5.5	2.7	2.5	4.9	2.9	1.8
	Work at Home	3.3	4.3	5.7	4.0	5.0	3.7	4.8
	Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Black or African American Alone	Drive Alone	74.3	70.7	94.2	71.4	65.3	68.9	67.6
	Carpool	13.4	9.5	5.3	10.3	16.5	13.0	18.1
	Bus	3.6	12.5	0.5	8.6	2.2	0.0	3.3
	Other	7.2	3.8	0.0	6.4	16.0	15.1	3.2
	Work at Home	1.5	3.5	0.0	3.3	0.0	3.0	7.8
	Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Asian Alone	Drive Alone	84.2	72.9	78.7	82.9	56.3	75.7	77.6
	Carpool	14.4	13.2	11.0	5.5	35.5	19.8	16.0
	Bus	0.0	4.4	0.0	1.2	0.0	0.0	1.4
	Other	0.0	6.1	3.1	7.2	6.9	2.8	1.3
	Work at Home	1.4	3.4	7.2	3.2	1.3	1.7	3.7
	Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Other Race Alone or Two or More Races	Drive Alone	81.1	70.1	73.0	74.0	80.2	86.2	82.4
	Carpool	11.7	16.9	21.1	17.3	11.4	9.4	12.4
	Bus	1.8	5.8	0.0	1.1	0.0	0.5	0.8
	Other	2.1	5.0	2.3	6.3	7.3	1.5	2.2
	Work at Home	3.3	2.2	3.6	1.3	1.1	2.4	2.2
	Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Hispanic	Drive Alone	82.5	71.9	78.0	76.7	71.6	85.5	77.8
	Carpool	12.7	17.5	13.7	15.7	19.0	5.8	13.8
	Bus	0.7	4.7	0.0	1.8	0.7	0.0	1.5
	Other	3.0	4.0	7.3	3.6	5.2	6.2	4.2
	Work at Home	1.1	1.9	1.0	2.2	3.5	2.5	2.7
	Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: U.S. Bureau of the Census American Community Survey and SEWRPC

Table N.5
Comparison of the Percentages of Minority Populations and Minority Population Transit Ridership in Milwaukee, Ozaukee, Washington, and Waukesha Counties, and the Cities of Kenosha, Racine, and Waukesha

Location of Transit Operations	Year 2010 Percent Minority Population	Year 2011 Percent Minority Transit Ridership
Milwaukee County	46	60
Ozaukee County Commuter Service	7	14
Ozaukee County Shared Ride-Taxi Service	7	10
Washington County Commuter Service	6	7
Washington County Shared-Ride Taxi Service	6	2
Waukesha County	9	13
City of Kenosha	31	58
City of Racine	47	61
City of Waukesha	20	32

Source: U.S. Bureau of the Census and SEWRPC

engage these partner organizations, and added Renew Environmental Public Health Advocates as a ninth partner. During outreach for the 2020 Review and Update of VISION 2050, staff engaged its now nine community partners once again, including holding multiple meetings with the partners during both rounds of meetings for the general public.

The transportation needs identified by participants at the workshops held by the eight community organization partners during the initial VISION 2050 process included expanded and integrated public and private transportation modes; better connections by transit to jobs and other activity centers (including better links between urban and suburban areas); expanded bus routes and hours of service; more transit options and services for seniors and people with disabilities; an expanded transit system to include more streetcar, commuter, and rapid transit service; improved roadway maintenance; and better bicycle and pedestrian accommodations. Comments received were mixed with respect to capacity expansion of the arterial system, with most comments expressing opposition to widening existing arterials and adding new arterial facilities, but some comments expressing support for capacity expansion to improve access within or between communities. Comments received during the 2020 Review and Update of VISION 2050 generally affirmed the needs identified during the initial VISION 2050 process, in particular needs associated with improving public transit services. Notable additional needs identified during the 2020 Update included support for providing additional funding for public transit and the transportation system as a whole and for identifying ways to address reckless driving and excessive vehicular speeds on roadways.

ARTERIAL STREETS AND HIGHWAYS ELEMENT OF VISION 2050 AND THE FCTS

VISION 2050

The arterial street and highway capacity improvements under VISION 2050 are shown on Map N.9. These improvements were modestly updated as part of the 2020 Update to include removal of a planned new arterial[80] and to reflect implementation that had occurred following the original adoption

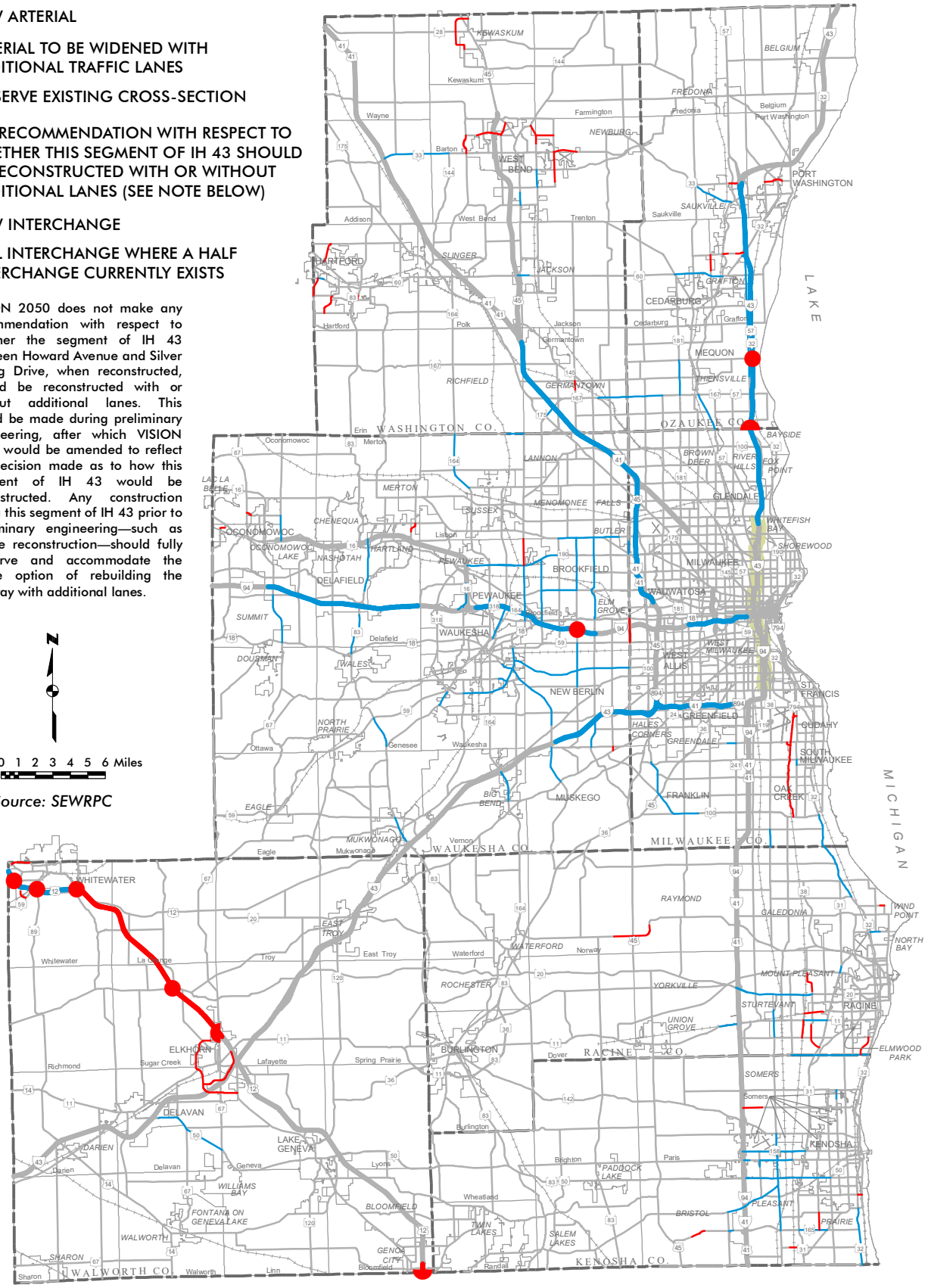
[80] *Based on a request by the Washington County Board of Supervisors to remove the planned northern reliever route from VISION 2050, the previously planned realignment of Arthur Road between a point west of Bramble Wood Drive and Kettle Moraine Road was removed as part of the 2020 Review and Update of VISION 2050.*

Map N.9
Arterial Street and Highway Element: VISION 2050

- NEW ARTERIAL
- ARTERIAL TO BE WIDENED WITH ADDITIONAL TRAFFIC LANES
- PRESERVE EXISTING CROSS-SECTION
- NO RECOMMENDATION WITH RESPECT TO WHETHER THIS SEGMENT OF IH 43 SHOULD BE RECONSTRUCTED WITH OR WITHOUT ADDITIONAL LANES (SEE NOTE BELOW)
- NEW INTERCHANGE
- FULL INTERCHANGE WHERE A HALF INTERCHANGE CURRENTLY EXISTS

Note: VISION 2050 does not make any recommendation with respect to whether the segment of IH 43 between Howard Avenue and Silver Spring Drive, when reconstructed, should be reconstructed with or without additional lanes. This would be made during preliminary engineering, after which VISION 2050 would be amended to reflect the decision made as to how this segment of IH 43 would be reconstructed. Any construction along this segment of IH 43 prior to preliminary engineering—such as bridge reconstruction—should fully preserve and accommodate the future option of rebuilding the freeway with additional lanes.

Source: SEWRPC



of VISION 2050. The planned arterial street and highway system under VISION 2050 totals 3,669 miles. Approximately 92 percent, or 3,371 of these miles, are recommended to be resurfaced and reconstructed to their existing traffic carrying capacity. Approximately 6 percent, or 233 of these miles, are recommended for capacity expansion through widening to provide additional through traffic lanes. Approximately 2 percent, or 65 miles, are recommended for capacity expansion through the construction of new arterial facilities. VISION 2050 recommends this planned capacity expansion to address the residual congestion that may not be alleviated recommended land use, public transit, bicycle and pedestrian, systems management, and demand management measures. In addition, many of the recommended new arterial facilities are recommended to provide a grid of arterial streets and highways at the appropriate spacing as the planned urban areas of the Region develop to the year 2050.

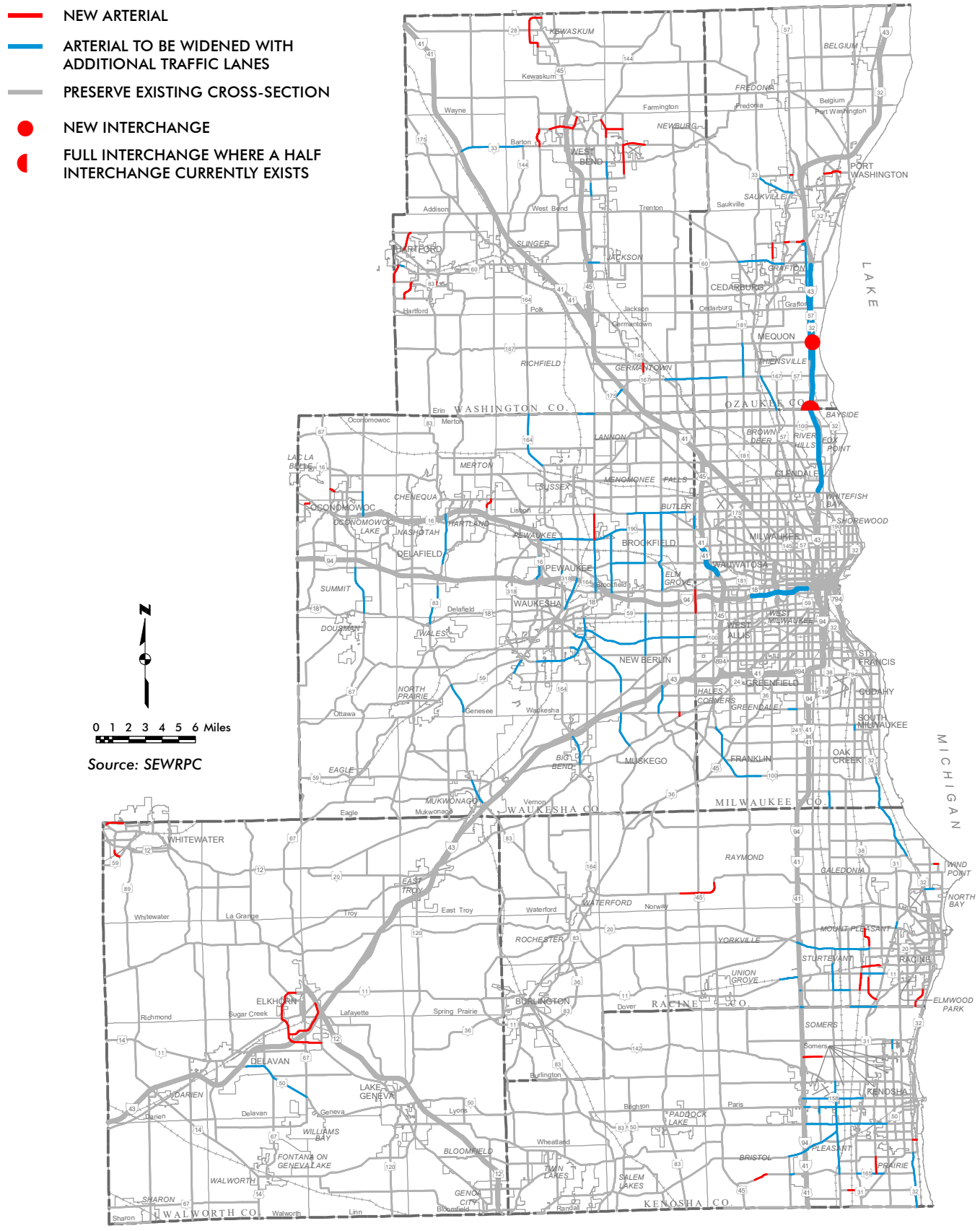
VISION 2050 does not make any recommendation with respect to whether the remaining 10.0 route-miles of IH 43 between Howard Avenue and Silver Spring Drive, when reconstructed, should be reconstructed with or without additional traffic lanes. The plan recommends that preliminary engineering conducted for the reconstruction of this segment of IH 43 should include the consideration of alternatives for rebuilding the freeway with additional lanes and rebuilding it with the existing number of lanes. The decision as to how this segment of IH 43 would be reconstructed would be made by the Wisconsin Department of Transportation (WisDOT) through preliminary engineering and environmental impact study. During preliminary engineering, WisDOT would consider and evaluate a number of alternatives, including rebuilding as is, various options for rebuilding to modern design standards, compromises to rebuilding to modern design standards, rebuilding with additional lanes, and rebuilding with the existing number of lanes. Only at the conclusion of preliminary engineering would a determination be made as to how this segment of IH 43 freeway would be reconstructed. Following the conclusion of the preliminary engineering for the reconstruction, VISION 2050 and the FCTS—should funding be available—would be amended to reflect the decision made as to how IH 43 between Howard Avenue and Silver Spring Drive would be reconstructed.

FCTS

The arterial street and highway capacity improvements under the FCTS are shown on Map N.10. The FCTS does not include reconstructing the remaining portions of the freeway system recommended in VISION 2050, with the exception of the reconstructions of IH 94 between 70th Street and 16th Street, the north leg of the Zoo Interchange, and IH 43 between Silver Spring Drive and STH 60. Thus, the FCTS does not include the reconstruction of IH 43 between Silver Spring Avenue and Howard Avenue, in addition to many other segments of the freeway system. In addition, the FCTS does not include the planned extension of the USH 12 freeway between the Cities of Elkhorn and Whitewater.

With respect to surface arterials under the FCTS, approximately half of the total miles of arterial roadways recommended for reconstruction in VISION 2050 would instead be rehabilitated—extending the overall life of the roadway, but likely resulting in a reduction in long-term pavement quality. The FCTS includes all of the surface arterial capacity expansion recommended in VISION 2050, with the exception of the planned extension of the Lake Parkway between Edgerton Avenue and STH 100 in Milwaukee County and the extension of Cold Springs Road between CTH O and IH 43 in Ozaukee County.

Map N.10
Fiscally Constrained Arterial Street and Highway System



Approximately 94 percent, or 3,426 of the total 3,650 miles, of the expected year 2050 arterial street and highway system would be resurfaced or reconstructed to their same capacity under the FCTS. Approximately 179 miles, or 5 percent of the total expected year 2050 arterial system, would be widened to provide additional through traffic lanes as part of their reconstruction. The remaining 46 miles, or about 1 percent of the total expected year 2050 arterial system, would be new arterial roadways.

Potential Funding Sources for VISION 2050
VISION 2050 identifies potential funding sources that, should they be utilized, could potentially permit the funding of all or portions of the VISION 2050 highway recommendations that were not included in the FCTS. These sources could include increasing the motor fuel tax, sales tax, or registration fees; establishing tolls on the freeway system; creating a highway use fee that charges a one-time sales tax on new vehicle purchases; and/or creating a mileage-based registration fee. Other potential funding could involve the State allocating more funding in the biennial budget for freeway reconstruction. Implementing these funding measures would require action by the State Legislature and Governor. In the case of tolling, its full implementation would require action by the U.S. Congress and President to be able to toll on the freeway system.

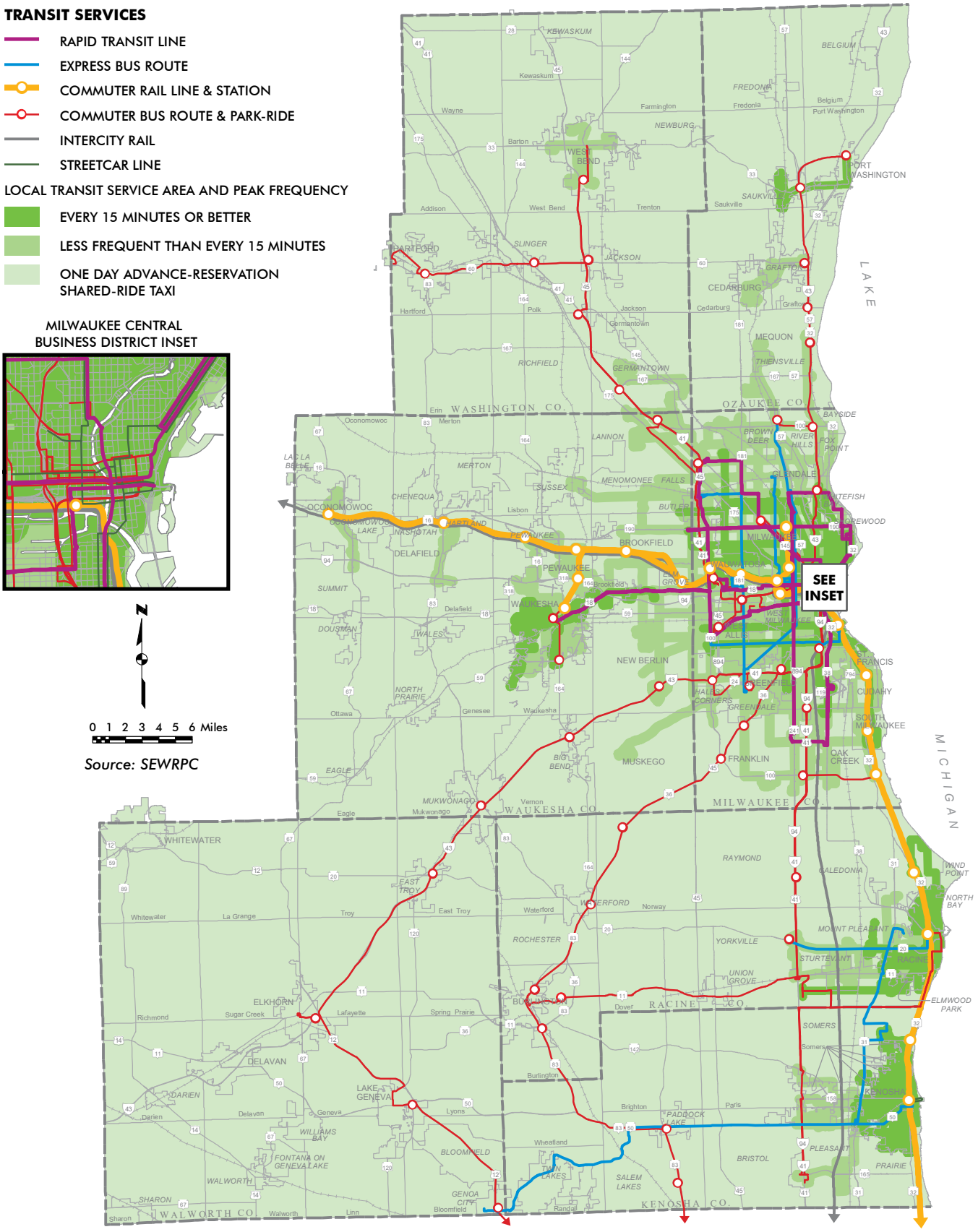
PUBLIC TRANSIT ELEMENT OF VISION 2050 AND THE FCTS

VISION 2050
The transit system under VISION 2050 is shown on Map N.11. The public transit element of VISION 2050 recommends a significant improvement and expansion of public transit in Southeastern Wisconsin, including eight rapid transit lines; four commuter rail lines; and significantly expanded local bus, express bus, commuter bus, and shared-ride taxi and other flexible transit services. Implementing these recommendations would be expected to more than double transit service from 4,870 revenue vehicle-hours of service on an average weekday in 2018 to 10,350 vehicle-hours of service in 2050.

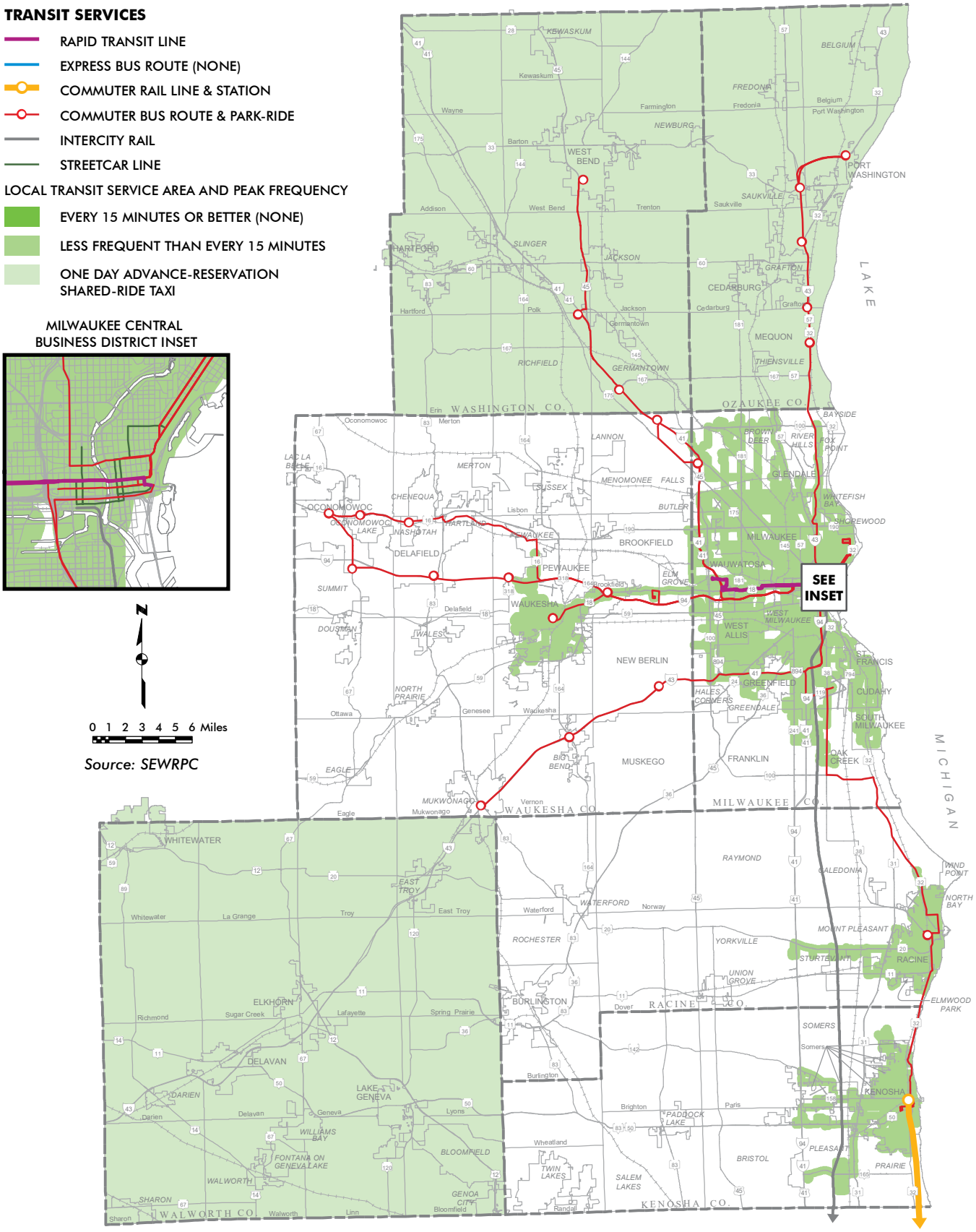
FCTS
Due to the expected funding gap between the costs of constructing and operating the transit system recommended under VISION 2050 and the existing and reasonably expected available revenues (including an increase in transit fares at the rate of inflation) to implement the plan, transit service under the FCTS would be expected to decline in the Region by about 35 percent, from 4,870 revenue vehicle-hours of service on an average weekday in 2018 to 3,190 vehicle-hours of service in 2050. The expected transit service decline would likely result in a smaller transit service area and a decline in the frequency of service. The only improvement or expansion in transit service under the FCTS is the East-West Bus Rapid Transit (BRT) project between downtown Milwaukee and the Regional Medical Center and the lakefront and 4th Street extensions of the Milwaukee Streetcar. The transit system expected under the FCTS is shown on Map N.12.

Potential Funding Sources for VISION 2050
VISION 2050 identifies potential funding sources, such as local dedicated transit funding and a renewal of adequate annual State financial assistance, needed to fully fund the plan. Implementing these funding measures would require action by the State Legislature and Governor. Additionally, transit operators could secure funding outside of traditional revenue streams for public transit, similar to the initial Milwaukee Streetcar lines. Should any

Map N.11
Public Transit Element: VISION 2050



Map N.12
Fiscally Constrained Transit Services



additional transit capital and operating funding become available, the FCTS would be amended to include the resulting increased level of transit service.

LEVEL OF ACCESSIBILITY TO JOBS AND ACTIVITY CENTERS FOR MINORITY POPULATIONS AND LOW-INCOME POPULATIONS BY MODE

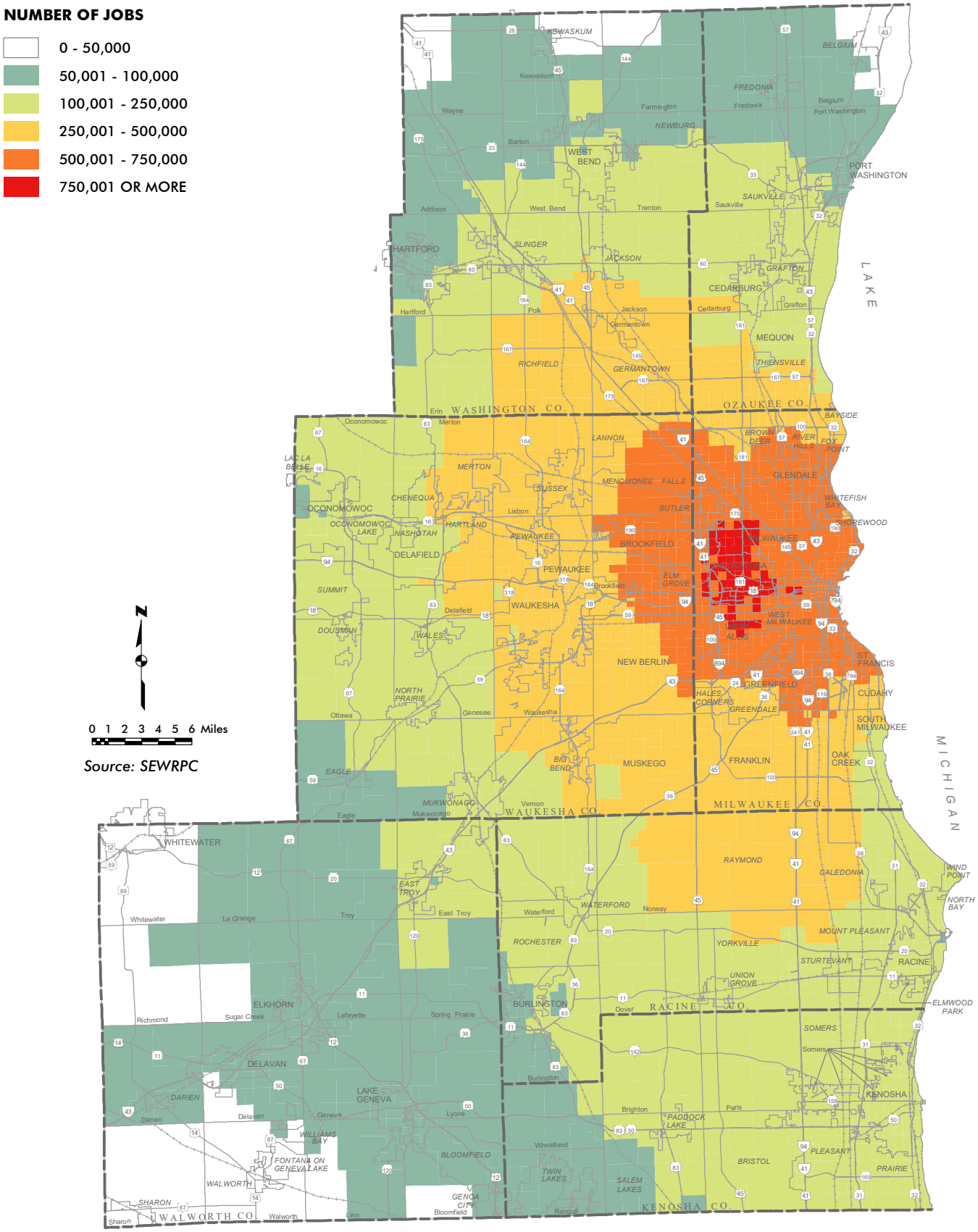
VISION 2050 and the FCTS were evaluated based on their ability for existing minority populations and low-income[81] populations to reach jobs and other activity centers, such as retail centers, major parks, public technical colleges/universities, health care facilities, grocery stores, the Milwaukee Regional Medical Center (MRMC), and Milwaukee Mitchell International Airport. In addition, this evaluation analyzes the ability of families with incomes less than twice the poverty level and people with disabilities to reach jobs and other destinations using transit. The following sections describe the results of these analyses to determine the accessibility by minority populations and low-income populations to jobs and other activities by automobile and transit under VISION 2050 and the FCTS.

- **Driving Accessibility to Jobs and Other Activities:** Automobile travel is the dominant mode of travel by both the Southeastern Wisconsin minority population (76 percent) and white population (86 percent). In Milwaukee County, minority populations use the automobile for 80 to 89 percent of their travel to and from work (depending on race or ethnicity), compared to 87 percent of the white population. Similarly, in Milwaukee County about 70 percent of travel by low-income populations to and from work is by automobile, compared to 89 percent for populations of higher income. More robust and detailed data available by county from the year 2014-2018 ACS indicate a similar pattern by race and ethnic group for work trips in Southeastern Wisconsin as for all travel. However, as these data only include travel to and from work, they exclude those without employment who are more likely to be among the poorest people in the Region. Data as robust as the 2014-2018 ACS data are not available for modes of travel for non-work trips within Southeastern Wisconsin by race and ethnicity. Given that automobile travel is the dominant mode, improvements in accessibility by automobile to jobs and other activities would likely benefit a significant proportion of minority populations and low-income populations. The Region would generally be able to modestly improve accessibility via automobile with implementation of the highway improvements—new roadways and highway widening—under both VISION 2050 and the FCTS. Should these improvements not be implemented, access to jobs and other activities via automobile would be expected to decline for the Region's residents, particularly residents in Milwaukee County, including for minority populations and low-income populations.

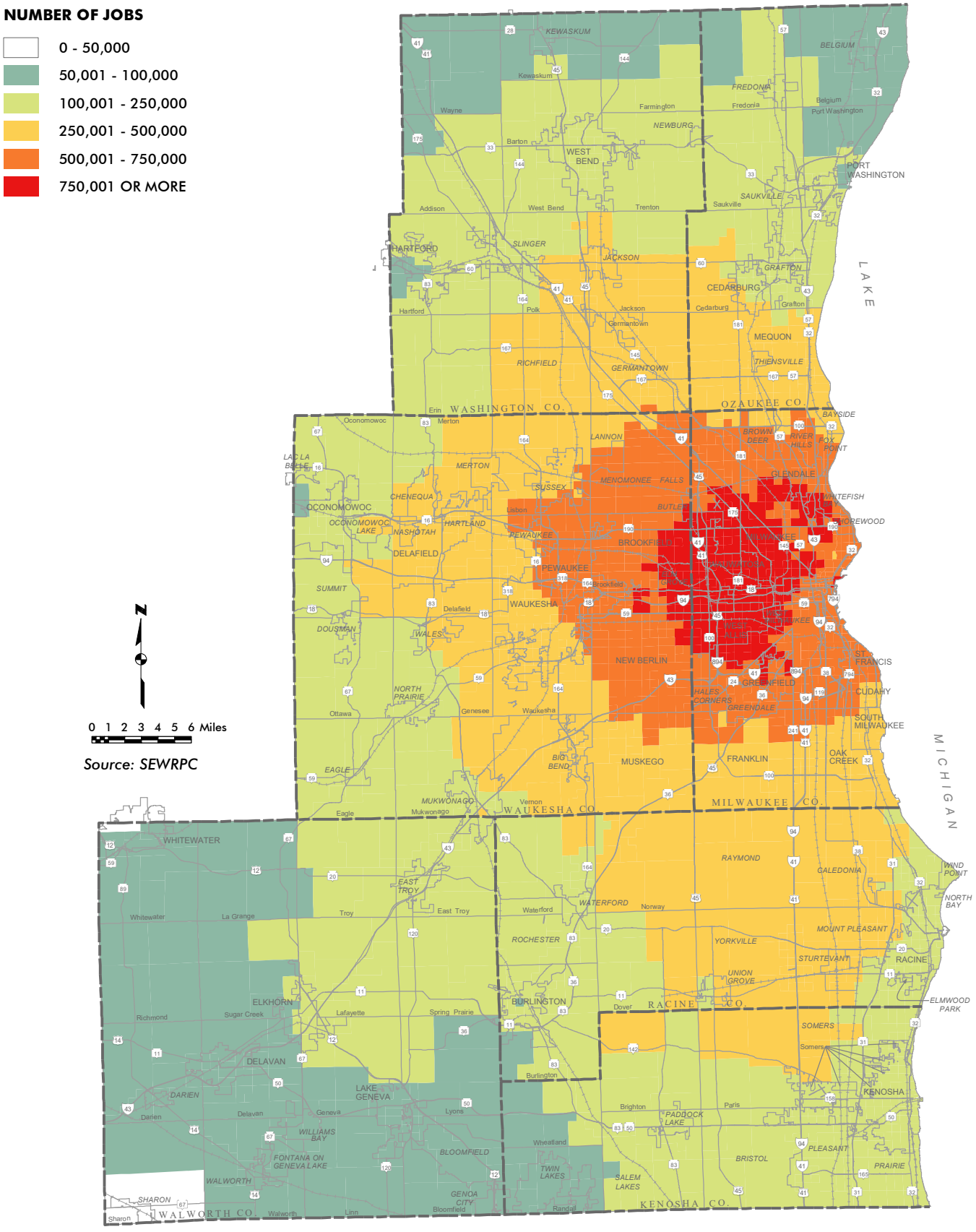
  The number of jobs accessible within 30 minutes by automobile under existing conditions, VISION 2050, and the FCTS are shown on Maps N.13 through N.15. These maps were compared to areas of existing concentrations of minority populations and low-income populations (as shown on Maps N.6 and N.8). The highway improvements under

[81] *For purposes of this evaluation, a low-income person is defined as a person residing in a household with an income level at or below the poverty level (about $25,701 for a family of four in 2010).*

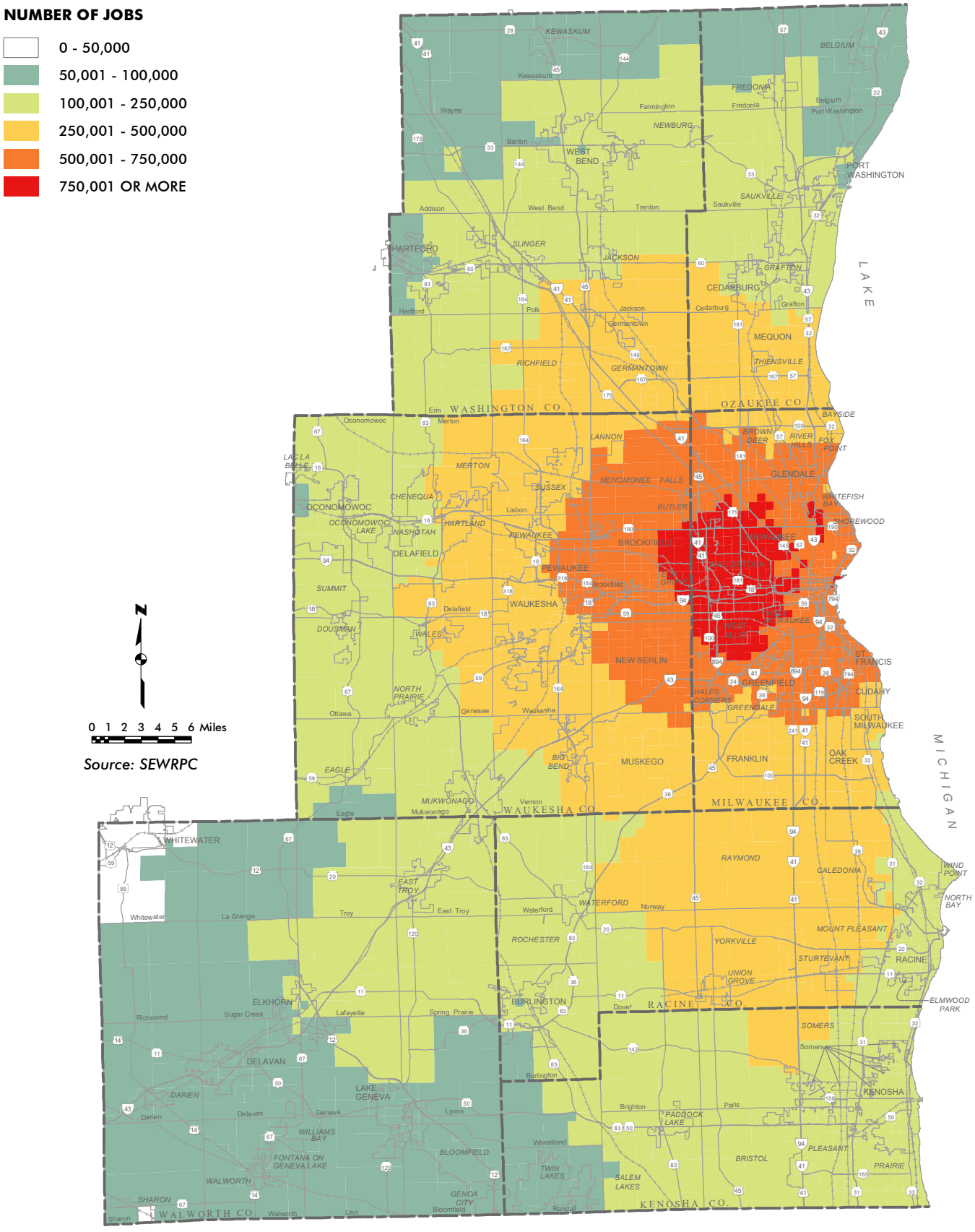
Map N.13
Jobs Accessible Within 30 Minutes by Automobile: Existing



Map N.14
Jobs Accessible Within 30 Minutes by Automobile: VISION 2050



Map N.15
Jobs Accessible Within 30 Minutes by Automobile: FCTS



VISION 2050 and the FCTS would modestly improve access to jobs by automobile for areas of concentrations of minority populations and low-income populations. As shown in Table N.6, it is projected that the existing minority population with access to at least 500,000 jobs by automobile would increase from about 70 percent to about 74 and 72 percent under VISION 2050 and the FCTS, respectively, with VISION 2050 providing access for slightly more minority people (429,800 people) than the FCTS (418,100 people). Similarly, the existing families in poverty with access to at least 500,000 jobs by automobile would increase from about 63 percent to about 66 and 65 percent under VISION 2050 and the FCTS, respectively, with VISION 2050 providing access for slightly more families in poverty (32,200 families) than the FCTS (31,500 families). Under both VISION 2050 and the FCTS, a larger proportion of the Region's minority population than the proportion of the Region's non-minority population would have access to 500,000 or more, 250,000 or more, and 100,000 or more jobs within 30 minutes by automobile. The same is true for families in poverty compared to families not in poverty.

The number of lower-wage jobs accessible within 30 minutes by automobile under existing conditions, VISION 2050, and the FCTS are shown on Maps N.16 through N.18. Lower-wage jobs are estimated to represent about 32 percent of total jobs. These maps were compared to areas of existing concentrations of minority populations and low-income populations (as shown on Maps N.6 and N.8). The highway improvements under VISION 2050 and the FCTS would improve access to jobs for areas of existing concentrations of minority populations and low-income populations. As shown in Table N.7, it is projected that the existing minority population with access to at least 200,000 lower-wage jobs by automobile would increase from about 70 percent to about 74 and 72 percent under VISION 2050 and the FCTS, respectively, with VISION 2050 providing access for slightly more minorities (430,200 people) than the FCTS (418,200 people). Similarly, the existing families in poverty with access to at least 200,000 lower-wage jobs by automobile would increase from about 63 percent to about 67 and 65 percent under VISION 2050 and the FCTS, respectively, with VISION 2050 providing access for slightly more families in poverty (32,300 families) than the FCTS (31,500 families). Under both VISION 2050 and the FCTS, a larger proportion of the Region's minority population than the proportion of the Region's non-minority population would have access to 200,000 or more, 100,000 or more, and 50,000 or more lower-wage jobs within 30 minutes by automobile. The same is true for families in poverty compared to families not in poverty.

As shown in Table N.8, nearly all (about 90 to 100 percent) of the existing minority population and families in poverty in the Region would have reasonable access by automobile to the activity centers under both VISION 2050 and the FCTS, with the FCTS providing slightly less access than VISION 2050.

- **Transit Accessibility to Jobs and Other Activities:** Although the automobile is the dominant mode of travel for the Region's minority population, the minority population utilizes public transit at a higher percentage relative to other modes of travel than the white population. Based on data from the 2017 National Household Travel Survey (NHTS), the Region's minority population utilizes public

Table N.6
Access to Jobs Within 30 Minutes by Automobile

Minority Population[a]

Plan	500,000 or More Jobs		250,000 or More Jobs		100,000 or More Jobs		Total Minority Population
	People	Percent	People	Percent	People	Percent	
Existing - 2010	407,700	69.9	467,500	80.2	562,900	96.6	582,900
VISION 2050	429,800	73.7	479,500	82.3	569,400	97.7	582,900
FCTS - 2050	418,100	71.7	475,700	81.6	568,300	97.5	582,900

Non-Minority Population[a]

Plan	500,000 or More Jobs		250,000 or More Jobs		100,000 or More Jobs		Total Non-Minority Population
	People	Percent	People	Percent	People	Percent	
Existing - 2010	454,700	31.6	824,700	57.4	1,266,900	88.1	1,437,500
VISION 2050	581,100	40.4	935,600	65.1	1,332,100	92.7	1,437,500
FCTS - 2050	529,500	36.8	897,200	62.4	1,319,200	91.8	1,437,500

Families in Poverty[a]

Plan	500,000 or More Jobs		250,000 or More Jobs		100,000 or More Jobs		Total Families in Poverty
	Families	Percent	Families	Percent	Families	Percent	
Existing - 2010	30,500	62.9	35,400	73.0	45,700	94.2	48,500
VISION 2050	32,200	66.4	37,100	76.5	46,600	96.1	48,500
FCTS - 2050	31,500	64.9	36,600	75.5	46,400	95.7	48,500

Families Not in Poverty[a]

Plan	500,000 or More Jobs		250,000 or More Jobs		100,000 or More Jobs		Total Families Not in Poverty
	Families	Percent	Families	Percent	Families	Percent	
Existing - 2010	164,800	35.8	277,400	60.2	411,800	89.4	460,600
VISION 2050	202,800	44.0	310,500	67.4	431,000	93.6	460,600
FCTS - 2050	186,800	40.6	299,000	64.9	427,400	92.8	460,600

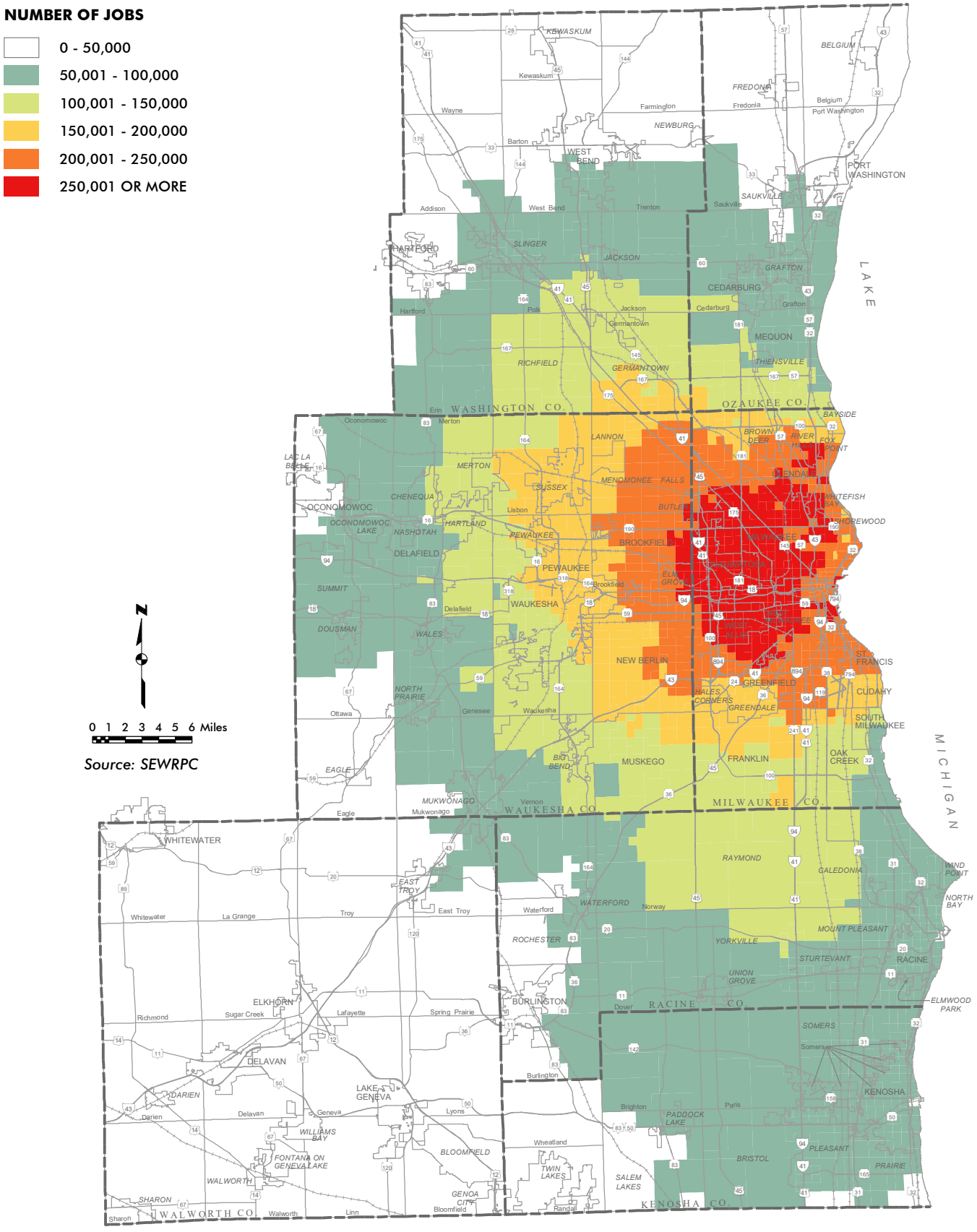
[a] *Minority and non-minority population are based on the 2010 U.S. Census and families in poverty and families not in poverty are based on the 2014-2018 American Community Survey.*

Source: U.S. Bureau of the Census, U.S. Census and American Community Survey; and SEWRPC

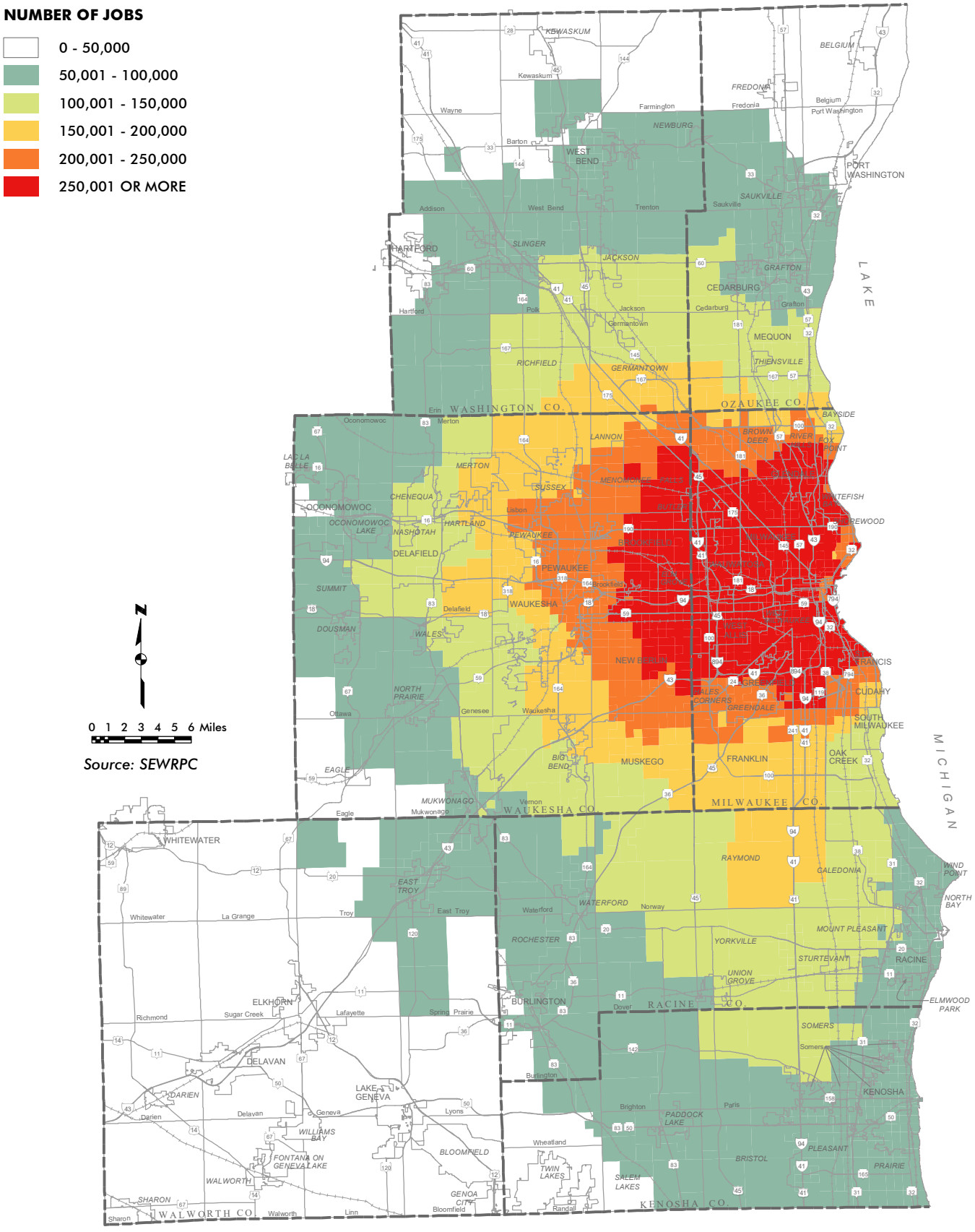
transit for more of its travel (6 percent) than the white population (less than 1 percent). In addition, based on the transit travel survey conducted as part of the Commission's 2011 travel survey for Southeastern Wisconsin, the minority population represents a greater proportion of total transit ridership than it does of total population. More robust and detailed data available by county from the year 2014-2018 ACS indicate a similar pattern by race and ethnic group for work trips in Southeastern Wisconsin as for all travel, as shown in Table N.5. As these data only include travel to and from work, they exclude those without employment who are more likely to be among the poorest people in the Region. Nonetheless, the data indicate that, in Milwaukee County, between 4 and 13 percent of the minority population uses public transit to travel to and from work, with the highest proportion (13 percent) by the African-American population. Only about 3 percent of the white population uses public transit for travel to and from work. Similarly, about 13 percent of the low-income population (residing in a family with an income below the poverty level) uses public transit to travel to and from work, compared to 5 percent of the population with higher wages.

As shown in Tables N.9 through N.11, low-income households and a number of minority populations are particularly dependent upon

Map N.16
Lower-Wage Jobs Accessible Within 30 Minutes by Automobile: Existing



Map N.17
Lower-Wage Jobs Accessible Within 30 Minutes by Automobile: VISION 2050



Map N.18
Lower-Wage Jobs Accessible Within 30 Minutes by Automobile: FCTS

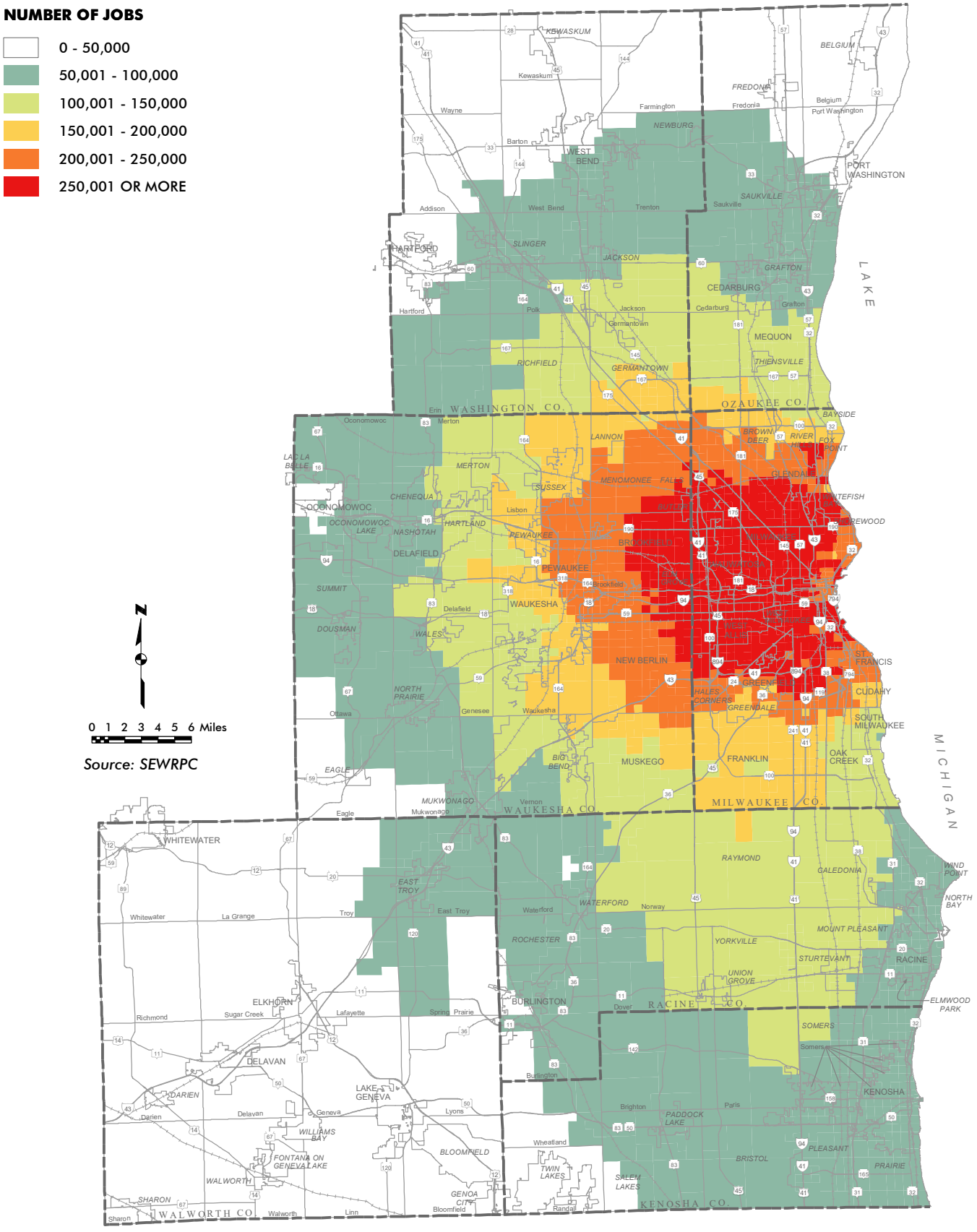


Table N.7
Access to Lower-Wage Jobs Within 30 Minutes by Automobile

Minority Population[a]

Plan	200,000 or More Jobs		100,000 or More Jobs		50,000 or More Jobs		Total Minority Population
	People	Percent	People	Percent	People	Percent	
Existing - 2010	407,400	69.9	468,700	80.4	558,300	95.8	582,900
VISION 2050	430,200	73.8	478,300	82.1	564,600	96.9	582,900
FCTS - 2050	418,200	71.7	475,900	81.6	563,400	96.7	582,900

Non-Minority Population[a]

Plan	200,000 or More Jobs		100,000 or More Jobs		50,000 or More Jobs		Total Non-Minority Population
	People	Percent	People	Percent	People	Percent	
Existing - 2010	455,600	31.7	833,800	58.0	1,207,200	84.0	1,437,500
VISION 2050	585,100	40.7	928,200	64.6	1,286,500	89.5	1,437,500
FCTS - 2050	534,400	37.2	899,400	62.6	1,266,300	88.1	1,437,500

Families in Poverty[a]

Plan	200,000 or More Jobs		100,000 or More Jobs		50,000 or More Jobs		Total Families in Poverty
	Families	Percent	Families	Percent	Families	Percent	
Existing - 2010	30,500	62.9	35,600	73.4	45,000	92.8	48,500
VISION 2050	32,300	66.6	36,900	76.1	46,000	94.8	48,500
FCTS - 2050	31,500	64.9	36,700	75.7	45,700	94.2	48,500

Families Not in Poverty[a]

Plan	200,000 or More Jobs		100,000 or More Jobs		50,000 or More Jobs		Total Families Not in Poverty
	Families	Percent	Families	Percent	Families	Percent	
Existing - 2010	165,800	36.0	280,100	60.8	395,000	85.8	460,600
VISION 2050	204,000	44.3	308,200	66.9	417,600	90.7	460,600
FCTS - 2050	188,100	40.8	299,500	65.0	412,000	89.4	460,600

[a] *Minority and non-minority population are based on the 2010 U.S. Census and families in poverty and families not in poverty are based on the 2014-2018 American Community Survey.*

Source: U.S. Bureau of the Census, U.S. Census and American Community Survey; and SEWRPC

transit, as a significant proportion of these populations have no private vehicle available for travel. For example, in Milwaukee County, about 74 percent of Black/African-American households indicated they had an automobile available for travel, compared to about 92 percent of non-minority households. Similarly, only about 65 percent of Milwaukee County families in poverty indicated they had an automobile available for travel, compared to 91 percent of families not in poverty. Historical driver's license data indicate a similar conclusion. In 2005, a study found that only about 60 percent of Black/African American adults and 50 percent of Hispanic adults had a driver's license, compared to about 80 percent of non-minority adults. Another transit-dependent population group is people with disabilities, with about 10 percent of this population group in Milwaukee County utilizing transit for travel to and from work. It should be noted that data regarding travel to work exclude those without employment.

Maps N.19 through N.21 show those areas of the Region with the highest job densities that would be directly served by transit under existing conditions, VISION 2050, and the FCTS. As shown on these maps, the transit service areas under VISION 2050 and the FCTS would principally serve the areas of the Region with the highest density of jobs. However, the expected decrease in transit service hours and

Table N.8
Reasonable Access to Activity Centers by Automobile[a]

Minority Population[b]

Activity Center	Existing (2010)		VISION 2050		FCTS (2050)		Total Minority Population
	People	Percent	People	Percent	People	Percent	
Retail Centers	565,400	97.0	564,500	96.8	563,900	96.7	582,900
Major Parks	582,900	100.0	582,900	100.0	582,900	100.0	582,900
Public Technical Colleges and Universities	582,800	100.0	582,700	100.0	582,700	100.0	582,900
Health Care Facilities	581,800	99.8	582,900	100.0	581,400	99.7	582,900
Grocery Stores	582,900	100.0	582,900	100.0	582,900	100.0	582,900
Milwaukee Mitchell International Airport	571,500	98.0	571,100	98.0	568,200	97.5	582,900
Milwaukee Regional Medical Center	531,000	91.1	542,300	93.0	519,900	89.2	582,900

Families in Poverty[b]

Activity Center	Existing (2010)		VISION 2050		FCTS (2050)		Total Families in Poverty
	Families	Percent	Families	Percent	People	Percent	
Retail Centers	46,000	94.8	45,900	94.6	45,700	94.2	48,500
Major Parks	48,500	100.0	48,500	100.0	48,500	100.0	48,500
Public Technical Colleges and Universities	48,500	100.0	48,500	100.0	48,400	99.8	48,500
Health Care Facilities	48,300	99.6	48,500	100.0	48,200	99.4	48,500
Grocery Stores	48,500	100.0	48,500	100.0	48,500	100.0	48,500
Milwaukee Mitchell International Airport	46,600	96.1	46,700	96.3	46,200	95.3	48,500
Milwaukee Regional Medical Center	42,900	88.5	43,800	90.3	42,000	86.6	48,500

[a] *Reasonable access is defined as the ability to travel by automobile within 60 minutes to Milwaukee Mitchell International Airport and the Milwaukee Regional Medical Center and within 30 minutes to all the other activity centers.*

[b] *Minority population is based on the 2010 U.S. Census and families in poverty are based on the 2014-2018 American Community Survey.*

Source: U.S. Bureau of the Census, U.S. Census and American Community Survey; and SEWRPC

shift times covered under the FCTS would result in access to fewer jobs than the existing transit system, and far fewer jobs than VISION 2050. Specifically, implementing VISION 2050 would significantly increase the number of jobs within the transit service area, from 704,900 jobs under current conditions to 1,025,800 jobs in 2050. Under the FCTS, the number of jobs within the transit service area would increase to 735,900 in 2050. The increase in the number of jobs within the transit service area under both VISION 2050 and the FCTS is in part due to the increase in jobs in the Region projected under the land use component of VISION 2050. However, as stated previously, likely decreases in the hours of the day that transit service would be available in some areas under the FCTS means that fewer jobs are likely to be accessible than under the existing system.

Maps N.22 through N.24 show the number of jobs that could be accessible within 30 minutes by transit under existing conditions, VISION 2050, and the FCTS. Comparing these maps to areas of existing concentrations of minority populations (Map N.6), lower-income populations (Map N.8 for families in poverty and Map N.25 for families with incomes less than twice the poverty level), and people with disabilities (Map N.26) indicates that access to jobs for these populations would improve significantly due to the improvement and expansion of transit service under VISION 2050. As shown in Table N.12, VISION 2050's recommended transit improvement and expansion would provide access to at least 100,000 jobs within 30 minutes by transit to a significantly higher proportion of the existing minority population (18.6 percent), families in poverty (16.3 percent), families with incomes less than twice the poverty level (14.1 percent),

Table N.9
Households by Number of Vehicles Available and Race/Ethnicity of Householder: 2014-2018

Kenosha County

Race/Ethnicity	Households		Race/Ethnicity Group Household Vehicle Availability		
			One or More Vehicles Available	No Vehicle Available	
	Total	Percent		Households	Percent
White (Non-Hispanic)	51,150	79.3	48,574	2,576	5.0
Black/African American	3,955	6.1	3,270	685	17.3
American Indian and Alaskan Native	1,416	2.2	531	885	62.5
Asian and Pacific Islander	913	1.4	913	--	0.0
Other Minority	870	1.4	870	--	0.0
Hispanic	6,195	9.6	6,195	--	0.0
County Total	62,950	100.0	58,804	4,146	6.6

Milwaukee County

Race/Ethnicity	Households		Race/Ethnicity Group Household Vehicle Availability		
			One or More Vehicles Available	No Vehicle Available	
	Total	Percent		Households	Percent
White (Non-Hispanic)	229,536	55.4	210,389	19,147	8.3
Black/African American	101,768	24.6	75,832	25,936	25.5
American Indian and Alaskan Native	3,897	0.9	3,373	524	13.4
Asian and Pacific Islander	13,838	3.3	12,773	1,065	7.7
Other Minority	21,651	5.2	19,246	2,405	11.1
Hispanic	43,993	10.6	39,534	4,459	10.1
County Total	384,280	100.0	334,200	50,080	13.0

Ozaukee and Washington Counties

Race/Ethnicity	Households		Race/Ethnicity Group Household Vehicle Availability		
			One or More Vehicles Available	No Vehicle Available	
	Total	Percent		Households	Percent
White (Non-Hispanic)	86,832	94.1	84,516	2,316	2.7
Black/African American	1,593	1.7	1,593	18	0.0
American Indian and Alaskan Native	146	0.2	146	--	0.0
Asian and Pacific Islander	1,259	1.4	1,229	30	2.4
Other Minority	309	0.3	309	--	0.0
Hispanic	2,120	2.3	2,120	--	0.0
County Total	91,750	100.0	89,404	2,346	2.6

Racine County

Race/Ethnicity	Households		Race/Ethnicity Group Household Vehicle Availability		
			One or More Vehicles Available	No Vehicle Available	
	Total	Percent		Households	Percent
White (Non-Hispanic)	60,627	77.8	57,776	2,851	4.7
Black/African American	9,153	11.7	6,608	2,545	27.8
American Indian and Alaskan Native	349	0.4	349	--	0.0
Asian and Pacific Islander	1,373	1.8	1,373	--	0.0
Other Minority	230	0.3	99	131	57.0
Hispanic	6,215	8.0	6,215	--	0.0
County Total	76,808	100.0	71,412	5,396	7.0

Walworth County

Race/Ethnicity	Households		Race/Ethnicity Group Household Vehicle Availability		
			One or More Vehicles Available	No Vehicle Available	
	Total	Percent		Households	Percent
White (Non-Hispanic)	37,976	90.2	36,311	1,665	4.4
Black/African American	218	0.5	218	--	0.0
American Indian and Alaskan Native	332	0.8	332	--	0.0
Asian and Pacific Islander	730	1.7	730	--	0.0
Other Minority	574	1.4	574	--	0.0
Hispanic	2,270	5.4	2,270	--	0.0
County Total	40,865	100.0	39,200	1,665	4.1

Table continued on next page.

Table N.9 (Continued)

Waukesha County

Race/Ethnicity	Households		Race/Ethnicity Group Household Vehicle Availability		
			One or More Vehicles Available	No Vehicle Available	
	Total	Percent		Households	Percent
White (Non-Hispanic)	144,633	90.2	138,847	5,786	4.0
Black/African American	4,033	2.5	4,033	--	0.0
American Indian and Alaskan Native	570	0.4	570	--	0.0
Asian and Pacific Islander	4,665	2.9	4,541	124	2.7
Other Minority	347	0.2	347	--	0.0
Hispanic	6,167	3.8	6,167	--	0.0
County Total	158,369	100.0	152,459	5,910	3.7

Region

Race/Ethnicity	Households		Race/Ethnicity Group Household Vehicle Availability		
			One or More Vehicles Available	No Vehicle Available	
	Total	Percent		Households	Percent
White (Non-Hispanic)	610,754	71.7	576,413	34,341	5.6
Black/African American	120,720	14.2	91,554	29,166	24.2
American Indian and Alaskan Native	6,710	0.8	5,301	1,409	21.0
Asian and Pacific Islander	22,778	2.7	21,559	1,219	5.4
Other Minority	23,981	2.8	21,445	2,536	10.6
Hispanic	66,960	7.8	62,501	4,459	6.7
Region Total	815,022	100.0	745,479	69,543	8.5

Source: U.S. Bureau of the Census American Community Survey Public Use Microdata Sample and SEWRPC

and people with disabilities (14.6 percent). Regarding the FCTS, the expected decrease in transit service hours would slightly reduce the percent of the minority population, families in poverty, and families with incomes less than twice the poverty level that have potential access to 100,000 or more jobs within 30 minutes by transit. For people with disabilities, the FCTS would provide a slight increase to the percent of those that have potential access to 100,000 or more jobs.

As shown in Table N.13, the existing percent of the minority population with potential access to at least 100,000 jobs by transit would be about 15 percentage points more under VISION 2050, compared to about 12 percentage points more for the non-minority population. The existing families in poverty with potential access to at least 100,000 jobs by transit would be about 13 percentage points more and families with incomes less than twice the poverty level would be about 12 percentage points more, compared to about 11 percentage points more for families not in poverty and incomes higher than twice the poverty level. With respect to people with disabilities, potential access to 100,000 jobs would be about 12 percentage points more compared to about 13 percentage points more for people without disabilities.

Additionally, the existing percentage of the minority population with potential access to at least 10,000 jobs by transit would be about 35 percentage points more under VISION 2050, compared to about 42 percentage points more for the non-minority population. The existing families in poverty with potential access to at least 10,000 jobs by transit would be about 37 percentage points more and families with incomes less than twice the poverty level would be about 39 percentage points more, compared to about 42 percentage points more for both families not in poverty and for families with incomes higher than twice the poverty level. With respect to people with disabilities, potential access to 10,000 jobs by transit would be about

Table N.10
Households by Number of Vehicles Available and Minority Householders: 2014-2018

County	Minority Household Vehicle Availability			Non-Minority Household Vehicle Availability		
	One or More Vehicles Available	No Vehicle Available		One or More Vehicles Available	No Vehicle Available	
		Households	Percent		Households	Percent
Kenosha County	11,779	1,570	11.8	48,574	2,576	5.0
Milwaukee County	150,758	34,389	18.6	210,389	19,147	8.3
Ozaukee and Washington Counties	5,397	30	0.6	84,516	2,316	2.7
Racine County	14,644	2,676	15.5	57,776	2,851	4.7
Walworth County	4,124	--	0.0	36,311	1,665	4.4
Waukesha County	15,658	124	0.8	138,847	5,786	4.0
Region	202,360	38,789	16.1	576,413	34,341	5.6

Source: U.S. Bureau of the Census American Community Survey Public Use Microdata Sample and SEWRPC

Table N.11
Households by Number of Vehicles Available for Families in Poverty: 2012-2016

County	Vehicle Availability for Families in Poverty			Vehicle Availability for Families Not in Poverty		
	One or More Vehicles Available	No Vehicle Available		One or More Vehicles Available	No Vehicle Available	
		Families	Percent		Families	Percent
Kenosha County	6,530	1,965	23.1	52,070	2,430	4.5
Milwaukee County	47,935	26,035	35.2	280,430	28,380	9.2
Ozaukee County	1,770	320	15.3	31,565	1,110	3.4
Racine County	6,520	2,505	27.8	63,280	2,985	4.5
Walworth County	4,480	865	16.2	33,350	1,270	3.7
Washington County	2,635	590	18.3	48,395	1,565	3.1
Waukesha County	7,115	1,425	16.7	142,350	4,885	3.3
Region	76,985	33,705	30.4	651,440	42,625	6.1

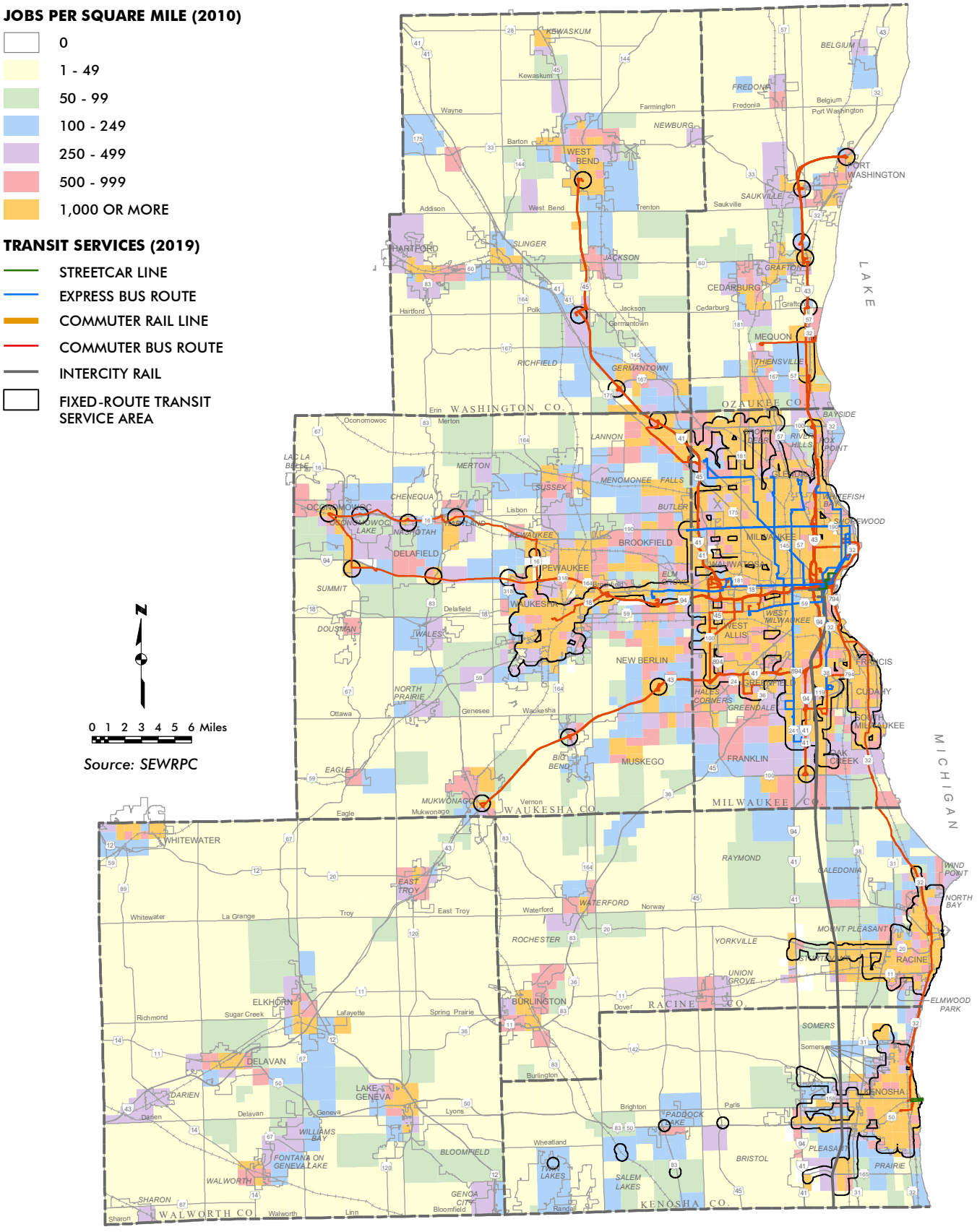
Source: U.S. Census Transportation Planning Products and SEWRPC

41 percentage points more for people with disabilities compared to about 40 percentage points more for people without disabilities.

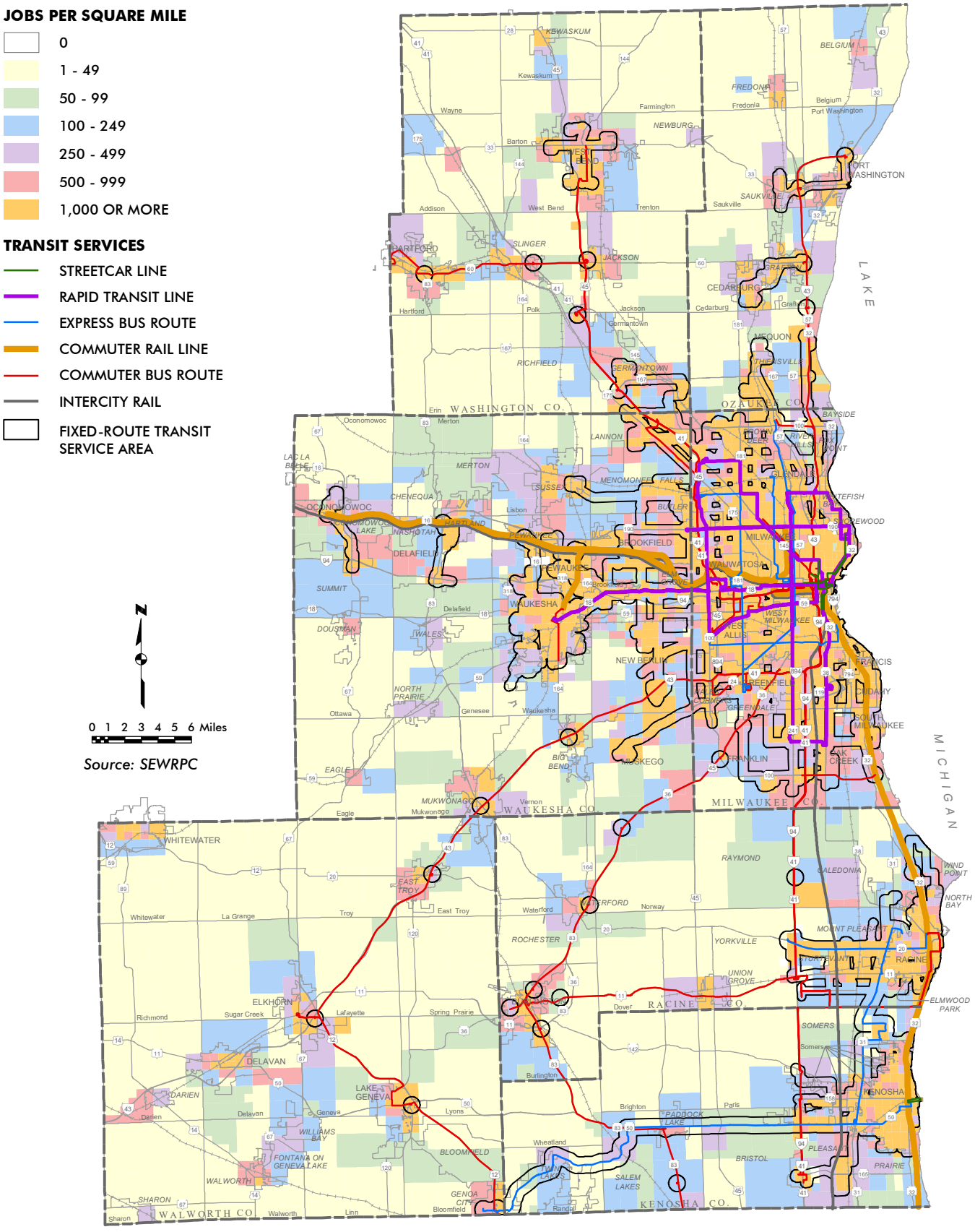
As shown in Table N.13, the existing percent of all populations with potential access to at least 100,000 jobs by transit would remain essentially the same under the FCTS.

For all populations, the existing percentage of people with potential access to at least 10,000 jobs by transit would decrease significantly under the FCTS, as shown in Table N.13. The existing percentage of the minority population with access to at least 10,000 jobs by transit is expected to be about 23 percentage points less under the FCTS, compared to about 8 percentage points less for the non-minority population. The existing percent of families in poverty and families with incomes less than twice the poverty level with potential access to at least 10,000 jobs by transit would be about 20 and 19 percentage points less under the FCTS, respectively, compared to about 11 and 9 percentage points less for families not in poverty and with incomes higher than twice the poverty level. With respect to people with disabilities, the existing percent of people with disabilities with potential access to at least 10,000 jobs by transit would be about 14 percentage points less under the FCTS, compared to about 12 percentage points less for people without disabilities.

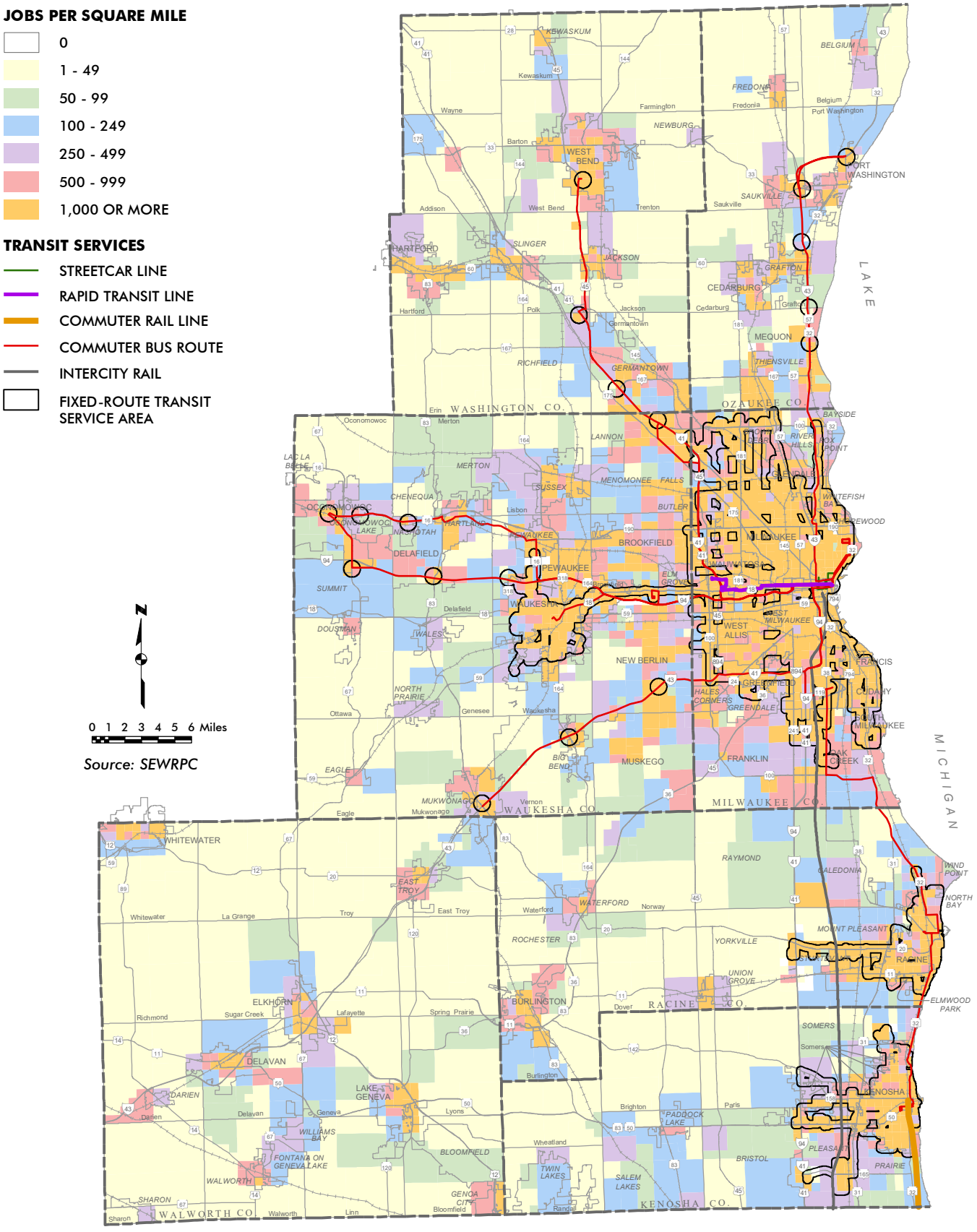
Map N.19
Comparison of Public Transit Services to Job Density: Existing



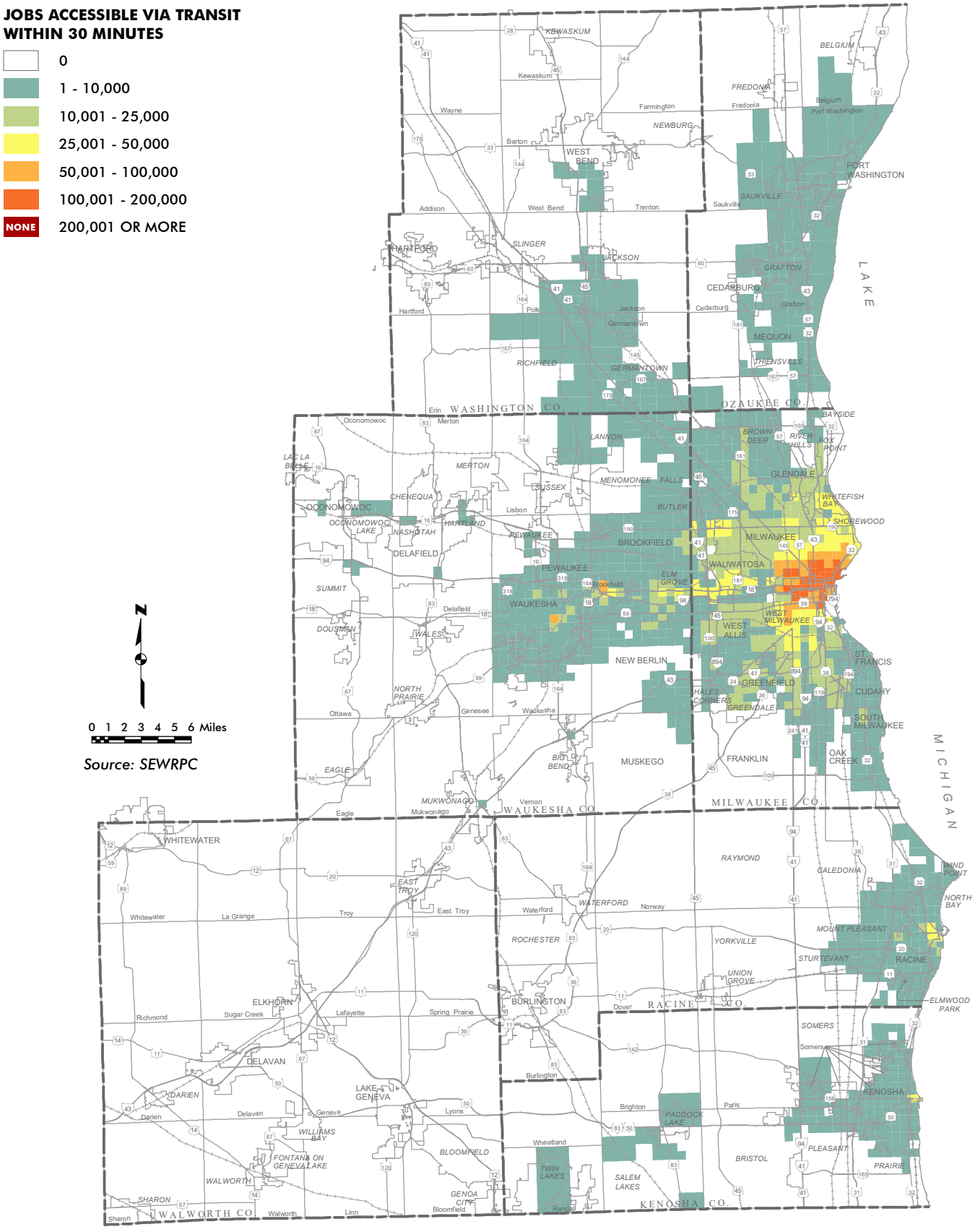
Map N.20
Comparison of Public Transit Services to Job Density: VISION 2050



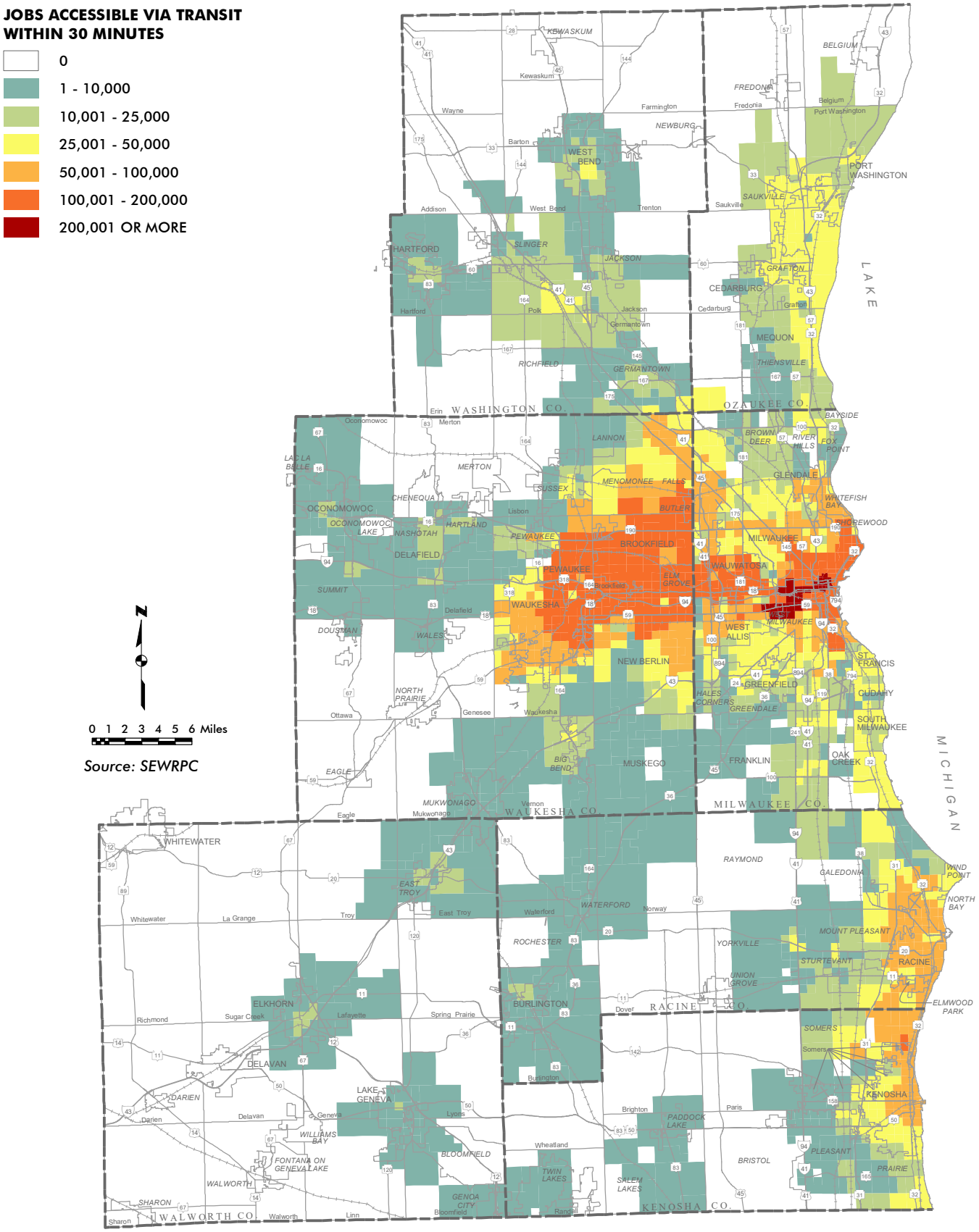
Map N.21
Comparison of Public Transit Services to Job Density: FCTS



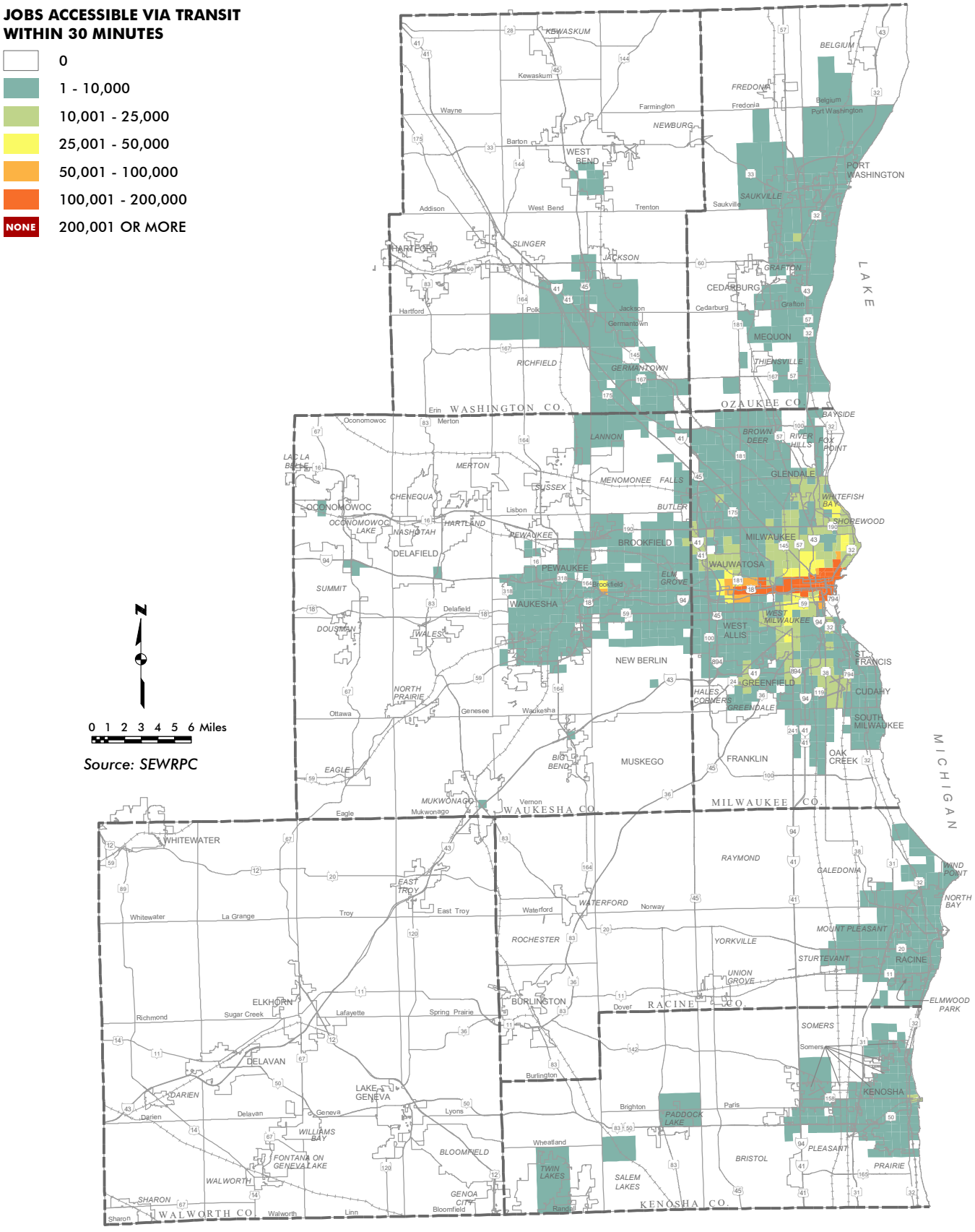
Map N.22
Jobs Accessible Within 30 Minutes by Transit: Existing



Map N.23
Jobs Accessible Within 30 Minutes by Transit: VISION 2050



Map N.24
Jobs Accessible Within 30 Minutes by Transit: FCTS



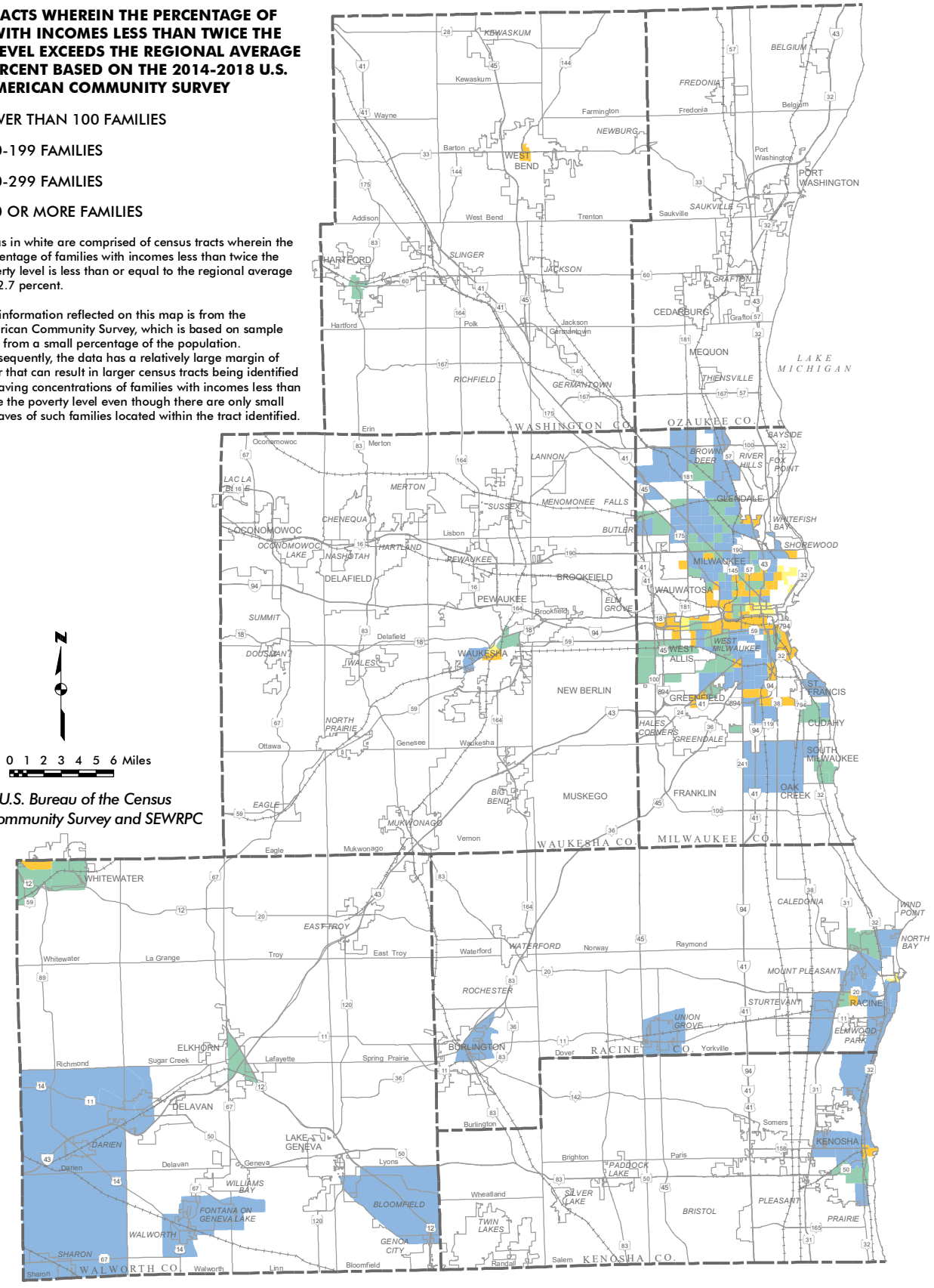
Map N.25
Concentrations of Families with Incomes Less Than Twice the Poverty Level: 2014-2018

CENSUS TRACTS WHEREIN THE PERCENTAGE OF FAMILIES WITH INCOMES LESS THAN TWICE THE POVERTY LEVEL EXCEEDS THE REGIONAL AVERAGE OF 22.7 PERCENT BASED ON THE 2014-2018 U.S. CENSUS AMERICAN COMMUNITY SURVEY

- FEWER THAN 100 FAMILIES
- 100-199 FAMILIES
- 200-299 FAMILIES
- 300 OR MORE FAMILIES

Notes: Areas in white are comprised of census tracts wherein the percentage of families with incomes less than twice the poverty level is less than or equal to the regional average of 22.7 percent.

The information reflected on this map is from the American Community Survey, which is based on sample data from a small percentage of the population. Consequently, the data has a relatively large margin of error that can result in larger census tracts being identified as having concentrations of families with incomes less than twice the poverty level even though there are only small enclaves of such families located within the tract identified.



Source: U.S. Bureau of the Census American Community Survey and SEWRPC

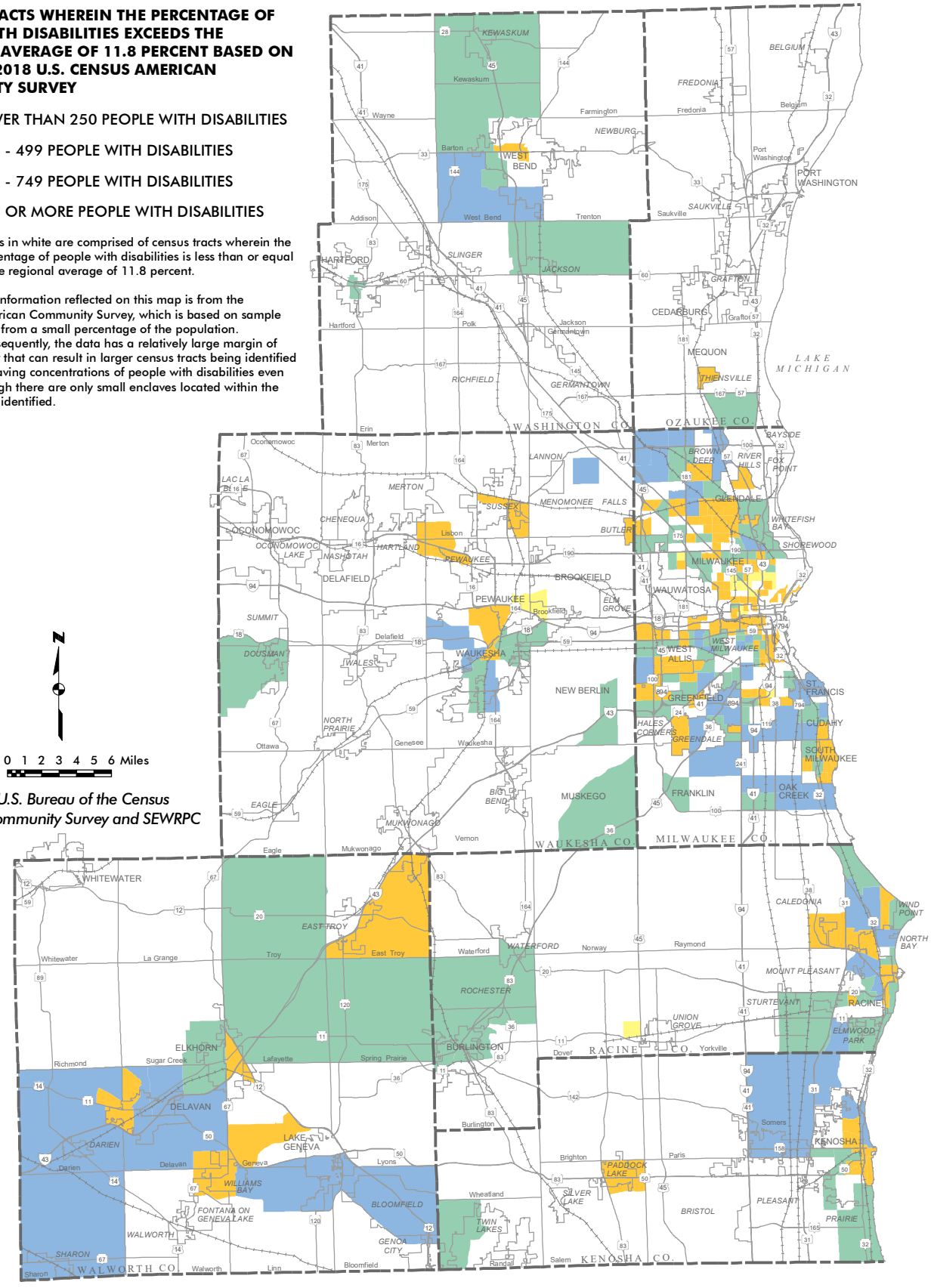
Map N.26
Concentrations of People with Disabilities: 2014-2018

CENSUS TRACTS WHEREIN THE PERCENTAGE OF PEOPLE WITH DISABILITIES EXCEEDS THE REGIONAL AVERAGE OF 11.8 PERCENT BASED ON THE 2014-2018 U.S. CENSUS AMERICAN COMMUNITY SURVEY

- FEWER THAN 250 PEOPLE WITH DISABILITIES
- 250 - 499 PEOPLE WITH DISABILITIES
- 500 - 749 PEOPLE WITH DISABILITIES
- 750 OR MORE PEOPLE WITH DISABILITIES

Notes: Areas in white are comprised of census tracts wherein the percentage of people with disabilities is less than or equal to the regional average of 11.8 percent.

The information reflected on this map is from the American Community Survey, which is based on sample data from a small percentage of the population. Consequently, the data has a relatively large margin of error that can result in larger census tracts being identified as having concentrations of people with disabilities even though there are only small enclaves located within the tract identified.



Source: U.S. Bureau of the Census American Community Survey and SEWRPC

Table N.12
Access to Jobs Within 30 Minutes by Transit

Minority Population[a]

Plan	100,000 or More Jobs		50,000 or More Jobs		10,000 or More Jobs		Total Minority Population
	People	Percent	People	Percent	People	Percent	
Existing - 2017	21,800	3.7	74,000	12.7	312,800	53.7	582,900
VISION 2050	108,600	18.6	295,600	50.7	518,100	88.9	582,900
FCTS - 2050	19,900	3.4	21,700	3.7	179,100	30.7	582,900

Non-Minority Population[a]

Plan	100,000 or More Jobs		50,000 or More Jobs		10,000 or More Jobs		Total Non-Minority Population
	People	Percent	People	Percent	People	Percent	
Existing - 2017	24,800	1.7	42,300	2.9	266,900	18.6	1,437,500
VISION 2050	191,700	13.3	393,900	27.4	876,500	61.0	1,437,500
FCTS - 2050	32,600	2.3	42,200	2.9	150,100	10.4	1,437,500

Families in Poverty[a]

Plan	100,000 or More Jobs		50,000 or More Jobs		10,000 or More Jobs		Total Families in Poverty
	Families	Percent	Families	Percent	Families	Percent	
Existing - 2017	1,500	3.1	5,200	10.7	23,300	48.0	48,500
VISION 2050	7,900	16.3	22,700	46.8	41,100	84.7	48,500
FCTS - 2050	1,400	2.9	1,700	3.5	13,500	27.8	48,500

Families Not in Poverty[a]

Plan	100,000 or More Jobs		50,000 or More Jobs		10,000 or More Jobs		Total Families Not in Poverty
	Families	Percent	Families	Percent	Families	Percent	
Existing - 2017	4,300	0.9	13,100	2.8	101,200	22.0	460,600
VISION 2050	54,600	11.9	133,800	29.0	293,800	63.8	460,600
FCTS - 2050	5,500	1.2	7,600	1.7	52,400	11.4	460,600

Families with Incomes Less Than Twice the Poverty Level[a]

Plan	100,000 or More Jobs		50,000 or More Jobs		10,000 or More Jobs		Total Families with Incomes Less Than Twice the Poverty Level
	Families	Percent	Families	Percent	Families	Percent	
Existing - 2017	2,500	2.2	9,200	8.0	47,800	41.3	115,600
VISION 2050	16,300	14.1	48,700	42.1	92,900	80.4	115,600
FCTS - 2050	2,400	2.1	3,000	2.6	26,200	22.7	115,600

Families with Incomes More Than Twice the Poverty Level[a]

Plan	100,000 or More Jobs		50,000 or More Jobs		10,000 or More Jobs		Total Families with Incomes More Than Twice the Poverty Level
	Families	Percent	Families	Percent	Families	Percent	
Existing - 2017	3,400	0.9	9,000	2.3	76,700	19.5	393,500
VISION 2050	46,300	11.8	107,800	27.4	241,900	61.5	393,500
FCTS - 2050	4,500	1.1	6,300	1.6	39,700	10.1	393,500

People with Disabilities[a]

Plan	100,000 or More Jobs		50,000 or More Jobs		10,000 or More Jobs		Total Population with Disabilities
	People	Percent	People	Percent	People	Percent	
Existing - 2017	5,500	2.3	14,700	6.2	75,300	31.7	237,700
VISION 2050	34,600	14.6	86,400	36.3	172,900	72.7	237,700
FCTS - 2050	6,100	2.6	7,200	3.0	41,700	17.5	237,700

People Without Disabilities[a]

Plan	100,000 or More Jobs		50,000 or More Jobs		10,000 or More Jobs		Total Population Without Disabilities
	People	Percent	People	Percent	People	Percent	
Existing - 2017	41,200	2.3	101,700	5.7	504,400	28.3	1,782,600
VISION 2050	265,800	14.9	603,100	33.8	1,221,700	68.5	1,782,600
FCTS - 2050	46,300	2.6	56,800	3.2	287,500	16.1	1,782,600

[a] *Minority population is based on the 2010 U.S. Census and families in poverty, families with incomes less than twice the poverty level, and people with disabilities are based on the 2014-2018 American Community Survey.*

Source: U.S. Bureau of the Census, U.S. Census and American Community Survey; and SEWRPC

Table N.13
Change in Percent Having Access to Jobs by Transit

100,000 or More Jobs

Minorities[a]

Plan	Minority Population	Non-Minority Population
VISION 2050	15	12
FCTS - 2050	0	1

Families in Poverty and with Incomes Less Than Twice the Poverty Level[a]

Plan	Families in Poverty	Families Not in Poverty	Families with Incomes Less Than Twice the Poverty Level	Families with Incomes More Than Twice the Poverty Level
VISION 2050	13	11	12	11
FCTS - 2050	0	0	0	0

People with Disabilities[a]

Plan	People with Disabilities	People Without Disabilities
VISION 2050	12	13
FCTS - 2050	0	0

10,000 or More Jobs

Minorities[a]

Plan	Minority Population	Non-Minority Population
VISION 2050	35	42
FCTS - 2050	-23	-8

Families in Poverty and with Incomes Less Than Twice the Poverty Level[a]

Plan	Families in Poverty	Families Not in Poverty	Families with Incomes Less Than Twice the Poverty Level	Families with Incomes More Than Twice the Poverty Level
VISION 2050	37	42	39	42
FCTS - 2050	-20	-11	-19	-9

People with Disabilities[a]

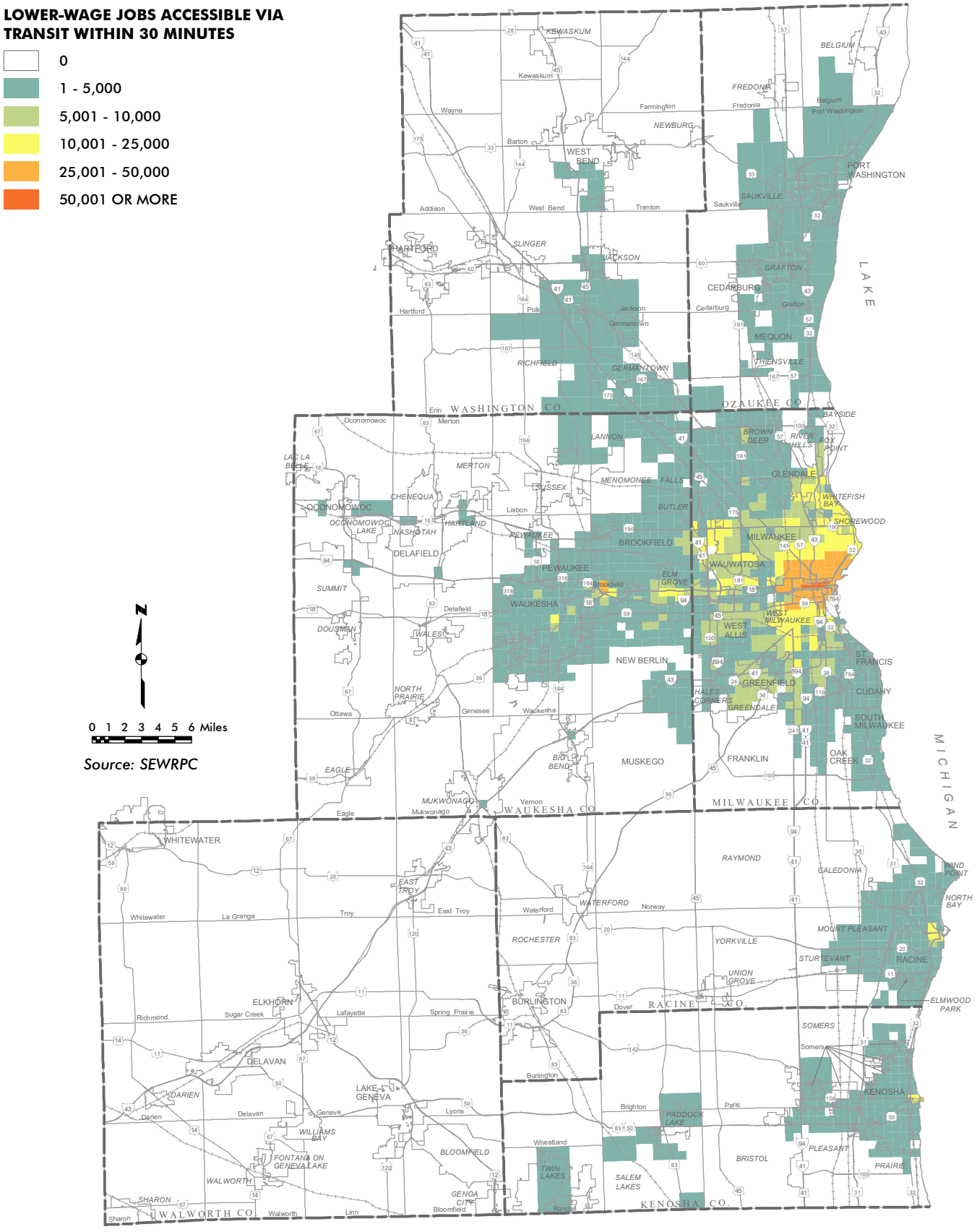
Plan	People with Disabilities	People Without Disabilities
VISION 2050	41	40
FCTS - 2050	-14	-12

[a] *Minority population and non-minority population are based on the 2010 U.S. Census and families in poverty, families not in poverty, families with incomes less than twice the poverty level, families with incomes more than twice the poverty level, people with disabilities, and people without disabilities are based on the 2014-2018 American Community Survey.*

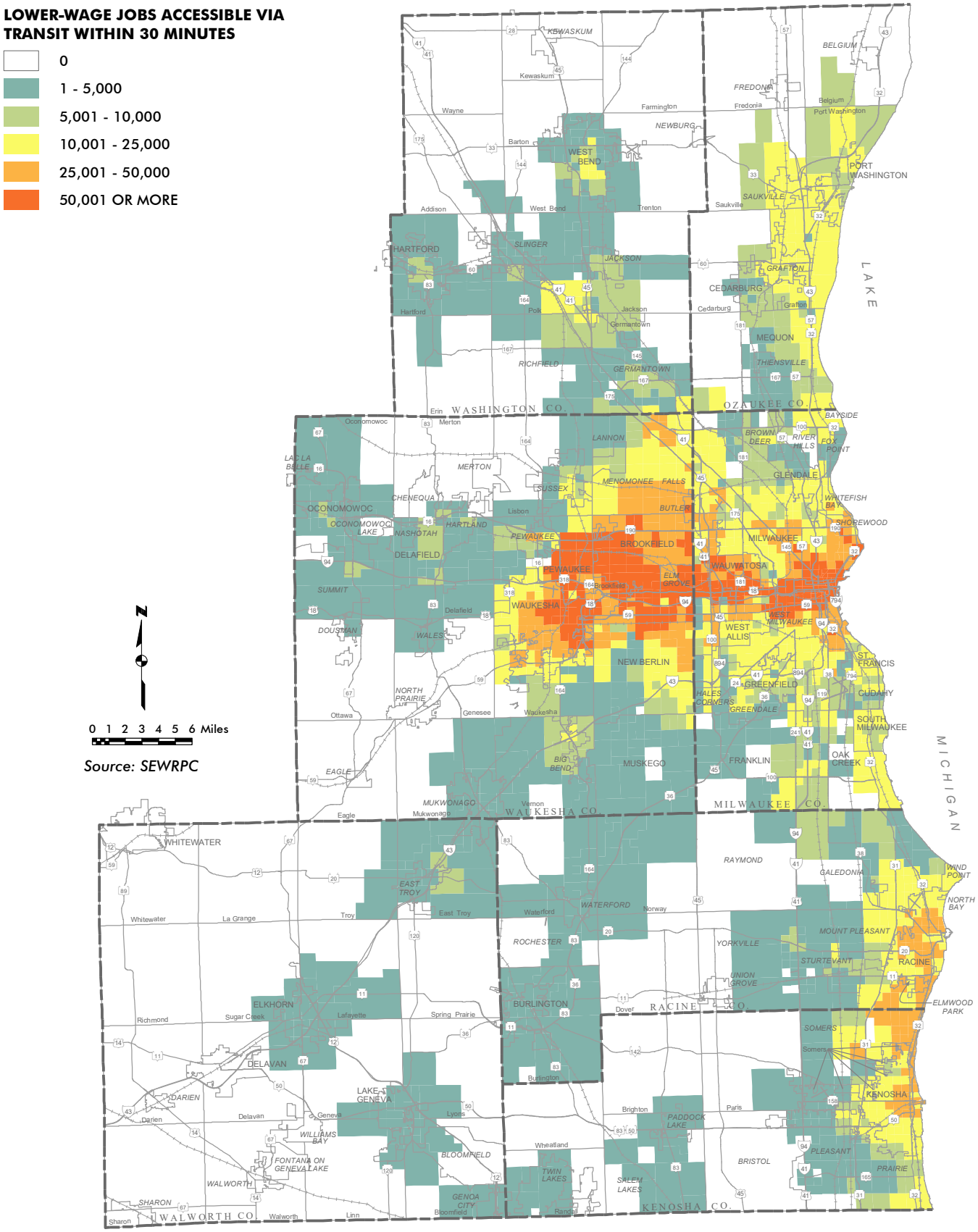
Source: U.S. Bureau of the Census, U.S. Census and American Community Survey; and SEWRPC

Maps N.27 through N.29 show the number of lower-wage jobs that would potentially be accessible in 30 minutes under existing conditions, VISION 2050, and the FCTS. Lower-wage jobs are estimated to represent about 32 percent of total jobs in the Region. Comparing these maps to areas of existing concentrations of minority populations (Map N.6), lower-income populations (Map N.8 for families in poverty and Map N.25 for families with incomes less than twice the poverty level), and people with disabilities (Map N.26) shows that potential access to lower-wage jobs for these populations would improve significantly due to the improvement and expansion of transit service under VISION 2050. As shown in Table N.14, it is projected that about 38 percent of the existing minority population would have potential access to at least 25,000 lower-wage jobs within 30 minutes by transit under VISION 2050, compared to about 4 percent under the FCTS. Similarly, it is projected that about 36 percent of the families in poverty and about 31 percent

Map N.27
Lower-Wage Jobs Accessible Within 30 Minutes by Transit: Existing



Map N.28
Lower-Wage Jobs Accessible Within 30 Minutes by Transit: VISION 2050



Map N.29
Lower-Wage Jobs Accessible Within 30 Minutes by Transit: FCTS

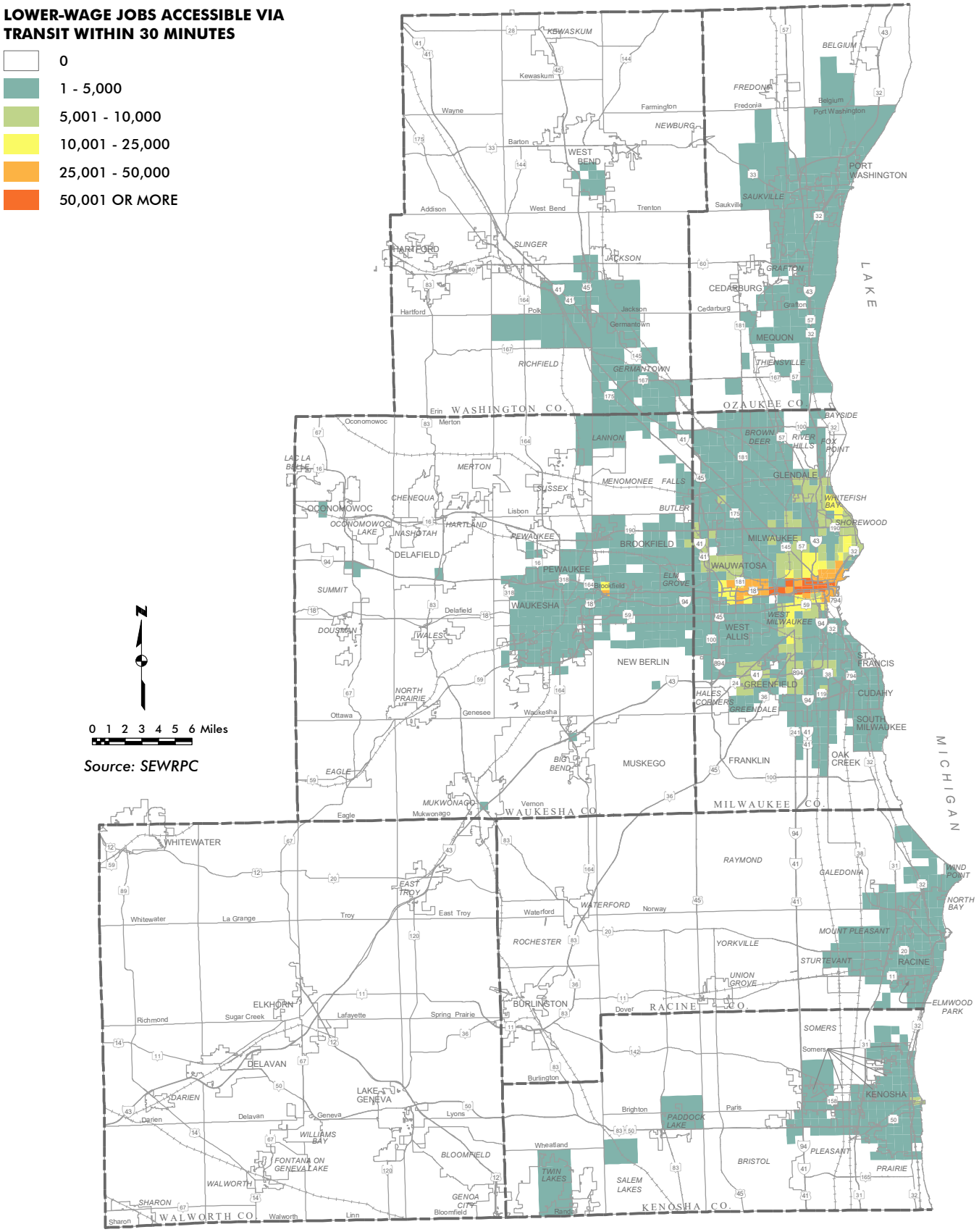


Table N.14
Access to Lower-Wage Jobs Within 30 Minutes by Transit

Minority Population[a]

Plan	25,000 or More Jobs		10,000 or More Jobs		5,000 or More Jobs		Total Minority Population
	People	Percent	People	Percent	People	Percent	
Existing - 2017	49,900	8.6	165,800	28.4	282,700	48.5	582,900
VISION 2050	222,000	38.1	446,100	76.5	511,600	87.8	582,900
FCTS - 2050	20,200	3.5	59,000	10.1	144,200	24.7	582,900

Families in Poverty[a]

Plan	25,000 or More Jobs		10,000 or More Jobs		5,000 or More Jobs		Total Families in Poverty
	Families	Percent	Families	Percent	Families	Percent	
Existing - 2017	3,600	7.4	12,500	25.8	21,000	43.3	48,500
VISION 2050	17,200	35.5	34,900	72.0	40,500	83.5	48,500
FCTS - 2050	1,500	3.1	4,300	8.9	11,100	22.9	48,500

Families with Incomes Less Than Twice the Poverty Level[a]

Plan	25,000 or More Jobs		10,000 or More Jobs		5,000 or More Jobs		Total Families with Incomes Less Than Twice the Poverty Level
	Families	Percent	Families	Percent	Families	Percent	
Existing - 2017	6,100	5.3	23,600	20.4	42,800	37.0	115,600
VISION 2050	36,300	31.4	77,400	67.0	91,300	79.0	115,600
FCTS - 2050	2,700	2.3	8,000	6.9	21,500	18.6	115,600

People with Disabilities[a]

Plan	25,000 or More Jobs		10,000 or More Jobs		5,000 or More Jobs		Total Population with Disabilities
	People	Percent	People	Percent	People	Percent	
Existing - 2017	10,900	4.6	34,700	14.6	68,600	28.9	237,700
VISION 2050	65,400	27.5	140,800	59.2	169,100	71.1	237,700
FCTS - 2050	6,600	2.8	13,900	5.8	34,500	14.5	237,700

[a] *Minority population is based on the 2010 U.S. Census and families in poverty, families with incomes less than twice the poverty level, and people with disabilities are based on the 2014-2018 American Community Survey.*

Source: U.S. Bureau of the Census, U.S. Census and American Community Survey; and SEWRPC

of families with incomes less than twice the poverty level would have potential access to at least 25,000 lower-wage jobs within 30 minutes by transit under VISION 2050, compared to about 3 and 2 percent, respectively, under the FCTS. With respect to people with disabilities, it is projected that about 28 percent of this population would have potential access to at least 25,000 lower-wage jobs within 30 minutes under VISION 2050, compared to 3 percent under the FCTS.

The substantial increase in transit service under VISION 2050 would provide better access than under the FCTS to existing retail centers, major parks, public technical colleges/universities, health facilities, grocery stores, the Milwaukee Regional Medical Center, and Milwaukee Mitchell International Airport. Table N.15 shows the existing minority populations, lower-income populations, and people with disabilities that would have reasonable access (within 30 minutes) by transit to various activity centers under existing conditions, VISION 2050, and the FCTS. Under VISION 2050, the proportion of existing minority populations, lower-income populations, and people with disabilities provided access by transit service to the activity centers analyzed would be between 11 and 36 percentage points more than under the FCTS.

As shown in Table N.16, the improvement and expansion of transit under VISION 2050 would result in between 9 and 35 additional percentage points of the total minority population having reasonable

Table N.15
Reasonable Access to Activity Centers by Transit[a]

Minority Population[b]

Activity Center	Existing (2017)		VISION 2050		FCTS (2050)		Total Minority Population
	People	Percent	People	Percent	People	Percent	
Retail Centers	108,300	18.6	265,700	45.6	58,800	10.1	582,900
Major Parks	41,600	7.1	150,200	25.8	25,200	4.3	582,900
Public Technical Colleges and Universities	141,900	24.3	244,800	42.0	107,900	18.5	582,900
Health Care Facilities	265,000	45.5	353,400	60.6	214,500	36.8	582,900
Grocery Stores	470,100	80.6	523,700	89.8	439,500	75.4	582,900
Milwaukee Mitchell International Airport	71,200	12.2	121,600	20.9	39,900	6.8	582,900
Milwaukee Regional Medical Center	128,800	22.1	331,900	56.9	120,800	20.7	582,900

Families in Poverty[b]

Activity Center	Existing (2017)		VISION 2050		FCTS (2050)		Total Families in Poverty
	Families	Percent	Families	Percent	Families	Percent	
Retail Centers	7,400	15.3	20,300	41.9	4,400	9.1	48,500
Major Parks	3,400	7.0	12,100	24.9	1,800	3.7	48,500
Public Technical Colleges and Universities	10,700	22.1	19,400	40.0	8,200	16.9	48,500
Health Care Facilities	21,300	43.9	28,500	58.8	17,100	35.3	48,500
Grocery Stores	35,500	73.2	40,200	82.9	33,400	68.9	48,500
Milwaukee Mitchell International Airport	5,500	11.3	10,100	20.8	3,200	6.6	48,500
Milwaukee Regional Medical Center	9,500	19.6	25,200	52.0	9,000	18.6	48,500

Families with Incomes Less Than Twice the Poverty Level[b]

Activity Center	Existing (2017)		VISION 2050		FCTS (2050)		Total Families with Incomes Less Than Twice the Poverty Level
	Families	Percent	Families	Percent	Families	Percent	
Retail Centers	16,100	13.9	48,200	41.7	9,500	8.2	115,600
Major Parks	7,100	6.1	27,600	23.9	4,000	3.5	115,600
Public Technical Colleges and Universities	23,200	20.1	44,200	38.2	17,600	15.2	115,600
Health Care Facilities	45,400	39.3	64,400	55.7	36,000	31.1	115,600
Grocery Stores	77,300	66.9	90,800	78.5	72,300	62.5	115,600
Milwaukee Mitchell International Airport	11,500	9.9	21,500	18.6	7,100	6.1	115,600
Milwaukee Regional Medical Center	20,100	17.4	54,900	47.5	18,800	16.3	115,600

People with Disabilities[b]

Activity Center	Existing (2017)		VISION 2050		FCTS (2050)		Total Population with Disabilities
	People	Percent	People	Percent	People	Percent	
Retail Centers	37,000	15.6	100,300	42.2	24,100	10.1	237,700
Major Parks	17,800	7.5	59,400	25.0	11,500	4.8	237,700
Public Technical Colleges and Universities	41,300	17.4	84,400	35.5	31,100	13.1	237,700
Health Care Facilities	74,200	31.2	120,600	50.7	58,700	24.7	237,700
Grocery Stores	129,000	54.3	166,800	70.2	119,400	50.2	237,700
Milwaukee Mitchell International Airport	19,400	8.2	38,000	16.0	11,900	5.0	237,700
Milwaukee Regional Medical Center	37,600	15.8	102,700	43.2	33,900	14.3	237,700

[a] *Reasonable access is defined as the ability to travel by transit within 60 minutes to Milwaukee Mitchell International Airport and the Milwaukee Regional Medical Center and within 30 minutes to all the other activity centers.*

[b] *Minority population is based on the 2010 U.S. Census and families in poverty, families with incomes less than twice the poverty level, and people with disabilities are based on the 2014-2018 American Community Survey.*

Source: U.S. Bureau of the Census, U.S. Census and American Community Survey; and SEWRPC

Table N.16
Additional Percent Having Reasonable Access[a] to Activity Centers by Transit: VISION 2050

Minority Population[b]

Activity Center	Minority Population	Non-Minority Population
Retail Centers	27	25
Major Parks	19	16
Public Technical Colleges and Universities	18	17
Health Care Facilities	15	22
Grocery Stores	9	21
Milwaukee Mitchell International Airport	9	6
Milwaukee Regional Medical Center	35	22

Families in Poverty and Families with Incomes Less Than Twice the Poverty Level[b]

Activity Center	Families in Poverty	Families Not in Poverty	Families with Incomes Less Than Twice the Poverty Level	Families with Incomes More Than Twice the Poverty Level
Retail Centers	27	25	28	24
Major Parks	18	16	18	16
Public Technical Colleges and Universities	18	17	18	16
Health Care Facilities	15	21	16	22
Grocery Stores	10	19	12	20
Milwaukee Mitchell International Airport	10	6	9	6
Milwaukee Regional Medical Center	32	24	30	24

People with Disabilities[b]

Activity Center	People with Disabilities	People Without Disabilities
Retail Centers	27	26
Major Parks	18	16
Public Technical Colleges and Universities	18	17
Health Care Facilities	20	20
Grocery Stores	16	17
Milwaukee Mitchell International Airport	8	7
Milwaukee Regional Medical Center	27	26

[a] *Reasonable access is defined as the ability to travel by transit within 60 minutes to Milwaukee Mitchell International Airport and the Milwaukee Regional Medical Center and within 30 minutes to all the other activity centers.*

[b] *Minority population is based on the 2010 U.S. Census and families in poverty, families with incomes less than twice the poverty level, and people with disabilities are based on the 2014-2018 American Community Survey.*

Source: U.S. Bureau of the Census, U.S. Census and American Community Survey; and SEWRPC

access to the various activity centers compared to existing conditions. This is greater than the 6 to 25 additional percentage points of the non-minority population that would have access under VISION 2050. Similarly, the improvement and expansion of transit under VISION 2050 would result in between 9 and 32 additional percentage points of the total families in poverty and families with incomes less than twice the poverty level having reasonable access to the various activity centers compared to existing conditions. This is greater than the 6 to 25 additional percentage points of the total families not in poverty and families with incomes higher than twice the poverty level that would have access under VISION 2050. With respect to people with disabilities, VISION 2050 would result in between 8 and 27 additional percentage points of people with disabilities having reasonable access to the various activity centers compared to existing conditions. This is slightly greater than the 7 to 26 additional percentage points of people without disabilities having reasonable access to the various activity centers compared to existing conditions.

As shown in Table N.17, the transit service under the FCTS would result in between 1 and 9 fewer percentage points of the total minority population that would have reasonable access to the various activity centers compared to existing conditions. These reductions in access are slightly greater than the reductions in access for the non-minority population under the FCTS, which is between 2 and 4 fewer percentage points compared to existing conditions. Similarly, the transit service under the FCTS would result in between 1 and 9 fewer percentage points for total families in poverty and families with incomes less than twice the poverty level having reasonable access to the various activity centers compared to existing conditions. These reductions in access are slightly greater than the reductions in access for total families not in poverty and families with incomes higher than twice the poverty level under the FCTS, which is between 2 and 5 fewer percentage points compared to existing conditions. With respect to people with disabilities, the FCTS would result in between 2 and 7 fewer percentage points for total people with disabilities having reasonable access to the various activity centers compared to existing conditions, which is a slightly greater change than for people without disabilities, with retail centers again being an exception.

- **Comparing Accessibility for Transit and Driving:** A comparison of the improvements in accessibility under the transit element of VISION 2050 to the highway element of VISION 2050 clearly indicates that the transit element would result in substantial increases in transit accessibility to jobs and other activities, and the highway element would result in only modest increases in highway accessibility to jobs and other activities. The modest increases in highway accessibility would benefit the majority of minority residents and low-income residents who travel by automobile. The substantial increases in transit accessibility would provide significant benefits to those who may not be able to afford or use a car and need public transit service to be able to reach jobs and other activities.

  Under the FCTS, the analysis indicates that the highway element would result in about the same accessibility to jobs and other activities for all residents of the Region that travel by automobile—with accessibility to some activities slightly better and some slightly worse. In contrast, the expected declines in transit, along with the minimal expected expansion and improvement of transit, under the FCTS are expected to generally result in small to significant declines in the accessibility to jobs and other activities—depending on the activity—for residents utilizing transit. The impact of any decline in accessibility would likely be greater on minority populations and low-income populations, as those populations are more likely to not have access to an automobile and to utilize transit.

MINORITY POPULATIONS AND LOW-INCOME POPULATIONS SERVED BY TRANSIT

An evaluation was conducted of the characteristics of the existing population located within the service area of the public transit system under existing conditions, VISION 2050, and the FCTS. Table N.18 and Maps N.30 through N.44 show information on the existing minority populations, lower-income populations (families in poverty and families with incomes less than twice the poverty level), and people with disabilities within walking distance of transit and fixed-guideway transit (either rapid transit or commuter rail) under existing conditions, VISION 2050, and the FCTS.

Table N.17
Reduced Percent Having Reasonable Access[a] to Activity Centers by Transit: FCTS

Minority Population[b]

Activity Center	Minority Population	Non-Minority Population
Retail Centers	-9	-4
Major Parks	-3	-3
Public Technical Colleges and Universities	-6	-3
Health Care Facilities	-9	-4
Grocery Stores	-5	-3
Milwaukee Mitchell International Airport	-5	-2
Milwaukee Regional Medical Center	-1	-2

Families in Poverty and Families with Incomes Less Than Twice the Poverty Level[b]

Activity Center	Families in Poverty	Families Not in Poverty	Families with Incomes Less Than Twice the Poverty Level	Families with Incomes More Than Twice the Poverty Level
Retail Centers	-6	-5	-6	-5
Major Parks	-3	-2	-3	-2
Public Technical Colleges and Universities	-5	-3	-5	-3
Health Care Facilities	-9	-5	-8	-4
Grocery Stores	-4	-3	-4	-3
Milwaukee Mitchell International Airport	-5	-2	-4	-2
Milwaukee Regional Medical Center	-1	-2	-1	-2

People with Disabilities[b]

Activity Center	People with Disabilities	People Without Disabilities
Retail Centers	-6	-6
Major Parks	-3	-3
Public Technical Colleges and Universities	-4	-4
Health Care Facilities	-7	-5
Grocery Stores	-4	-3
Milwaukee Mitchell International Airport	-3	-3
Milwaukee Regional Medical Center	-2	-2

[a] *Reasonable access is defined as the ability to travel by transit within 60 minutes to Milwaukee Mitchell International Airport and the Milwaukee Regional Medical Center and within 30 minutes to all the other activity centers.*

[b] *Minority population is based on the 2010 U.S. Census and families in poverty, families with incomes less than twice the poverty level, and people with disabilities are based on the 2014-2018 American Community Survey.*

Source: U.S. Bureau of the Census, U.S. Census and American Community Survey; and SEWRPC

- **Existing Transit Service:** Most of the base year 2019 routes and service areas for the public transit systems in the Region serve the principal concentrations of existing minority populations, lower-income populations, and people with disabilities. Specifically, about 487,440 minority people (or 84 percent of the total minority population) and 590,900 non-minority people (or 41 percent of the total non-minority population) were served by public transit services provided in the year 2019. With respect to lower-income populations, 37,200 (or 76 percent of) families in poverty and 197,200 (or 43 percent of) families not in poverty were served by public transit services provided in the year 2019. Similarly, 80,800 (or 69 percent of) families with incomes less than twice the poverty level and 153,600 (or 39 percent of) families with incomes more than twice the poverty level were served by public transit services provided in the year 2019. With respect to people with disabilities, 135,300 (or 57 percent of) people with disabilities and 894,900 (or

Table N.18
Access to Transit and Fixed-Guideway Transit

Minority Population[a]

Plan	Total Transit Service		Fixed-Guideway Transit Service[b]		Total Minority Population
	People	Percent	People	Percent	
Existing - 2019	487,440	83.6	3,200	0.5	582,900
VISION 2050	522,200	89.6	242,800	41.7	582,900
FCTS - 2050	470,100	80.6	22,500	3.9	582,900

Non-Minority Population[a]

Plan	Total Transit Service		Fixed-Guideway Transit Service[b]		Total Non-Minority Population
	People	Percent	People	Percent	
Existing - 2019	590,900	41.1	2,200	0.2	1,437,100
VISION 2050	826,100	57.5	240,900	16.8	1,437,100
FCTS - 2050	556,400	38.7	32,900	2.3	1,437,100

Families in Poverty[a]

Plan	Total Transit Service		Fixed-Guideway Transit Service[b]		Total Families in Poverty
	Families	Percent	Families	Percent	
Existing - 2019	37,200	75.8	300	0.6	49,100
VISION 2050	40,100	81.7	18,300	37.3	49,100
FCTS - 2050	35,800	72.9	1,700	3.5	49,100

Families Not in Poverty[a]

Plan	Total Transit Service		Fixed-Guideway Transit Service[b]		Total Families Not in Poverty
	Families	Percent	Families	Percent	
Existing - 2019	197,200	42.7	700	0.2	461,600
VISION 2050	258,700	56.0	83,500	18.1	461,600
FCTS - 2050	182,500	39.5	7,400	1.6	461,600

Families with Incomes Less Than Twice the Poverty Level[a]

Plan	Total Transit Service		Fixed-Guideway Transit Service[b]		Total Families with Incomes Less Than Twice the Poverty Level
	Families	Percent	Families	Percent	
Existing - 2019	80,800	69.3	500	0.4	116,600
VISION 2050	89,800	77.0	37,600	32.2	116,600
FCTS - 2050	77,300	66.3	3,200	2.7	116,600

Families with Incomes More Than Twice the Poverty Level[a]

Plan	Total Transit Service		Fixed-Guideway Transit Service[b]		Total Families with Incomes More Than Twice the Poverty Level
	Families	Percent	Families	Percent	
Existing - 2019	153,600	39.0	400	0.1	394,100
VISION 2050	209,100	53.0	64,000	16.2	394,100
FCTS - 2050	141,100	35.8	5,900	1.5	394,100

People with Disabilities[a]

Plan	Total Transit Service		Fixed-Guideway Transit Service[b]		Total Population with Disabilities
	People	Percent	People	Percent	
Existing - 2019	135,300	56.7	800	0.3	238,800
VISION 2050	161,100	67.5	62,000	26.0	238,800
FCTS - 2050	127,400	53.4	6,800	2.8	238,800

People Without Disabilities[a]

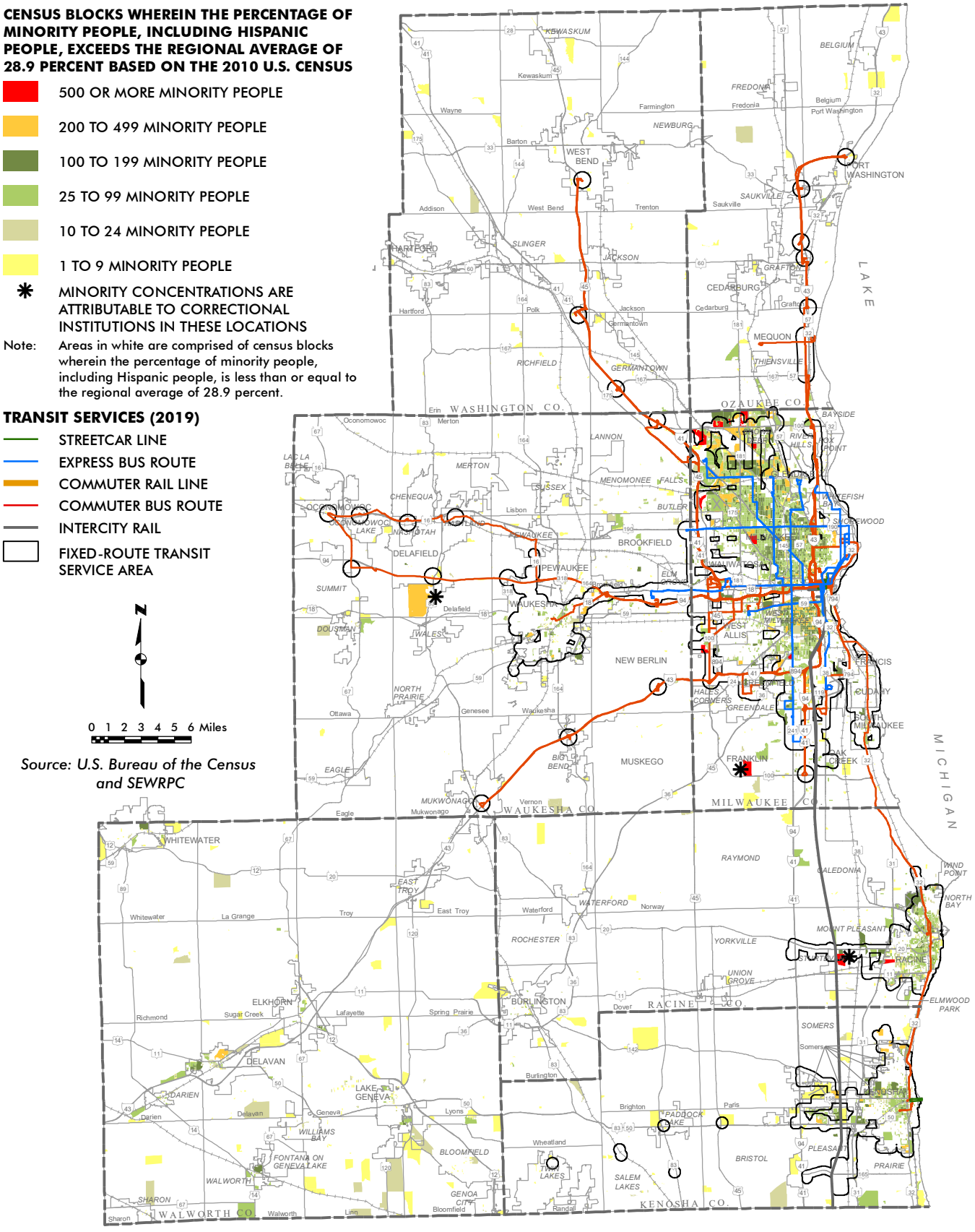
Plan	Total Transit Service		Fixed-Guideway Transit Service[b]		Total Population Without Disabilities
	People	Percent	People	Percent	
Existing - 2019	894,900	50.0	3,800	0.2	1,788,200
VISION 2050	1,108,400	62.0	413,700	23.1	1,788,200
FCTS - 2050	838,100	46.9	49,000	2.7	1,788,200

[a] Minority population and non-minority population are based on the 2010 U.S. Census and families in poverty, families not in poverty, families with incomes less than twice the poverty level, families with incomes more than twice the poverty level, people with disabilities, and people without disabilities are based on the 2014-2018 American Community Survey.

[b] Includes rapid transit and commuter rail services.

Source: U.S. Bureau of the Census, U.S. Census and American Community Survey; and SEWRPC

Map N.30
Comparison of Existing Concentrations of Total Minority Population to Public Transit Services: Existing



Map N.31
Comparison of Existing Concentrations of Total Minority Population to Public Transit Services: VISION 2050

CENSUS BLOCKS WHEREIN THE PERCENTAGE OF MINORITY PEOPLE, INCLUDING HISPANIC PEOPLE, EXCEEDS THE REGIONAL AVERAGE OF 28.9 PERCENT BASED ON THE 2010 U.S. CENSUS

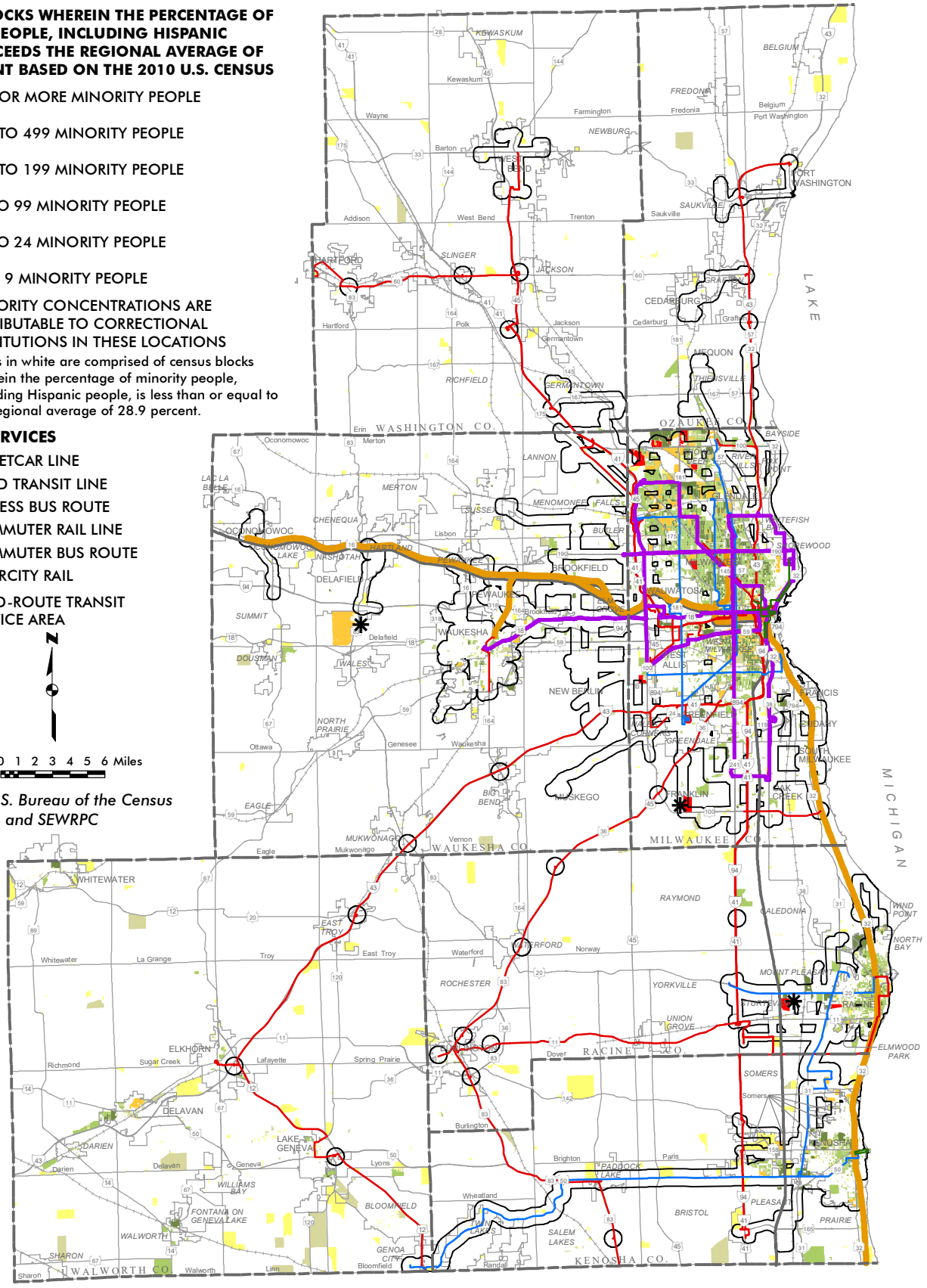
- 500 OR MORE MINORITY PEOPLE
- 200 TO 499 MINORITY PEOPLE
- 100 TO 199 MINORITY PEOPLE
- 25 TO 99 MINORITY PEOPLE
- 10 TO 24 MINORITY PEOPLE
- 1 TO 9 MINORITY PEOPLE
- * MINORITY CONCENTRATIONS ARE ATTRIBUTABLE TO CORRECTIONAL INSTITUTIONS IN THESE LOCATIONS

Note: Areas in white are comprised of census blocks wherein the percentage of minority people, including Hispanic people, is less than or equal to the regional average of 28.9 percent.

TRANSIT SERVICES

- STREETCAR LINE
- RAPID TRANSIT LINE
- EXPRESS BUS ROUTE
- COMMUTER RAIL LINE
- COMMUTER BUS ROUTE
- INTERCITY RAIL
- FIXED-ROUTE TRANSIT SERVICE AREA

Source: U.S. Bureau of the Census and SEWRPC



Map N.32
Comparison of Existing Concentrations of Total Minority Population to Public Transit Element: FCTS

CENSUS BLOCKS WHEREIN THE PERCENTAGE OF MINORITY PEOPLE, INCLUDING HISPANIC PEOPLE, EXCEEDS THE REGIONAL AVERAGE OF 28.9 PERCENT BASED ON THE 2010 U.S. CENSUS

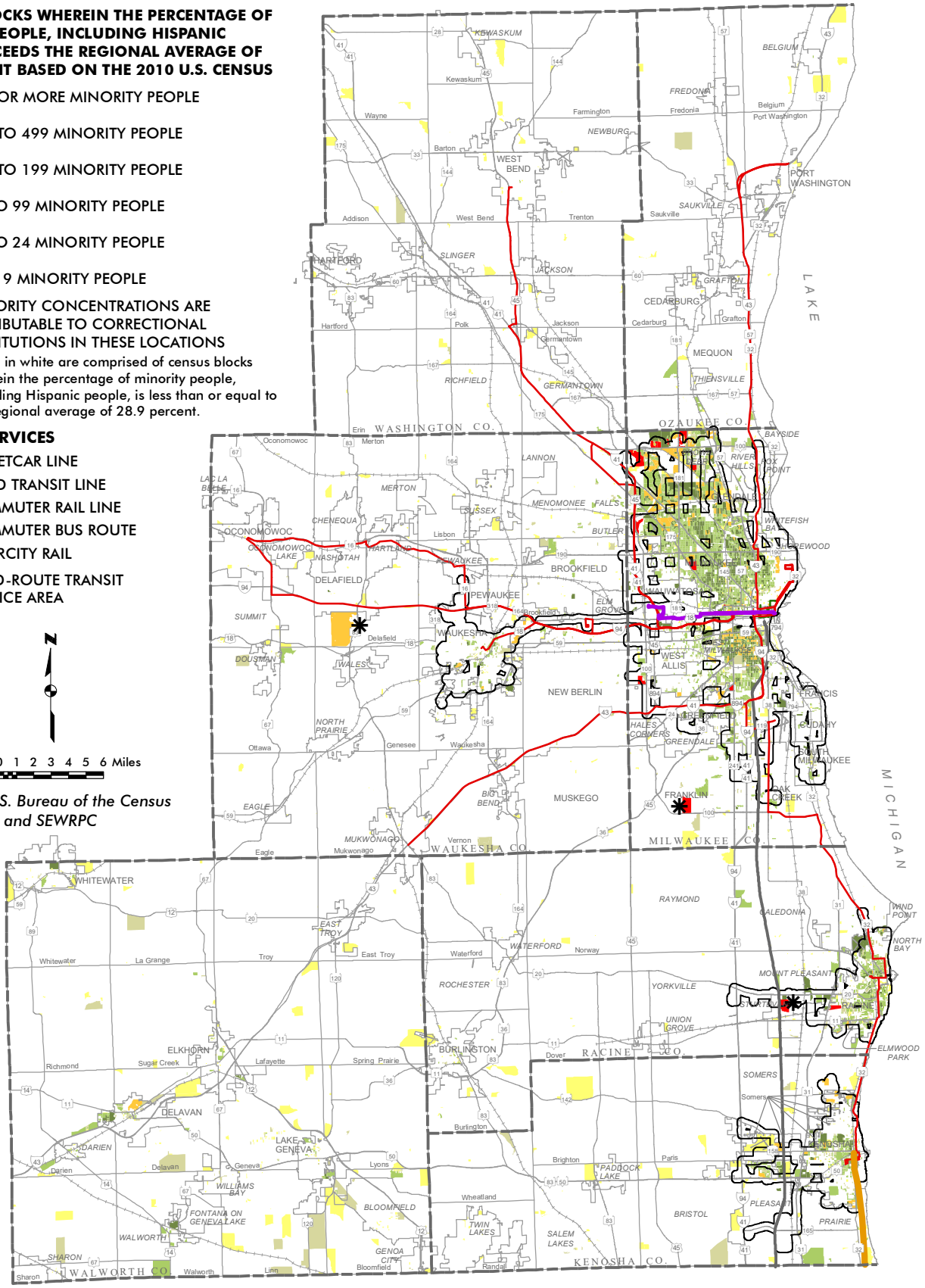
- 500 OR MORE MINORITY PEOPLE
- 200 TO 499 MINORITY PEOPLE
- 100 TO 199 MINORITY PEOPLE
- 25 TO 99 MINORITY PEOPLE
- 10 TO 24 MINORITY PEOPLE
- 1 TO 9 MINORITY PEOPLE
- * MINORITY CONCENTRATIONS ARE ATTRIBUTABLE TO CORRECTIONAL INSTITUTIONS IN THESE LOCATIONS

Note: Areas in white are comprised of census blocks wherein the percentage of minority people, including Hispanic people, is less than or equal to the regional average of 28.9 percent.

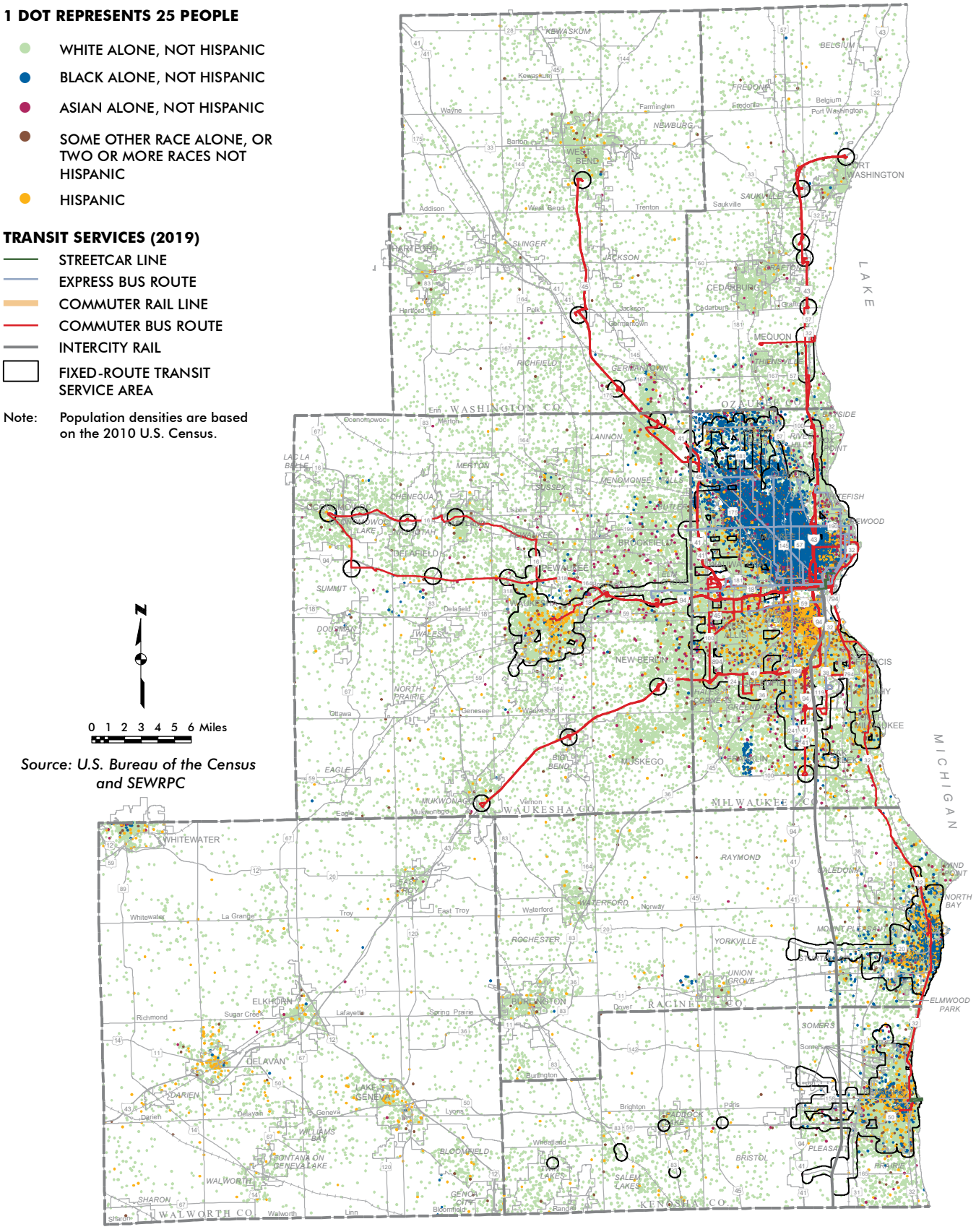
TRANSIT SERVICES

- STREETCAR LINE
- RAPID TRANSIT LINE
- COMMUTER RAIL LINE
- COMMUTER BUS ROUTE
- INTERCITY RAIL
- FIXED-ROUTE TRANSIT SERVICE AREA

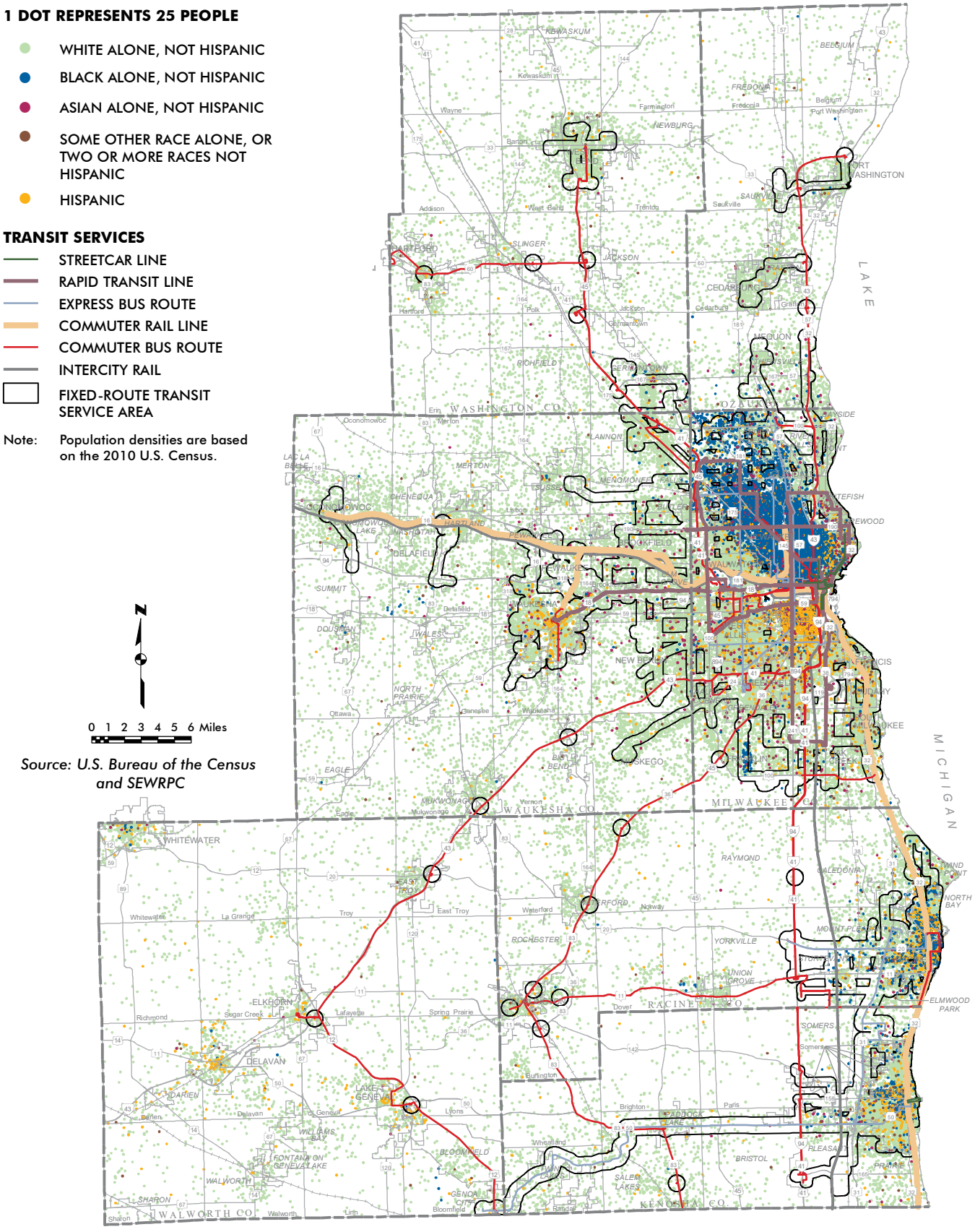
Source: U.S. Bureau of the Census and SEWRPC



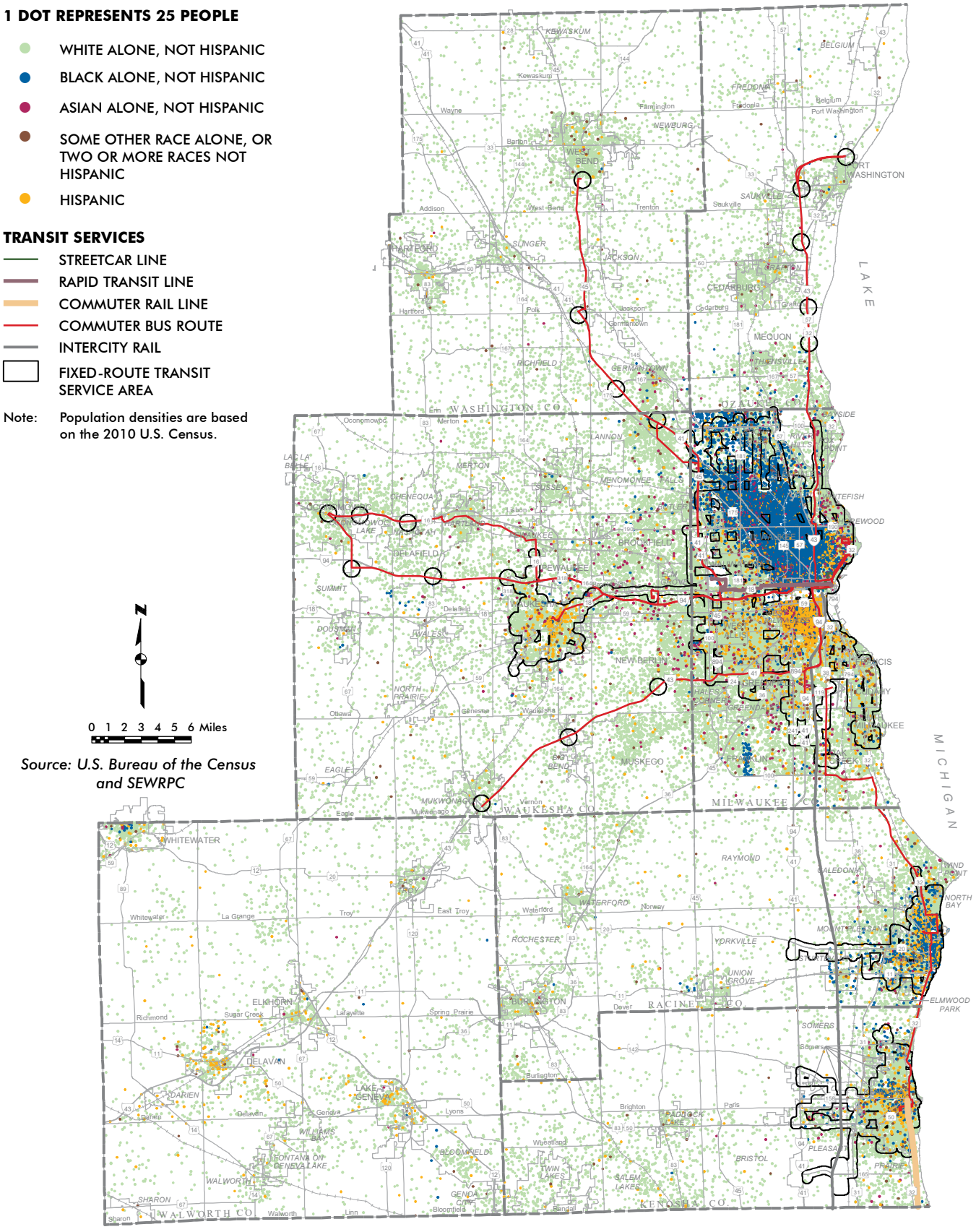
Map N.33
Comparison of Concentrations of Year 2010 Races/Ethnicities to Public Transit Element: Existing



Map N.34
Comparison of Concentrations of Year 2010 Races/Ethnicities to Public Transit Element: VISION 2050



Map N.35
Comparison of Concentrations of Year 2010 Races/Ethnicities to Public Transit Element: FCTS



Map N.36
Comparison of Existing Concentrations of Families in Poverty to Public Transit Services: Existing

CENSUS TRACTS WHEREIN THE PERCENTAGE OF FAMILIES IN POVERTY EXCEEDS THE REGIONAL AVERAGE OF 9.5 PERCENT BASED ON THE 2014-2018 U.S. CENSUS AMERICAN COMMUNITY SURVEY

- FEWER THAN 100 FAMILIES IN POVERTY
- 100-199 FAMILIES IN POVERTY
- 200-299 FAMILIES IN POVERTY
- 300 OR MORE FAMILIES IN POVERTY

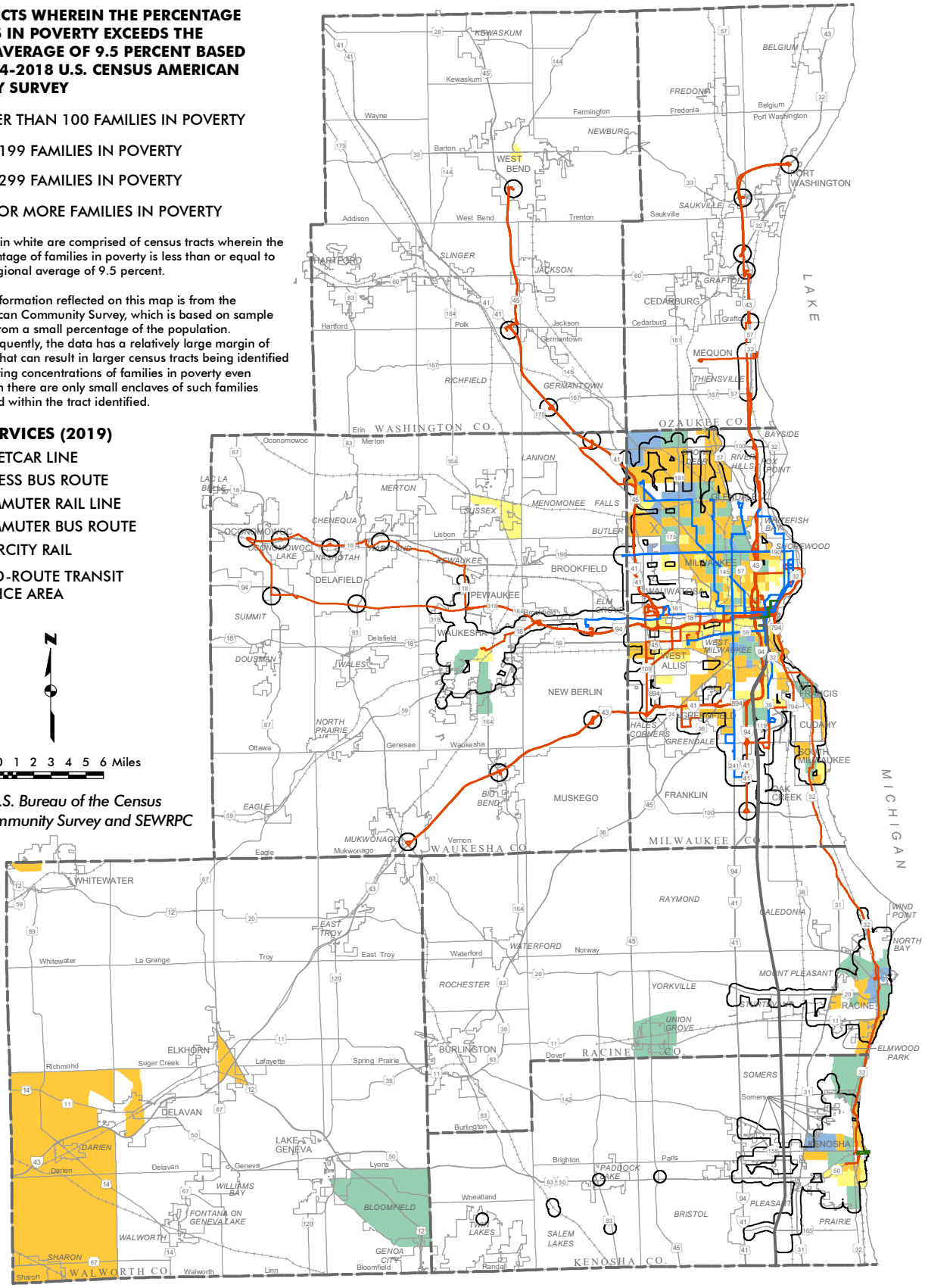
Notes: Areas in white are comprised of census tracts wherein the percentage of families in poverty is less than or equal to the regional average of 9.5 percent.

The information reflected on this map is from the American Community Survey, which is based on sample data from a small percentage of the population. Consequently, the data has a relatively large margin of error that can result in larger census tracts being identified as having concentrations of families in poverty even though there are only small enclaves of such families located within the tract identified.

TRANSIT SERVICES (2019)

- STREETCAR LINE
- EXPRESS BUS ROUTE
- COMMUTER RAIL LINE
- COMMUTER BUS ROUTE
- INTERCITY RAIL
- FIXED-ROUTE TRANSIT SERVICE AREA

Source: U.S. Bureau of the Census American Community Survey and SEWRPC



Map N.37
Comparison of Existing Concentrations of Families in Poverty to Public Transit Services: VISION 2050

CENSUS TRACTS WHEREIN THE PERCENTAGE OF FAMILIES IN POVERTY EXCEEDS THE REGIONAL AVERAGE OF 9.5 PERCENT BASED ON THE 2014-2018 U.S. CENSUS AMERICAN COMMUNITY SURVEY

- FEWER THAN 100 FAMILIES IN POVERTY
- 100-199 FAMILIES IN POVERTY
- 200-299 FAMILIES IN POVERTY
- 300 OR MORE FAMILIES IN POVERTY

Notes: Areas in white are comprised of census tracts wherein the percentage of families in poverty is less than or equal to the regional average of 9.5 percent.

The information reflected on this map is from the American Community Survey, which is based on sample data from a small percentage of the population. Consequently, the data has a relatively large margin of error that can result in larger census tracts being identified as having concentrations of families in poverty even though there are only small enclaves of such families located within the tract identified.

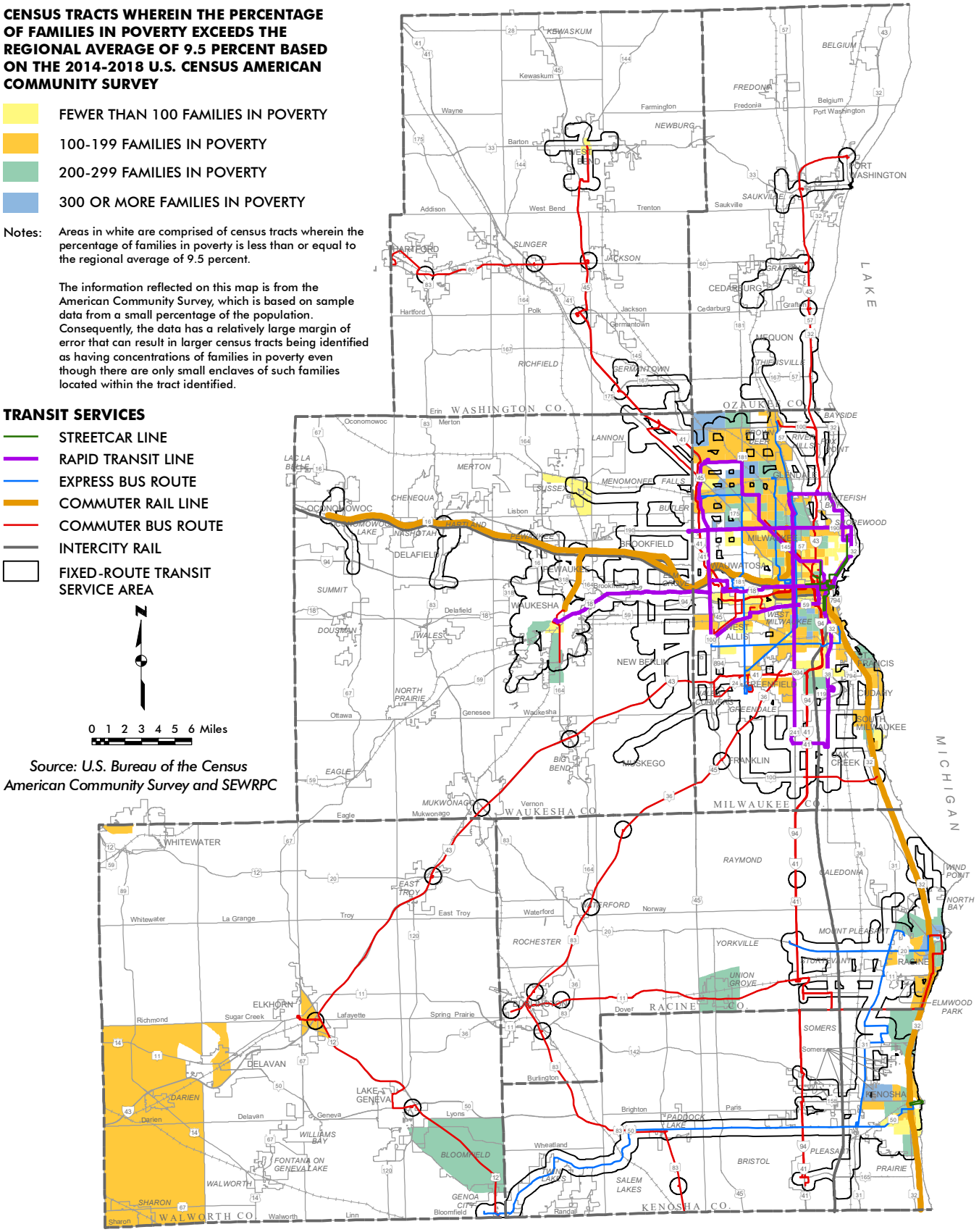
TRANSIT SERVICES

- STREETCAR LINE
- RAPID TRANSIT LINE
- EXPRESS BUS ROUTE
- COMMUTER RAIL LINE
- COMMUTER BUS ROUTE
- INTERCITY RAIL
- FIXED-ROUTE TRANSIT SERVICE AREA

N

0 1 2 3 4 5 6 Miles

Source: U.S. Bureau of the Census American Community Survey and SEWRPC



Map N.38
Comparison of Existing Concentrations of Families in Poverty to Public Transit Services: FCTS

CENSUS TRACTS WHEREIN THE PERCENTAGE OF FAMILIES IN POVERTY EXCEEDS THE REGIONAL AVERAGE OF 9.5 PERCENT BASED ON THE 2014-2018 U.S. CENSUS AMERICAN COMMUNITY SURVEY

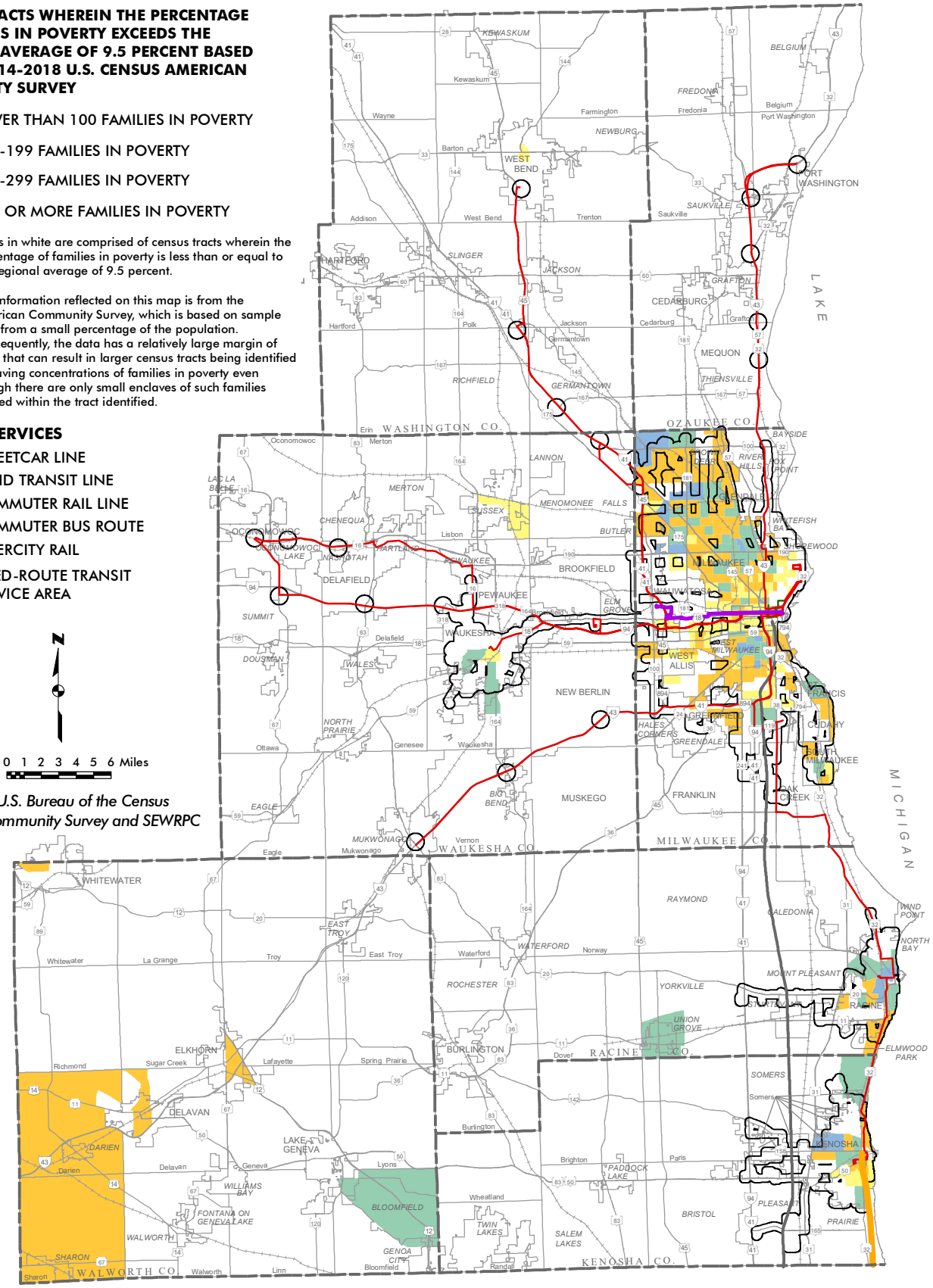
- FEWER THAN 100 FAMILIES IN POVERTY
- 100-199 FAMILIES IN POVERTY
- 200-299 FAMILIES IN POVERTY
- 300 OR MORE FAMILIES IN POVERTY

Notes: Areas in white are comprised of census tracts wherein the percentage of families in poverty is less than or equal to the regional average of 9.5 percent.

The information reflected on this map is from the American Community Survey, which is based on sample data from a small percentage of the population. Consequently, the data has a relatively large margin of error that can result in larger census tracts being identified as having concentrations of families in poverty even though there are only small enclaves of such families located within the tract identified.

TRANSIT SERVICES

- STREETCAR LINE
- RAPID TRANSIT LINE
- COMMUTER RAIL LINE
- COMMUTER BUS ROUTE
- INTERCITY RAIL
- FIXED-ROUTE TRANSIT SERVICE AREA



Source: U.S. Bureau of the Census American Community Survey and SEWRPC

Map N.39
Comparison of Existing Concentrations of Families with Incomes Less Than Twice the Poverty Level to Public Transit Services: Existing

CENSUS TRACTS WHEREIN THE PERCENTAGE OF FAMILIES WITH INCOMES LESS THAN TWICE THE POVERTY LEVEL EXCEEDS THE REGIONAL AVERAGE OF 22.7 PERCENT BASED ON THE 2014-2018 U.S. CENSUS AMERICAN COMMUNITY SURVEY

- FEWER THAN 100 FAMILIES
- 100-199 FAMILIES
- 200-299 FAMILIES
- 300 OR MORE FAMILIES

Notes: Areas in white are comprised of census tracts wherein the percentage of families with incomes less than twice the poverty level is less than or equal to the regional average of 22.7 percent.

The information reflected on this map is from the American Community Survey, which is based on sample data from a small percentage of the population. Consequently, the data has a relatively large margin of error that can result in larger census tracts being identified as having concentrations of families with incomes less than twice the poverty level even though there are only small enclaves of such families located within the tract identified.

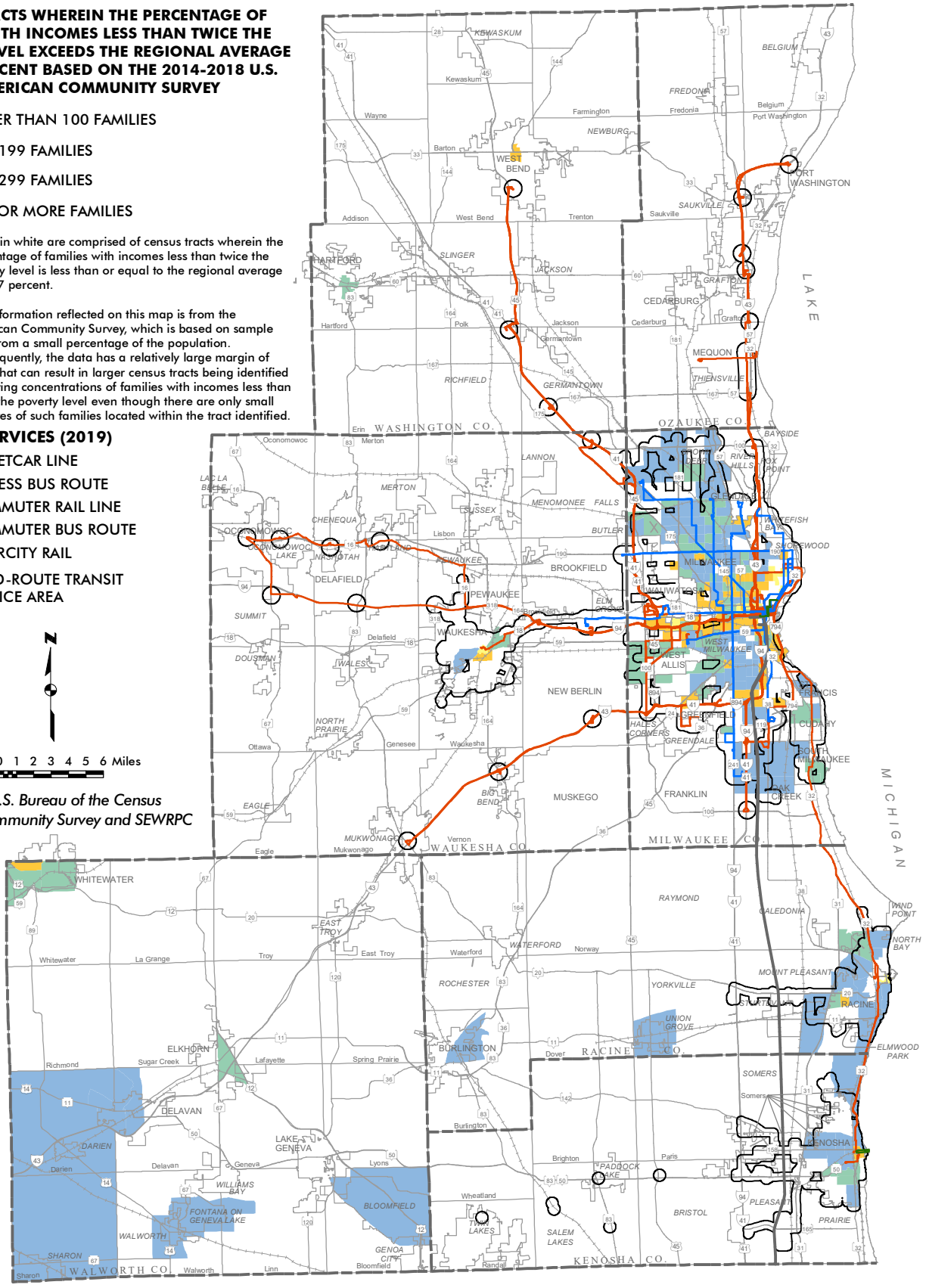
TRANSIT SERVICES (2019)

- STREETCAR LINE
- EXPRESS BUS ROUTE
- COMMUTER RAIL LINE
- COMMUTER BUS ROUTE
- INTERCITY RAIL
- FIXED-ROUTE TRANSIT SERVICE AREA

N

0 1 2 3 4 5 6 Miles

Source: U.S. Bureau of the Census American Community Survey and SEWRPC



Map N.40
Comparison of Existing Concentrations of Families with Incomes Less Than Twice the Poverty Level to Public Transit Services: VISION 2050

CENSUS TRACTS WHEREIN THE PERCENTAGE OF FAMILIES WITH INCOMES LESS THAN TWICE THE POVERTY LEVEL EXCEEDS THE REGIONAL AVERAGE OF 22.7 PERCENT BASED ON THE 2014-2018 U.S. CENSUS AMERICAN COMMUNITY SURVEY

- FEWER THAN 100 FAMILIES
- 100-199 FAMILIES
- 200-299 FAMILIES
- 300 OR MORE FAMILIES

Notes: Areas in white are comprised of census tracts wherein the percentage of families with incomes less than twice the poverty level is less than or equal to the regional average of 22.7 percent.

The information reflected on this map is from the American Community Survey, which is based on sample data from a small percentage of the population. Consequently, the data has a relatively large margin of error that can result in larger census tracts being identified as having concentrations of families with incomes less than twice the poverty level even though there are only small enclaves of such families located within the tract identified.

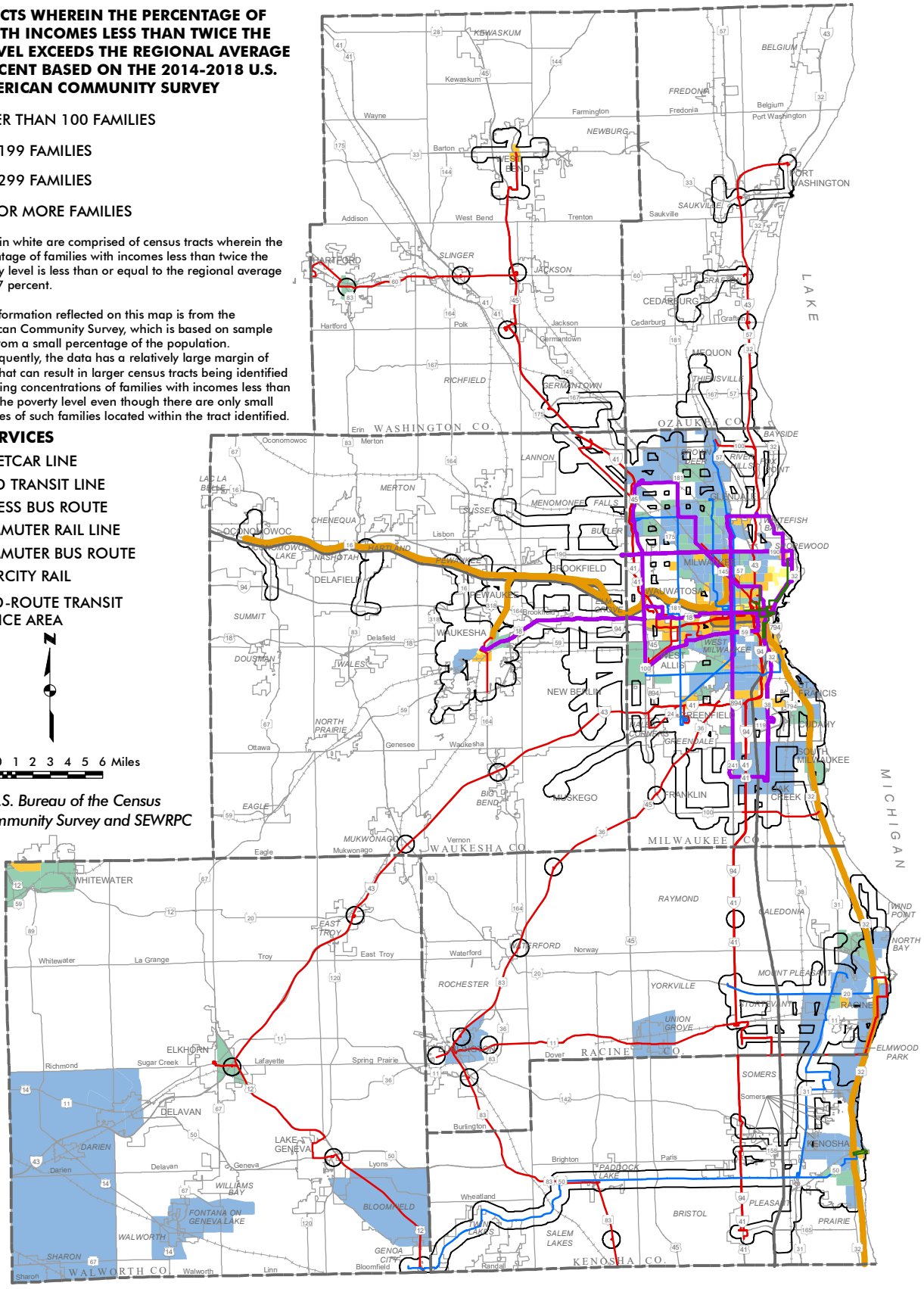
TRANSIT SERVICES

- STREETCAR LINE
- RAPID TRANSIT LINE
- EXPRESS BUS ROUTE
- COMMUTER RAIL LINE
- COMMUTER BUS ROUTE
- INTERCITY RAIL
- FIXED-ROUTE TRANSIT SERVICE AREA

N

0 1 2 3 4 5 6 Miles

Source: U.S. Bureau of the Census American Community Survey and SEWRPC



Map N.41
Comparison of Existing Concentrations of Families with Incomes Less Than Twice the Poverty Level to Public Transit Services: FCTS

CENSUS TRACTS WHEREIN THE PERCENTAGE OF FAMILIES WITH INCOMES LESS THAN TWICE THE POVERTY LEVEL EXCEEDS THE REGIONAL AVERAGE OF 22.7 PERCENT BASED ON THE 2014-2018 U.S. CENSUS AMERICAN COMMUNITY SURVEY

- FEWER THAN 100 FAMILIES
- 100-199 FAMILIES
- 200-299 FAMILIES
- 300 OR MORE FAMILIES

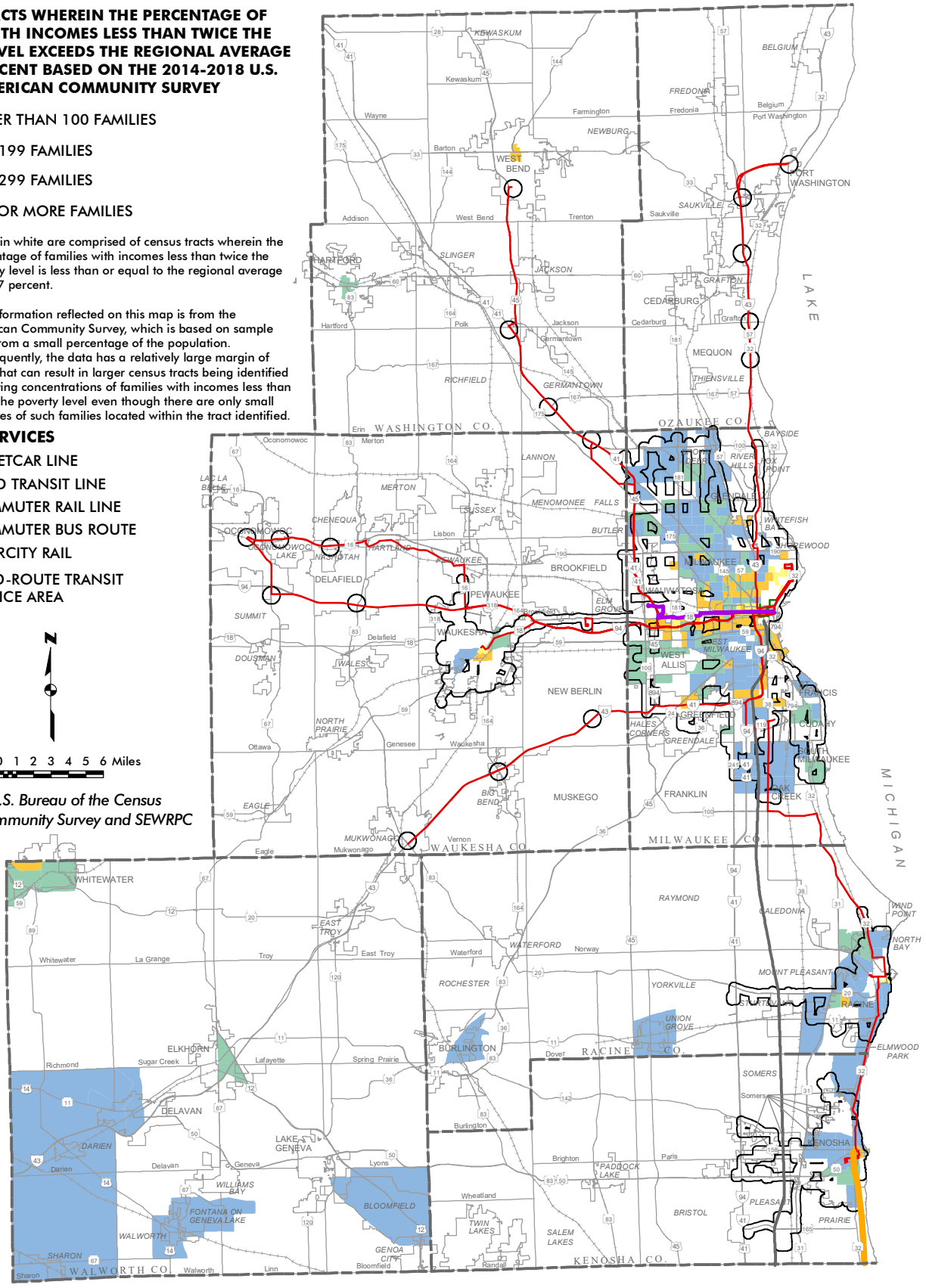
Notes: Areas in white are comprised of census tracts wherein the percentage of families with incomes less than twice the poverty level is less than or equal to the regional average of 22.7 percent.

The information reflected on this map is from the American Community Survey, which is based on sample data from a small percentage of the population. Consequently, the data has a relatively large margin of error that can result in larger census tracts being identified as having concentrations of families with incomes less than twice the poverty level even though there are only small enclaves of such families located within the tract identified.

TRANSIT SERVICES

- STREETCAR LINE
- RAPID TRANSIT LINE
- COMMUTER RAIL LINE
- COMMUTER BUS ROUTE
- INTERCITY RAIL
- FIXED-ROUTE TRANSIT SERVICE AREA

Source: U.S. Bureau of the Census American Community Survey and SEWRPC



Map N.42
Comparison of Existing Concentrations of People with Disabilities to Public Transit Services: Existing

CENSUS TRACTS WHEREIN THE PERCENTAGE OF PEOPLE WITH DISABILITIES EXCEEDS THE REGIONAL AVERAGE OF 11.8 PERCENT BASED ON THE 2014-2018 U.S. CENSUS AMERICAN COMMUNITY SURVEY

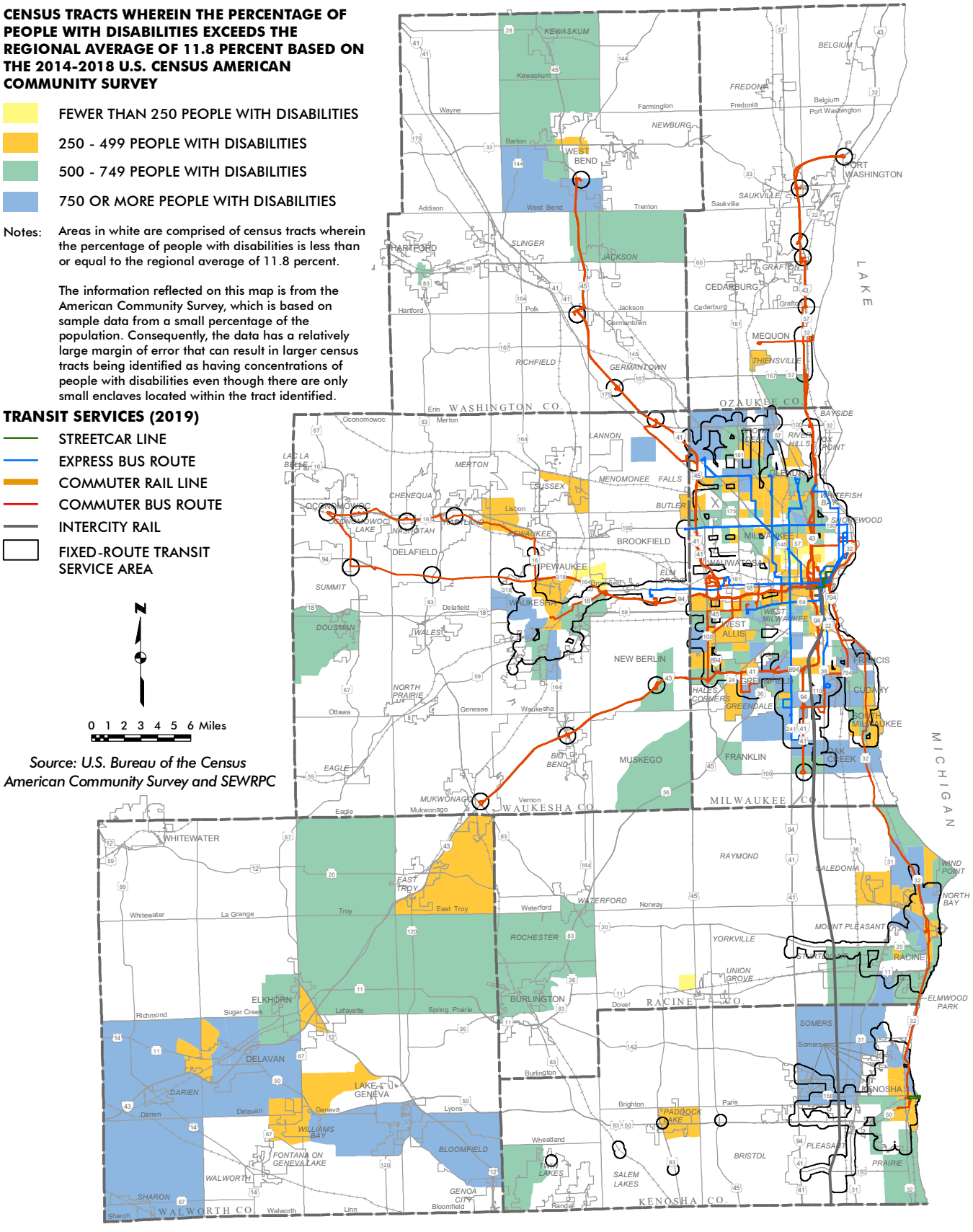
- FEWER THAN 250 PEOPLE WITH DISABILITIES
- 250 - 499 PEOPLE WITH DISABILITIES
- 500 - 749 PEOPLE WITH DISABILITIES
- 750 OR MORE PEOPLE WITH DISABILITIES

Notes: Areas in white are comprised of census tracts wherein the percentage of people with disabilities is less than or equal to the regional average of 11.8 percent.

The information reflected on this map is from the American Community Survey, which is based on sample data from a small percentage of the population. Consequently, the data has a relatively large margin of error that can result in larger census tracts being identified as having concentrations of people with disabilities even though there are only small enclaves located within the tract identified.

TRANSIT SERVICES (2019)

- STREETCAR LINE
- EXPRESS BUS ROUTE
- COMMUTER RAIL LINE
- COMMUTER BUS ROUTE
- INTERCITY RAIL
- FIXED-ROUTE TRANSIT SERVICE AREA



Source: U.S. Bureau of the Census American Community Survey and SEWRPC

Map N.43
Comparison of Existing Concentrations of People with Disabilities to Public Transit Services: VISION 2050

CENSUS TRACTS WHEREIN THE PERCENTAGE OF PEOPLE WITH DISABILITIES EXCEEDS THE REGIONAL AVERAGE OF 11.8 PERCENT BASED ON THE 2014-2018 U.S. CENSUS AMERICAN COMMUNITY SURVEY

- FEWER THAN 250 PEOPLE WITH DISABILITIES
- 250 - 499 PEOPLE WITH DISABILITIES
- 500 - 749 PEOPLE WITH DISABILITIES
- 750 OR MORE PEOPLE WITH DISABILITIES

Notes: Areas in white are comprised of census tracts wherein the percentage of people with disabilities is less than or equal to the regional average of 11.8 percent.

The information reflected on this map is from the American Community Survey, which is based on sample data from a small percentage of the population. Consequently, the data has a relatively large margin of error that can result in larger census tracts being identified as having concentrations of people with disabilities even though there are only small enclaves located within the tract identified.

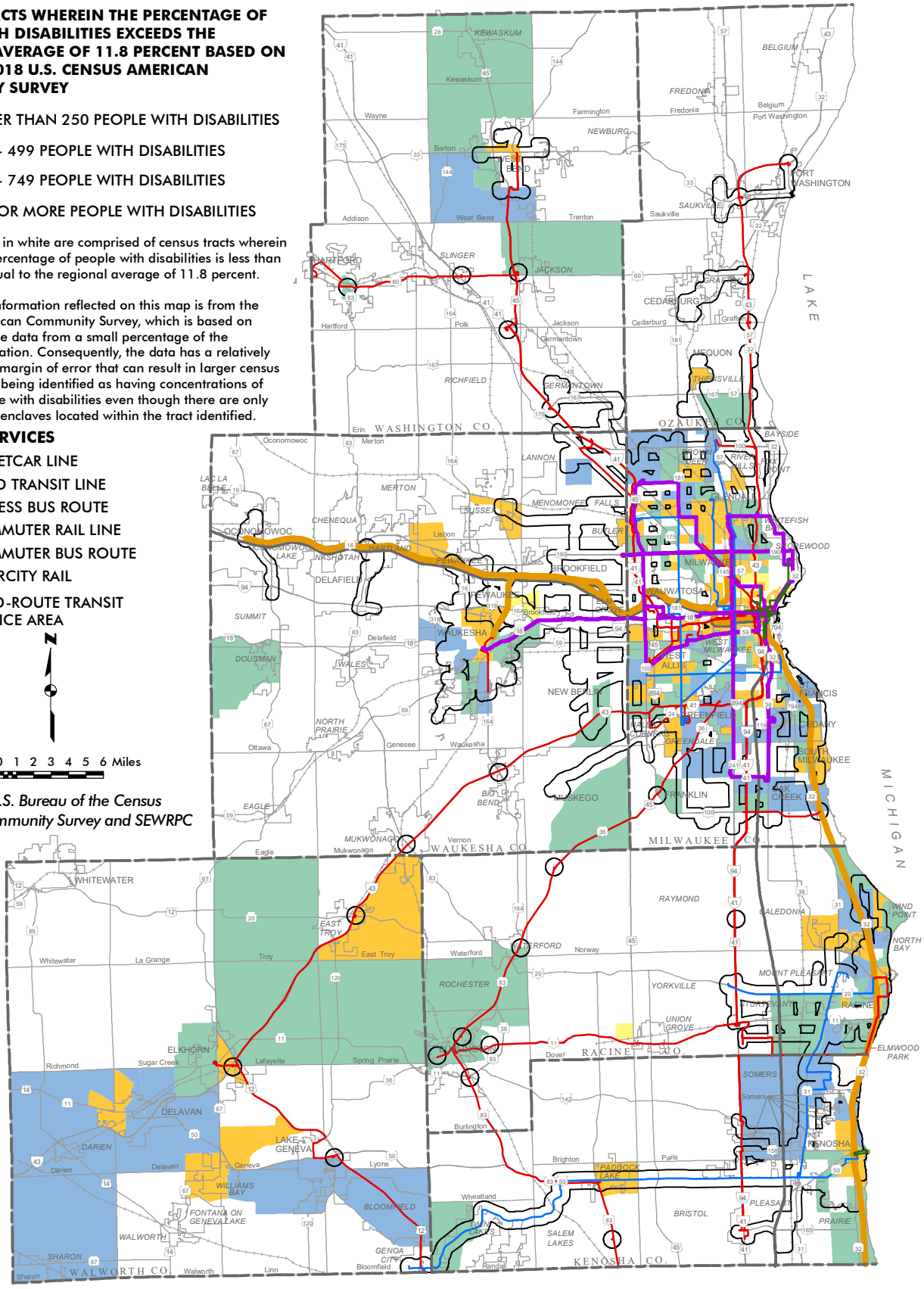
TRANSIT SERVICES

- STREETCAR LINE
- RAPID TRANSIT LINE
- EXPRESS BUS ROUTE
- COMMUTER RAIL LINE
- COMMUTER BUS ROUTE
- INTERCITY RAIL
- FIXED-ROUTE TRANSIT SERVICE AREA

N

0 1 2 3 4 5 6 Miles

Source: U.S. Bureau of the Census American Community Survey and SEWRPC



Map N.44
Comparison of Existing Concentrations of People with Disabilities to Public Transit Services: FCTS

CENSUS TRACTS WHEREIN THE PERCENTAGE OF PEOPLE WITH DISABILITIES EXCEEDS THE REGIONAL AVERAGE OF 11.8 PERCENT BASED ON THE 2014-2018 U.S. CENSUS AMERICAN COMMUNITY SURVEY

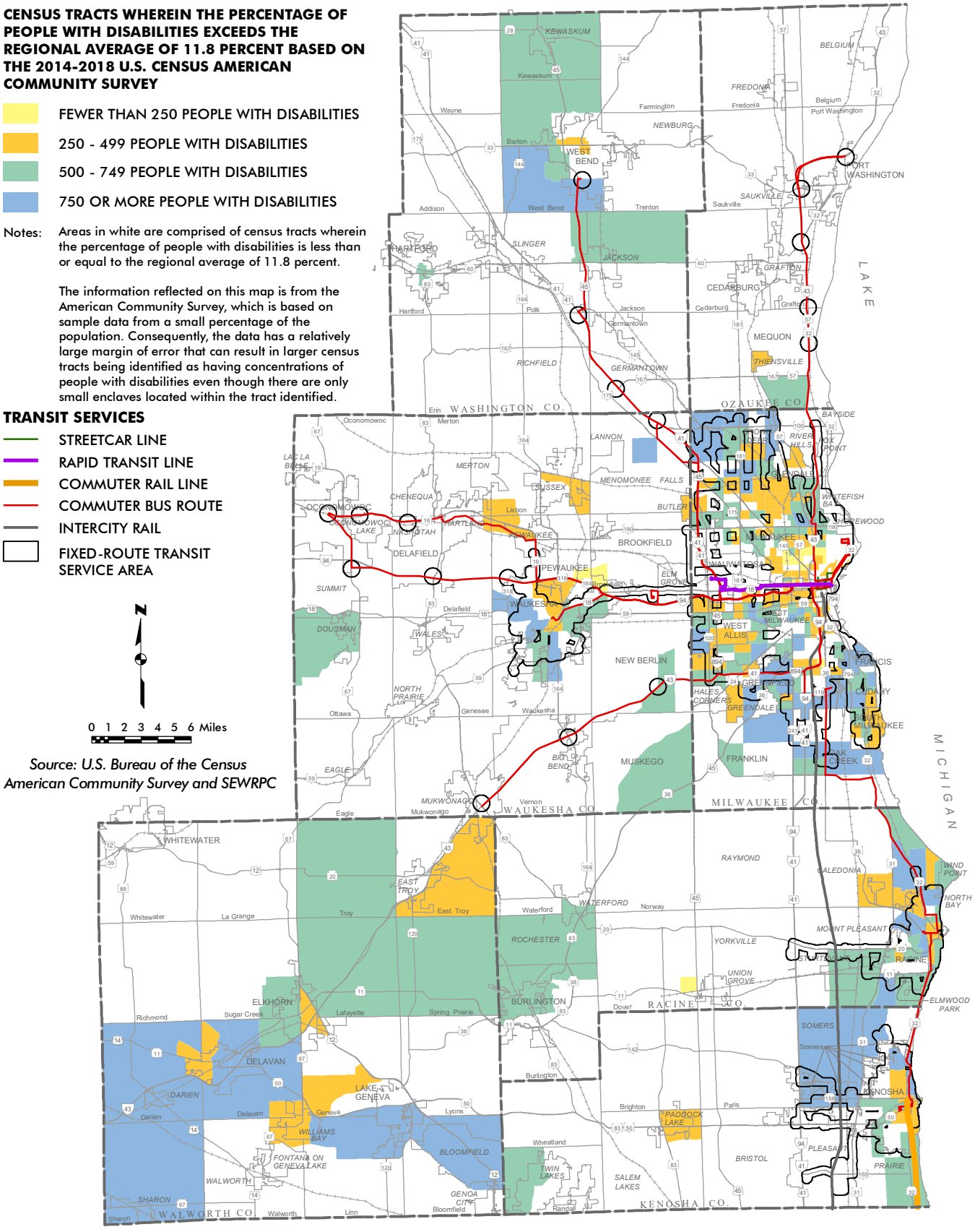
- FEWER THAN 250 PEOPLE WITH DISABILITIES
- 250 - 499 PEOPLE WITH DISABILITIES
- 500 - 749 PEOPLE WITH DISABILITIES
- 750 OR MORE PEOPLE WITH DISABILITIES

Notes: Areas in white are comprised of census tracts wherein the percentage of people with disabilities is less than or equal to the regional average of 11.8 percent.

The information reflected on this map is from the American Community Survey, which is based on sample data from a small percentage of the population. Consequently, the data has a relatively large margin of error that can result in larger census tracts being identified as having concentrations of people with disabilities even though there are only small enclaves located within the tract identified.

TRANSIT SERVICES

- STREETCAR LINE
- RAPID TRANSIT LINE
- COMMUTER RAIL LINE
- COMMUTER BUS ROUTE
- INTERCITY RAIL
- FIXED-ROUTE TRANSIT SERVICE AREA



Source: U.S. Bureau of the Census American Community Survey and SEWRPC

50 percent of) people not having a disability were served by public transit services provided in the year 2019.

With respect to higher levels of transit, less than 1 percent of all eight population groups had access to fixed-guideway transit in 2019 (a limited commuter rail service was provided to Kenosha from northeastern Illinois on Metra's Union Pacific North Line).

- **VISION 2050:** About 522,200 minority people (or about 90 percent of the total minority population) and 826,100 non-minority people (or 58 percent of the total non-minority population) would be served by public transit under VISION 2050. With respect to lower-income populations, 40,100 (or 82 percent of) families in poverty and 258,700 (or 56 percent of) families not in poverty would be served by public transit under VISION 2050. Similarly, 89,800 (or 77 percent of) families with incomes less than twice the poverty level and 209,100 (or 53 percent of) families with incomes more than twice the poverty level would be served by public transit under VISION 2050. With respect to people with disabilities, 161,100 (or 68 percent of) people with disabilities and 1,108,400 (or 62 percent of) people not having a disability would be served by public transit under VISION 2050.

  The extensive expansion of fixed-guideway transit under VISION 2050 would result in increased access to fixed-guideway transit from the current levels of 0.2 to 0.6 percent to about 27 to 42 percent for existing minority populations, lower-income populations, and people with disabilities. Access for non-minority populations, families not in poverty, families with incomes more than twice the poverty level, and people without disabilities would increase from the current levels of 0.1 to 0.3 percent to about 16 to 23 percent.

- **FCTS:** While the overall extent of transit service under the FCTS would be expected to decline, most of the transit routes and service areas under the FCTS would continue to serve the principal concentrations of existing minority populations, lower-income populations, and people with disabilities. Specifically, about 470,100 minority people (or 81 percent of the total minority population) and 556,400 non-minority people (or 39 percent of the total non-minority population) would be served by public transit under the FCTS. With respect to lower-income populations, 35,800 (or 73 percent of) families in poverty and 182,500 (or 40 percent of) families not in poverty would be served by public transit under the FCTS. Similarly, 77,300 (or 66 percent of) families with incomes less than twice the poverty level and 141,100 (or 36 percent of) families with incomes more than twice the poverty level would be served by public transit under the FCTS. With respect to people with disabilities, 127,400 (or 53 percent of) people with disabilities and 838,100 (or 47 percent of) people not having a disability would be served by public transit under the FCTS.

  Due to the planned bus rapid transit line between downtown Milwaukee and the Milwaukee Regional Medical Center, access to fixed-guideway transit would modestly increase for each of the eight population groups. Under the FCTS, access to fixed-guideway transit would increase from the current levels of 0.2 to 0.6 percent to about 3 to 4 percent for existing minority populations, lower-income

populations, and people with disabilities. Access for non-minority populations, families not in poverty, families with incomes more than twice the poverty level, and people without disabilities would increase from the current levels of 0.1 to 0.2 percent to about 2 to 3 percent.

TRANSIT SERVICE QUALITY FOR MINORITY POPULATIONS AND LOW-INCOME POPULATIONS

Based on the amount and speed of transit service, levels of transit service quality—Excellent, Very Good, Good, and Basic[82]—that would be provided under existing conditions, VISION 2050, and the FCTS to existing minority populations, low-income populations, and people with disabilities were determined. Based on this analysis, the quality of transit service provided under existing conditions, VISION 2050, and the FCTS is shown on Maps N.45 through N.47, respectively. Table N.19 and Maps N.48 through N.59 compare transit service quality under existing conditions, VISION 2050, and the FCTS to locations of existing minority populations, lower-income populations (families in poverty and families with incomes less than twice the poverty level), and people with disabilities in the Region.[83]

- **Existing Transit Service:** Most of the year 2017 routes and service areas providing quality transit service in the Region serve the principal concentrations of existing minority populations, lower-income populations, and people with disabilities. Specifically, about 286,600 minority people (or 49 percent of the total minority

[82] *Areas with "Excellent" transit service are areas that are typically within walking distance of at least one rapid transit station, and also within walking distance of multiple frequent local or express bus services. A resident living in an area of the Region with Excellent transit service has a high likelihood of not needing to own a car.*

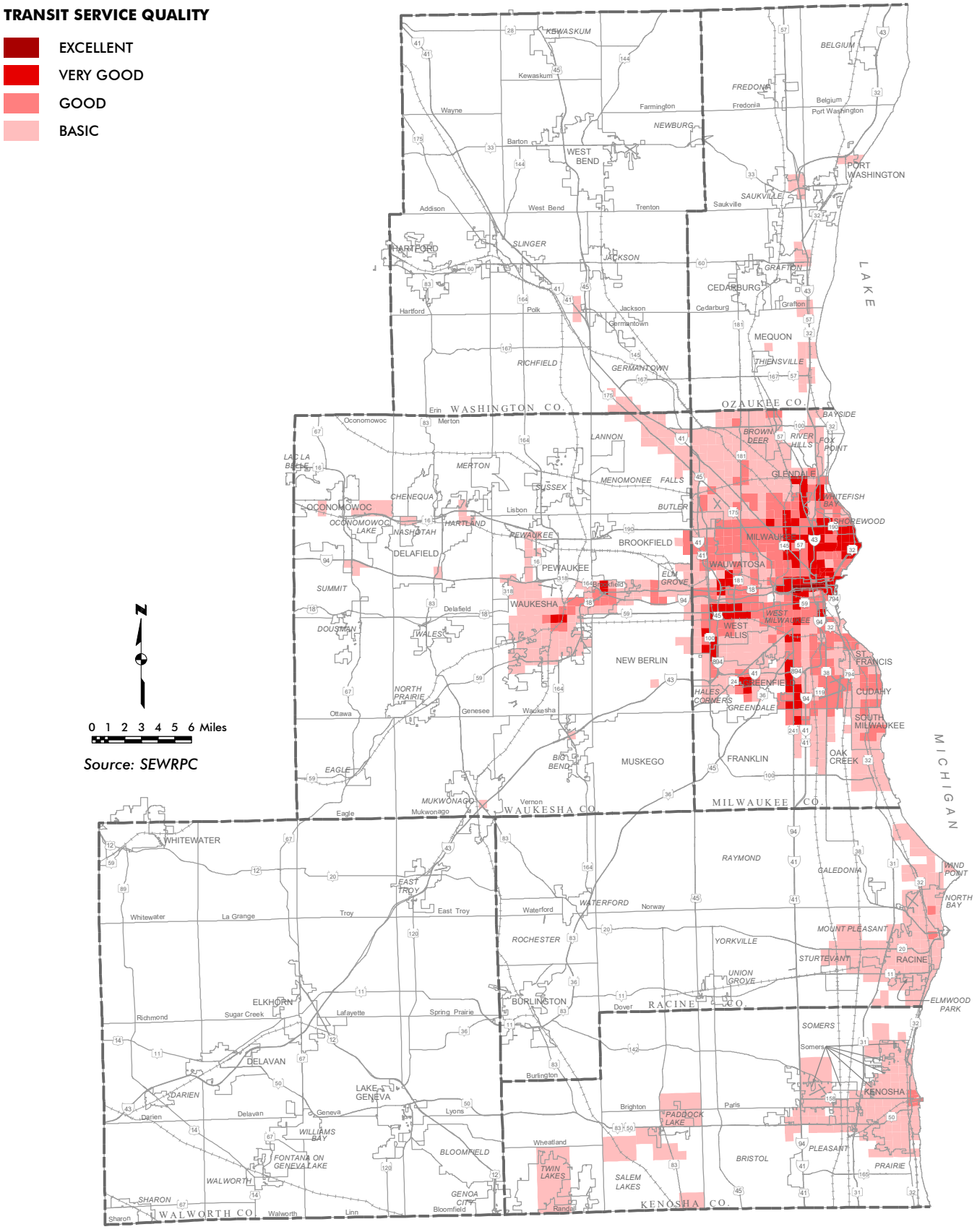
Areas *with "Very Good" transit service typically include parts of the Region that are within walking distance of a rapid transit or commuter rail station, but may have fewer local or express bus routes nearby than an area with Excellent service. Alternatively, areas with Very Good service may not be within walking distance of a rapid transit or commuter rail station, but may instead be near multiple frequent local and express bus routes.*

To *have "Good" transit service, an area would be within walking distance of one local or express bus route that provides service at least every 15 minutes all day, or may be near three or more local bus routes that do not provide frequent, all-day service. An area with Good transit service typically would not have access to a rapid transit line.*

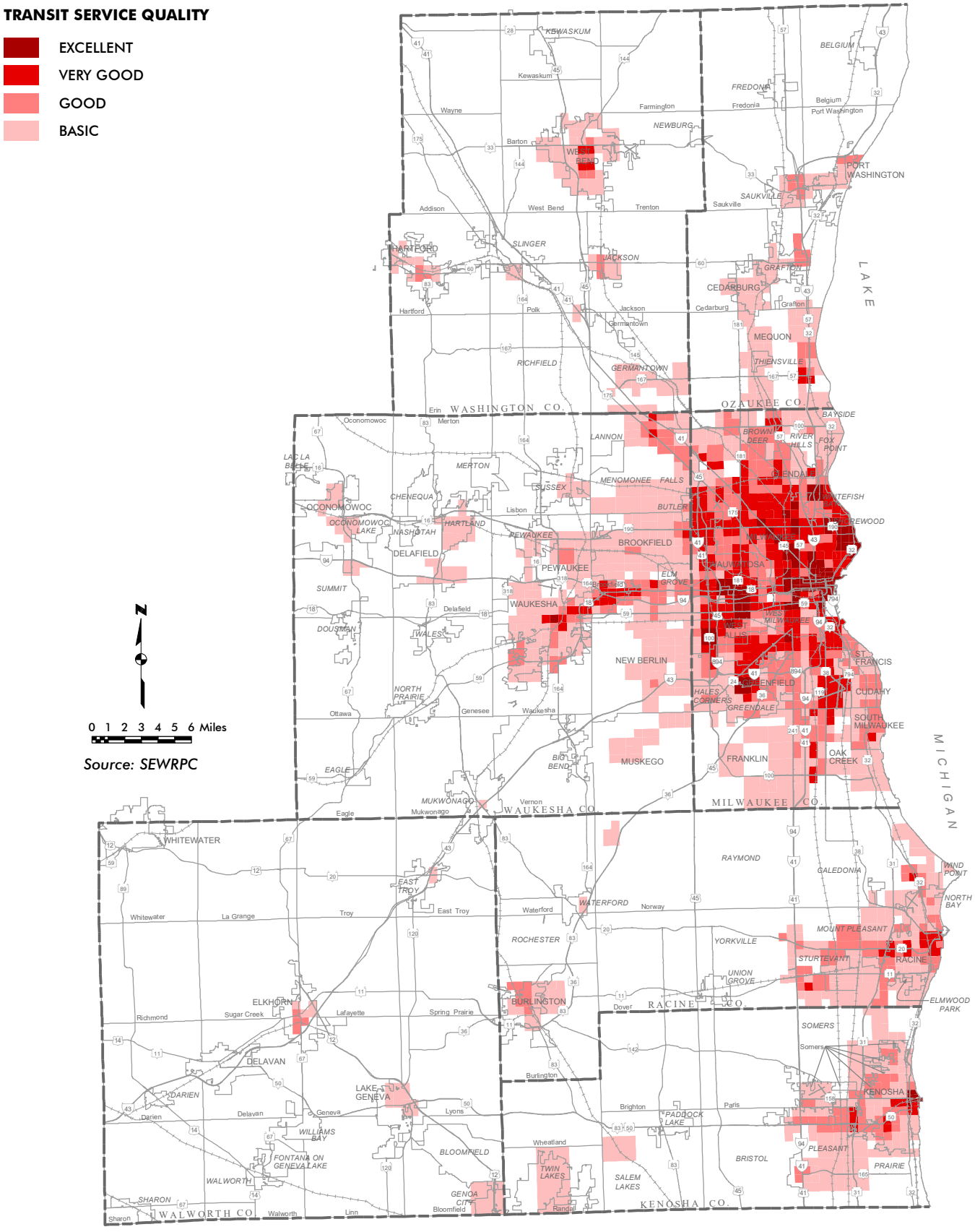
If *a part of the Region is served by "Basic" transit service, it is within walking distance of at least one local bus route, but generally not more than two routes. The routes are not likely to have service better than every 15 minutes all day.*

[83] *Table N.19 and Maps N.48 through N.59 must be considered together when evaluating changes to transit service quality. The table presents the number of each population group served, and, therefore, enables a direct comparison of both the number of people in a given group that are served under the existing, VISION 2050, and FCTS transit systems and the changes anticipated if VISION 2050 or the FCTS were implemented. The maps display the land areas served overlain on areas where there are varying concentrations of each group. Thus, Table N.19 is most useful for evaluating the number of people potentially affected by changes in transit service levels, while Maps N.48 through N.59 highlight the geographic areas where changes in transit service would be expected, providing a general, but less precise, indication of the degree to which the identified population groups may be affected. As an example, because high proportions of minority populations and lower-income populations in the Region reside in higher-density urban areas, the small area shown on Maps N.48 through N.59 as being served by quality transit may actually correspond to a relatively large number of people being served with such service, as reflected in Table N.19.*

Map N.45
Transit Service Quality: Existing



Map N.46
Transit Service Quality: VISION 2050



Map N.47
Transit Service Quality: FCTS

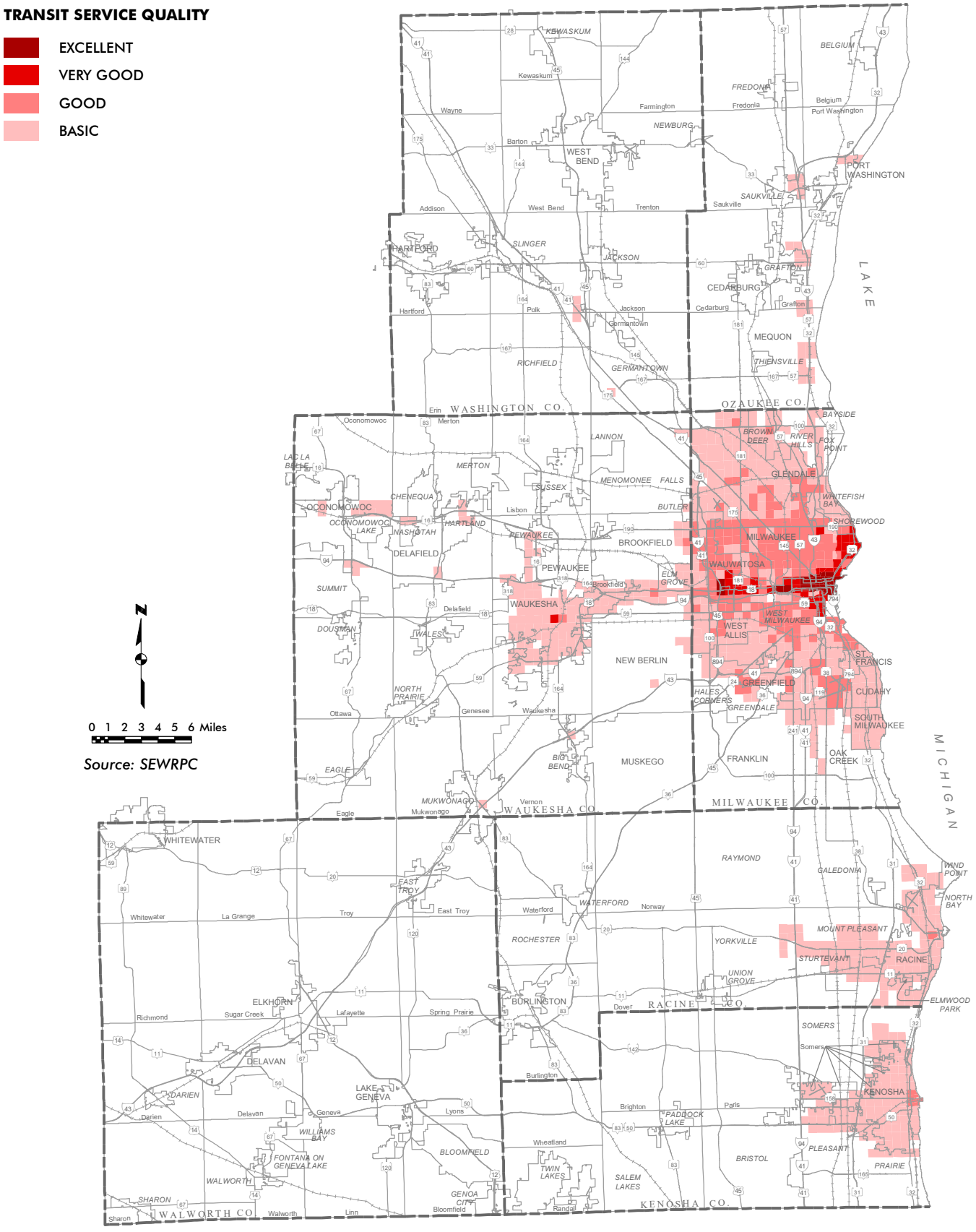


Table N.19
Transit Service Quality

Minority Population[a]

Plan	Excellent People	Excellent Percent	Very Good People	Very Good Percent	Good People	Good Percent	Basic People	Basic Percent	Total Minority Population
Existing - 2017	1,300	0.2	61,000	10.5	224,300	38.5	224,600	38.5	582,900
VISION 2050	69,900	12.0	205,100	35.2	149,000	25.6	113,000	19.4	582,900
FCTS - 2050	5,500	0.9	13,800	2.4	94,300	16.2	394,300	67.6	582,900

Non-Minority Population[a]

Plan	Excellent People	Excellent Percent	Very Good People	Very Good Percent	Good People	Good Percent	Basic People	Basic Percent	Total Non-Minority Population
Existing - 2017	2,300	0.2	58,700	4.1	177,600	12.4	396,400	27.6	1,437,500
VISION 2050	65,800	4.6	180,400	12.5	223,100	15.5	402,400	28.0	1,437,500
FCTS - 2050	9,800	0.7	20,300	1.4	50,400	3.5	522,300	36.3	1,437,500

Families in Poverty[a]

Plan	Excellent Families	Excellent Percent	Very Good Families	Very Good Percent	Good Families	Good Percent	Basic Families	Basic Percent	Total Families in Poverty
Existing - 2017	100	0.2	5,200	10.7	16,200	33.4	17,800	36.7	48,500
VISION 2050	5,300	10.9	15,400	31.8	11,600	23.9	9,200	19.0	48,500
FCTS - 2050	300	0.6	1,200	2.5	7,000	14.4	30,500	62.9	48,500

Families Not in Poverty[a]

Plan	Excellent Families	Excellent Percent	Very Good Families	Very Good Percent	Good Families	Good Percent	Basic Families	Basic Percent	Total Families Not in Poverty
Existing - 2017	200	0.0	16,500	3.6	73,000	15.8	135,700	29.5	460,600
VISION 2050	19,000	4.1	71,700	15.6	78,500	17.0	126,200	27.4	460,600
FCTS - 2050	1,000	0.2	3,900	0.8	23,200	5.0	188,100	40.8	460,600

Families with Incomes Less Than Twice the Poverty Level[a]

Plan	Excellent Families	Excellent Percent	Very Good Families	Very Good Percent	Good Families	Good Percent	Basic Families	Basic Percent	Total Families with Incomes Less Than Twice the Poverty Level
Existing - 2017	100	0.1	9,600	8.3	33,900	29.3	43,000	37.2	115,600
VISION 2050	9,900	8.6	32,900	28.5	26,800	23.2	25,000	21.6	115,600
FCTS - 2050	400	0.3	1,900	1.6	13,900	12.0	69,200	59.9	115,600

Families with Incomes More Than Twice the Poverty Level[a]

Plan	Excellent Families	Excellent Percent	Very Good Families	Very Good Percent	Good Families	Good Percent	Basic Families	Basic Percent	Total Families with Incomes More Than Twice the Poverty Level
Existing - 2017	200	0.1	12,100	3.1	55,300	14.1	110,500	28.1	393,500
VISION 2050	14,400	3.7	54,300	13.8	63,400	16.1	110,400	28.1	393,500
FCTS - 2050	900	0.2	3,100	0.8	16,400	4.2	149,400	38.0	393,500

People with Disabilities[a]

Plan	Excellent People	Excellent Percent	Very Good People	Very Good Percent	Good People	Good Percent	Basic People	Basic Percent	Total Population with Disabilities
Existing - 2017	300	0.1	15,800	6.6	53,800	22.6	79,900	33.6	237,700
VISION 2050	18,000	7.6	50,000	21.0	48,000	20.2	59,900	25.2	237,700
FCTS - 2050	1,400	0.6	4,400	1.9	20,800	8.8	119,400	50.2	237,700

People Without Disabilities[a]

Plan	Excellent People	Excellent Percent	Very Good People	Very Good Percent	Good People	Good Percent	Basic People	Basic Percent	Total Population Without Disabilities
Existing - 2017	3,200	0.2	103,900	5.8	348,200	19.5	541,100	30.4	1,782,600
VISION 2050	117,700	6.6	335,600	18.8	324,100	18.2	455,500	25.6	1,782,600
FCTS - 2050	14,000	0.8	29,700	1.7	123,900	7.0	797,300	44.7	1,782,600

[a] *Minority population and non-minority population are based on the 2010 U.S. Census and families in poverty, families not in poverty, families with incomes less than twice the poverty level, families with incomes more than twice the poverty level, people with disabilities, and people without disabilities are based on the 2014-2018 American Community Survey.*

Source: U.S. Bureau of the Census, U.S. Census and American Community Survey; and SEWRPC

Map N.48
Comparison of Existing Concentrations of Total Minority Population to Transit Service Quality: Existing

CENSUS BLOCKS WHEREIN THE PERCENTAGE OF MINORITY PEOPLE, INCLUDING HISPANIC PEOPLE, EXCEEDS THE REGIONAL AVERAGE OF 28.9 PERCENT BASED ON THE 2010 U.S. CENSUS

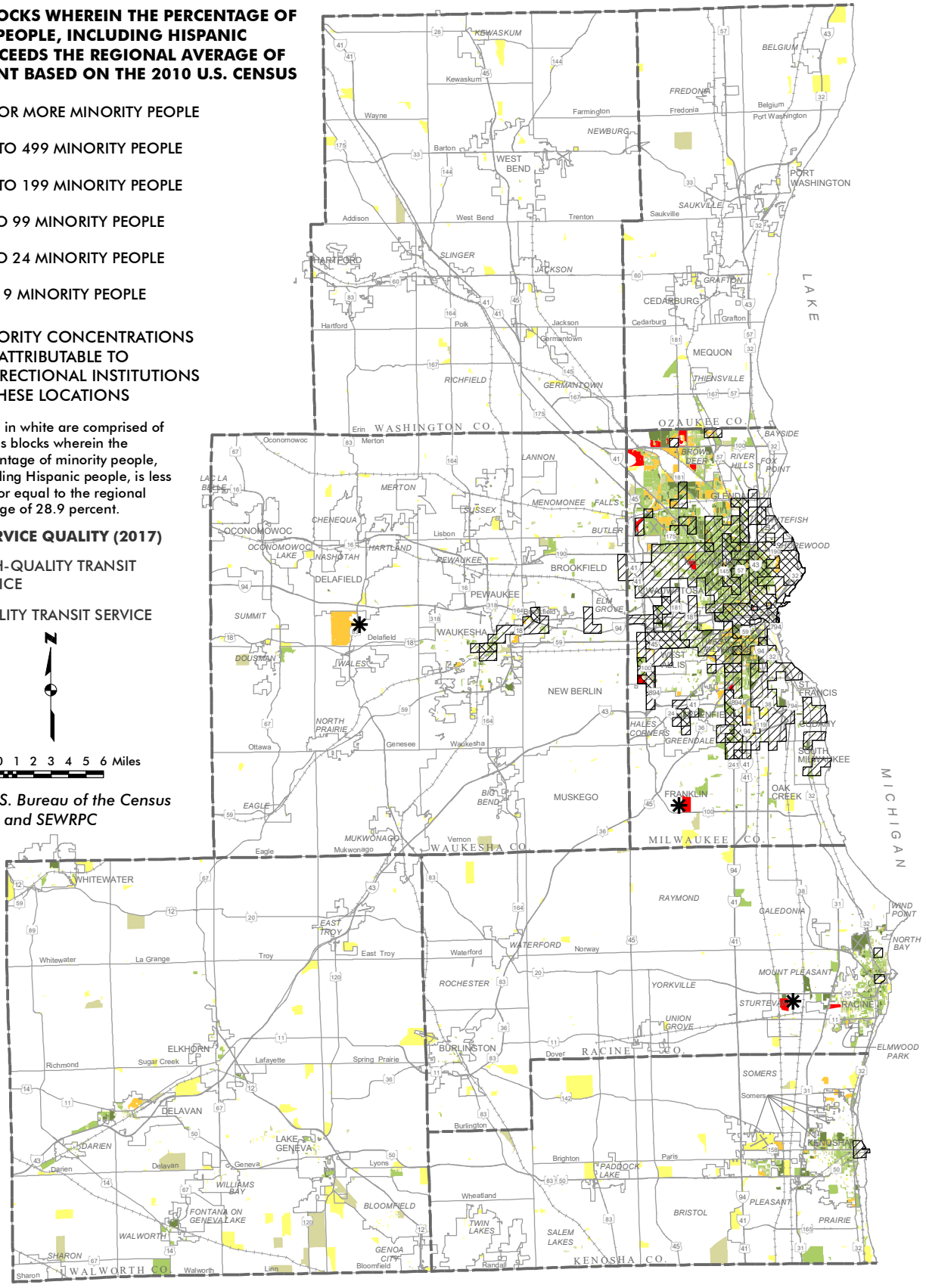
- 500 OR MORE MINORITY PEOPLE
- 200 TO 499 MINORITY PEOPLE
- 100 TO 199 MINORITY PEOPLE
- 25 TO 99 MINORITY PEOPLE
- 10 TO 24 MINORITY PEOPLE
- 1 TO 9 MINORITY PEOPLE
- * MINORITY CONCENTRATIONS ARE ATTRIBUTABLE TO CORRECTIONAL INSTITUTIONS IN THESE LOCATIONS

Note: Areas in white are comprised of census blocks wherein the percentage of minority people, including Hispanic people, is less than or equal to the regional average of 28.9 percent.

TRANSIT SERVICE QUALITY (2017)

- HIGH-QUALITY TRANSIT SERVICE
- QUALITY TRANSIT SERVICE

Source: U.S. Bureau of the Census and SEWRPC



Map N.49
Comparison of Existing Concentrations of Total Minority Population to Transit Service Quality: VISION 2050

CENSUS BLOCKS WHEREIN THE PERCENTAGE OF MINORITY PEOPLE, INCLUDING HISPANIC PEOPLE, EXCEEDS THE REGIONAL AVERAGE OF 28.9 PERCENT BASED ON THE 2010 U.S. CENSUS

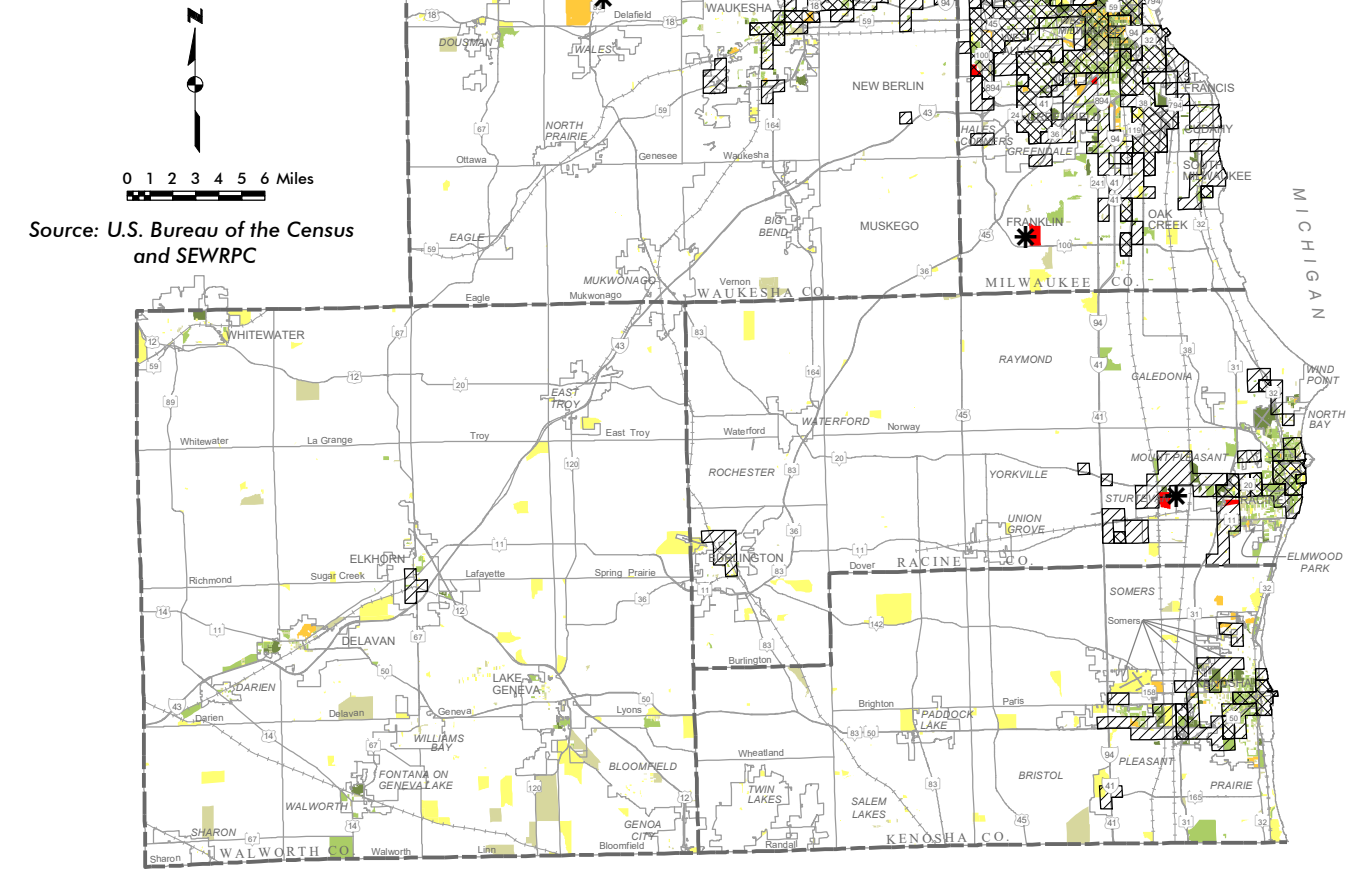
- 500 OR MORE MINORITY PEOPLE
- 200 TO 499 MINORITY PEOPLE
- 100 TO 199 MINORITY PEOPLE
- 25 TO 99 MINORITY PEOPLE
- 10 TO 24 MINORITY PEOPLE
- 1 TO 9 MINORITY PEOPLE

* MINORITY CONCENTRATIONS ARE ATTRIBUTABLE TO CORRECTIONAL INSTITUTIONS IN THESE LOCATIONS

Note: Areas in white are comprised of census blocks wherein the percentage of minority people, including Hispanic people, is less than or equal to the regional average of 28.9 percent.

TRANSIT SERVICE QUALITY

- HIGH-QUALITY TRANSIT SERVICE
- QUALITY TRANSIT SERVICE



Source: U.S. Bureau of the Census and SEWRPC

Map N.50
Comparison of Existing Concentrations of Total Minority Population to Transit Service Quality: FCTS

CENSUS BLOCKS WHEREIN THE PERCENTAGE OF MINORITY PEOPLE, INCLUDING HISPANIC PEOPLE, EXCEEDS THE REGIONAL AVERAGE OF 28.9 PERCENT BASED ON THE 2010 U.S. CENSUS

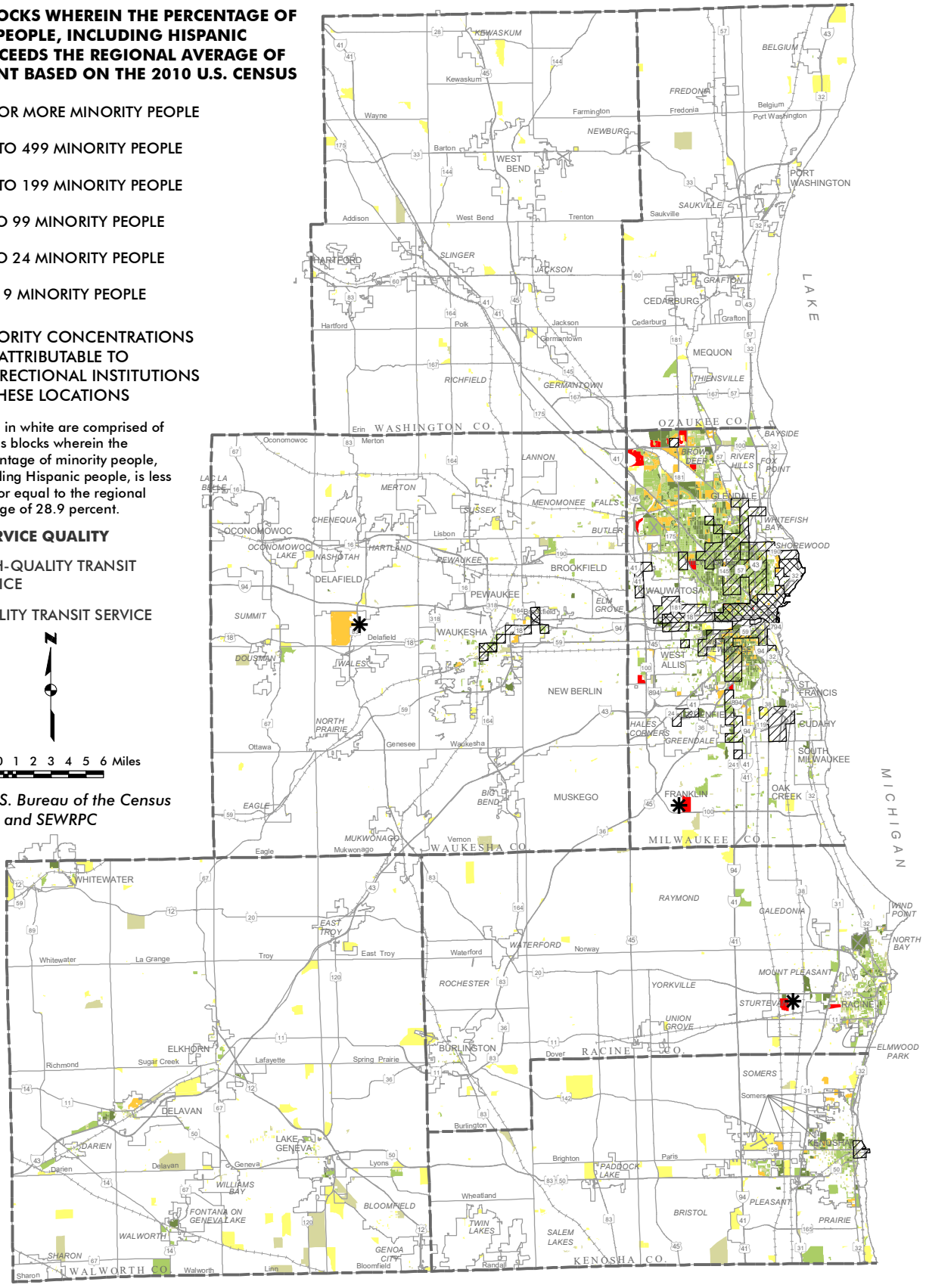
- 500 OR MORE MINORITY PEOPLE
- 200 TO 499 MINORITY PEOPLE
- 100 TO 199 MINORITY PEOPLE
- 25 TO 99 MINORITY PEOPLE
- 10 TO 24 MINORITY PEOPLE
- 1 TO 9 MINORITY PEOPLE
- * MINORITY CONCENTRATIONS ARE ATTRIBUTABLE TO CORRECTIONAL INSTITUTIONS IN THESE LOCATIONS

Note: Areas in white are comprised of census blocks wherein the percentage of minority people, including Hispanic people, is less than or equal to the regional average of 28.9 percent.

TRANSIT SERVICE QUALITY

- HIGH-QUALITY TRANSIT SERVICE
- QUALITY TRANSIT SERVICE

Source: U.S. Bureau of the Census and SEWRPC



Map N.51
Comparison of Existing Concentrations of Families in Poverty to Transit Service Quality: Existing

CENSUS TRACTS WHEREIN THE PERCENTAGE OF FAMILIES IN POVERTY EXCEEDS THE REGIONAL AVERAGE OF 9.5 PERCENT BASED ON THE 2014-2018 U.S. CENSUS AMERICAN COMMUNITY SURVEY

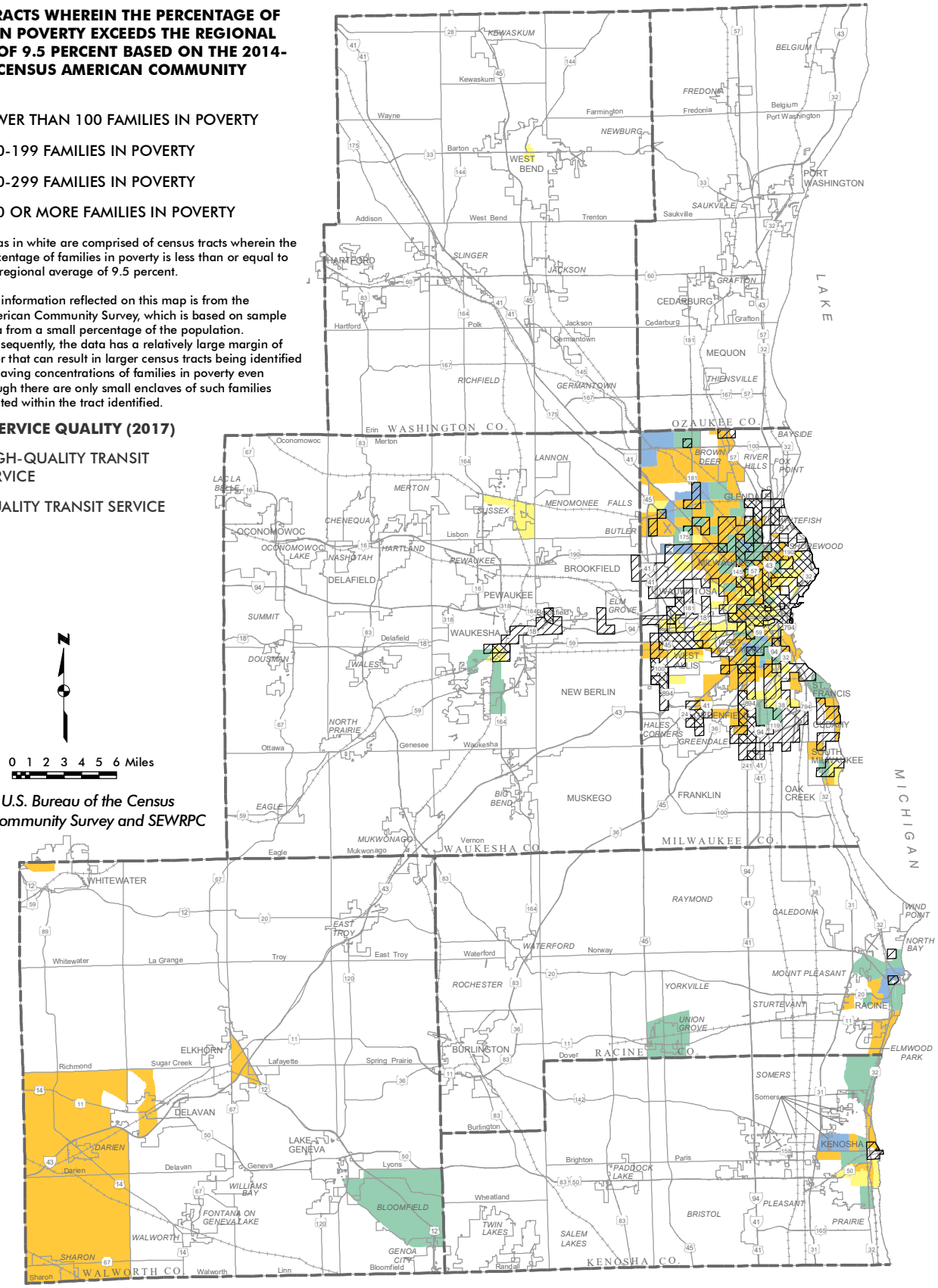
- FEWER THAN 100 FAMILIES IN POVERTY
- 100-199 FAMILIES IN POVERTY
- 200-299 FAMILIES IN POVERTY
- 300 OR MORE FAMILIES IN POVERTY

Notes: Areas in white are comprised of census tracts wherein the percentage of families in poverty is less than or equal to the regional average of 9.5 percent.

The information reflected on this map is from the American Community Survey, which is based on sample data from a small percentage of the population. Consequently, the data has a relatively large margin of error that can result in larger census tracts being identified as having concentrations of families in poverty even though there are only small enclaves of such families located within the tract identified.

TRANSIT SERVICE QUALITY (2017)

- HIGH-QUALITY TRANSIT SERVICE
- QUALITY TRANSIT SERVICE



Source: U.S. Bureau of the Census American Community Survey and SEWRPC

Map N.52
Comparison of Existing Concentrations of Families in Poverty to Transit Service Quality: VISION 2050

CENSUS TRACTS WHEREIN THE PERCENTAGE OF FAMILIES IN POVERTY EXCEEDS THE REGIONAL AVERAGE OF 9.5 PERCENT BASED ON THE 2014-2018 U.S. CENSUS AMERICAN COMMUNITY SURVEY

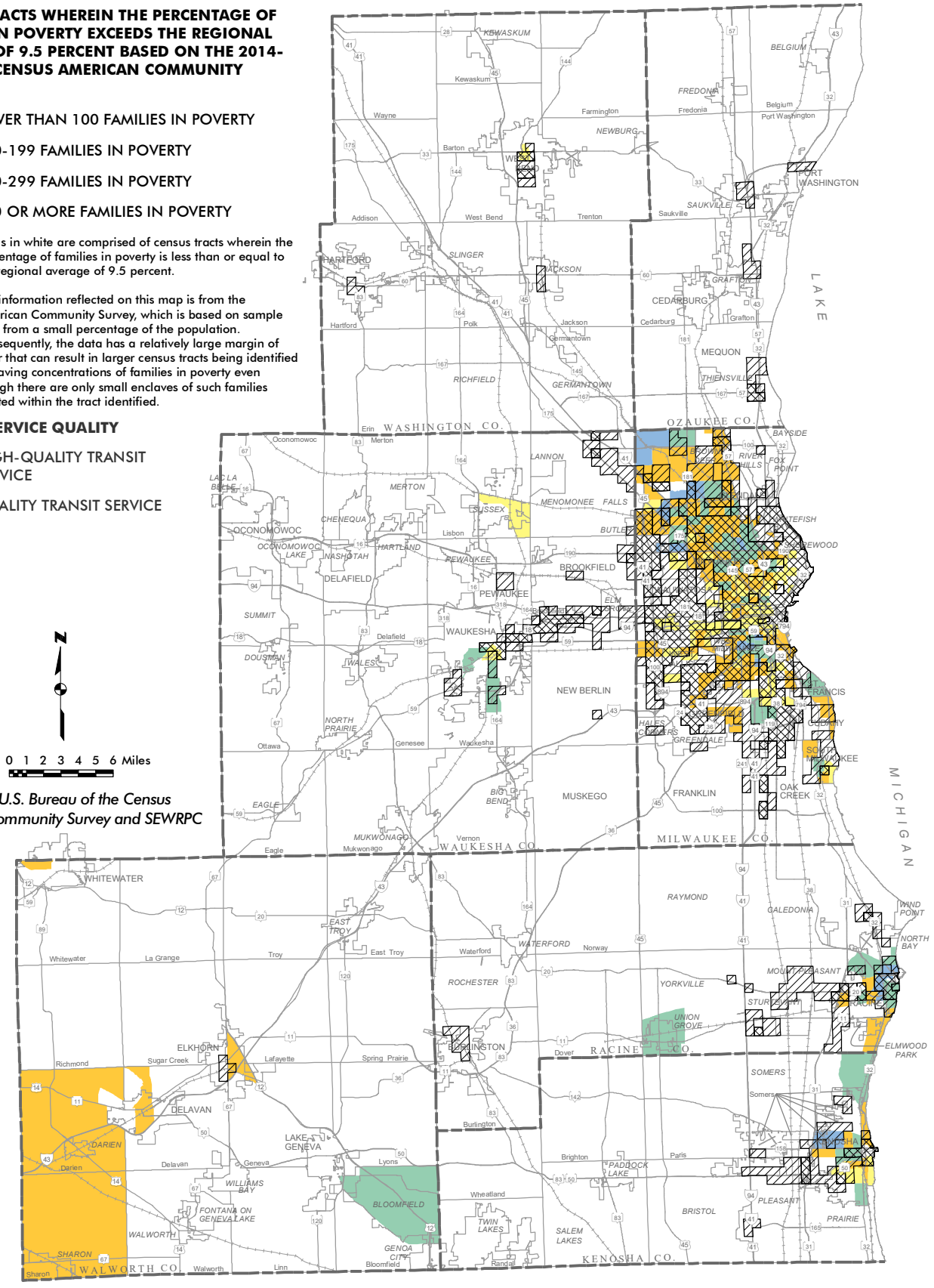
- FEWER THAN 100 FAMILIES IN POVERTY
- 100-199 FAMILIES IN POVERTY
- 200-299 FAMILIES IN POVERTY
- 300 OR MORE FAMILIES IN POVERTY

Notes: Areas in white are comprised of census tracts wherein the percentage of families in poverty is less than or equal to the regional average of 9.5 percent.

The information reflected on this map is from the American Community Survey, which is based on sample data from a small percentage of the population. Consequently, the data has a relatively large margin of error that can result in larger census tracts being identified as having concentrations of families in poverty even though there are only small enclaves of such families located within the tract identified.

TRANSIT SERVICE QUALITY

- HIGH-QUALITY TRANSIT SERVICE
- QUALITY TRANSIT SERVICE



Source: U.S. Bureau of the Census American Community Survey and SEWRPC

Map N.53
Comparison of Existing Concentrations of Families in Poverty to Transit Service Quality: FCTS

CENSUS TRACTS WHEREIN THE PERCENTAGE OF FAMILIES IN POVERTY EXCEEDS THE REGIONAL AVERAGE OF 9.5 PERCENT BASED ON THE 2014-2018 U.S. CENSUS AMERICAN COMMUNITY SURVEY

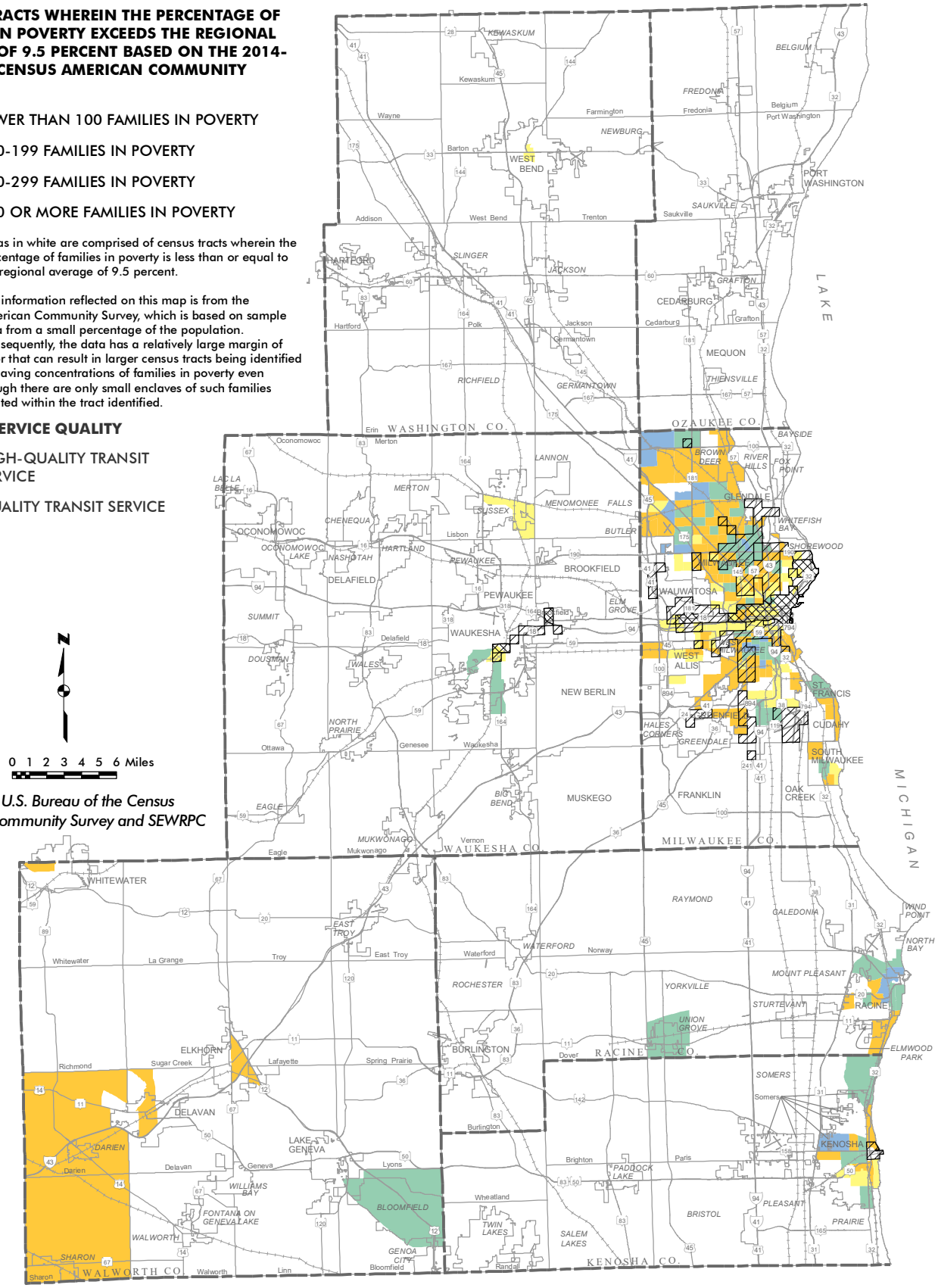
- FEWER THAN 100 FAMILIES IN POVERTY
- 100-199 FAMILIES IN POVERTY
- 200-299 FAMILIES IN POVERTY
- 300 OR MORE FAMILIES IN POVERTY

Notes: Areas in white are comprised of census tracts wherein the percentage of families in poverty is less than or equal to the regional average of 9.5 percent.

The information reflected on this map is from the American Community Survey, which is based on sample data from a small percentage of the population. Consequently, the data has a relatively large margin of error that can result in larger census tracts being identified as having concentrations of families in poverty even though there are only small enclaves of such families located within the tract identified.

TRANSIT SERVICE QUALITY

- HIGH-QUALITY TRANSIT SERVICE
- QUALITY TRANSIT SERVICE



Source: U.S. Bureau of the Census American Community Survey and SEWRPC

Map N.54
Comparison of Existing Concentrations of Families with Incomes Less Than Twice the Poverty Level to Transit Service Quality: Existing

CENSUS TRACTS WHEREIN THE PERCENTAGE OF FAMILIES WITH INCOMES LESS THAN TWICE THE POVERTY LEVEL EXCEEDS THE REGIONAL AVERAGE OF 22.7 PERCENT BASED ON THE 2014-2018 U.S. CENSUS AMERICAN COMMUNITY SURVEY

- FEWER THAN 100 FAMILIES
- 100-199 FAMILIES
- 200-299 FAMILIES
- 300 OR MORE FAMILIES

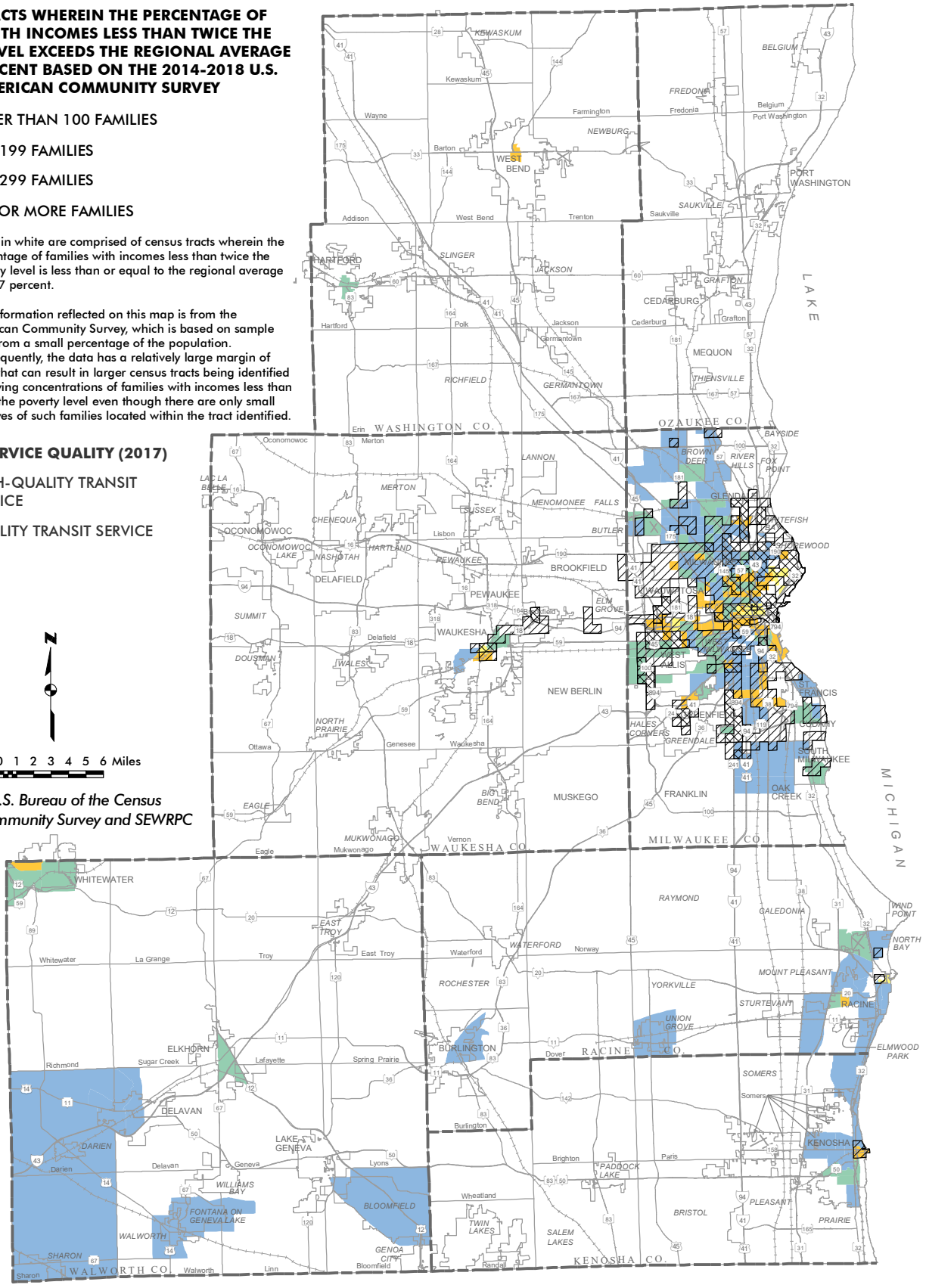
Notes: Areas in white are comprised of census tracts wherein the percentage of families with incomes less than twice the poverty level is less than or equal to the regional average of 22.7 percent.

The information reflected on this map is from the American Community Survey, which is based on sample data from a small percentage of the population. Consequently, the data has a relatively large margin of error that can result in larger census tracts being identified as having concentrations of families with incomes less than twice the poverty level even though there are only small enclaves of such families located within the tract identified.

TRANSIT SERVICE QUALITY (2017)

- HIGH-QUALITY TRANSIT SERVICE
- QUALITY TRANSIT SERVICE

Source: U.S. Bureau of the Census American Community Survey and SEWRPC



Map N.55
Comparison of Existing Concentrations of Families with Incomes Less Than Twice the Poverty Level to Transit Service Quality: VISION 2050

CENSUS TRACTS WHEREIN THE PERCENTAGE OF FAMILIES WITH INCOMES LESS THAN TWICE THE POVERTY LEVEL EXCEEDS THE REGIONAL AVERAGE OF 22.7 PERCENT BASED ON THE 2014-2018 U.S. CENSUS AMERICAN COMMUNITY SURVEY

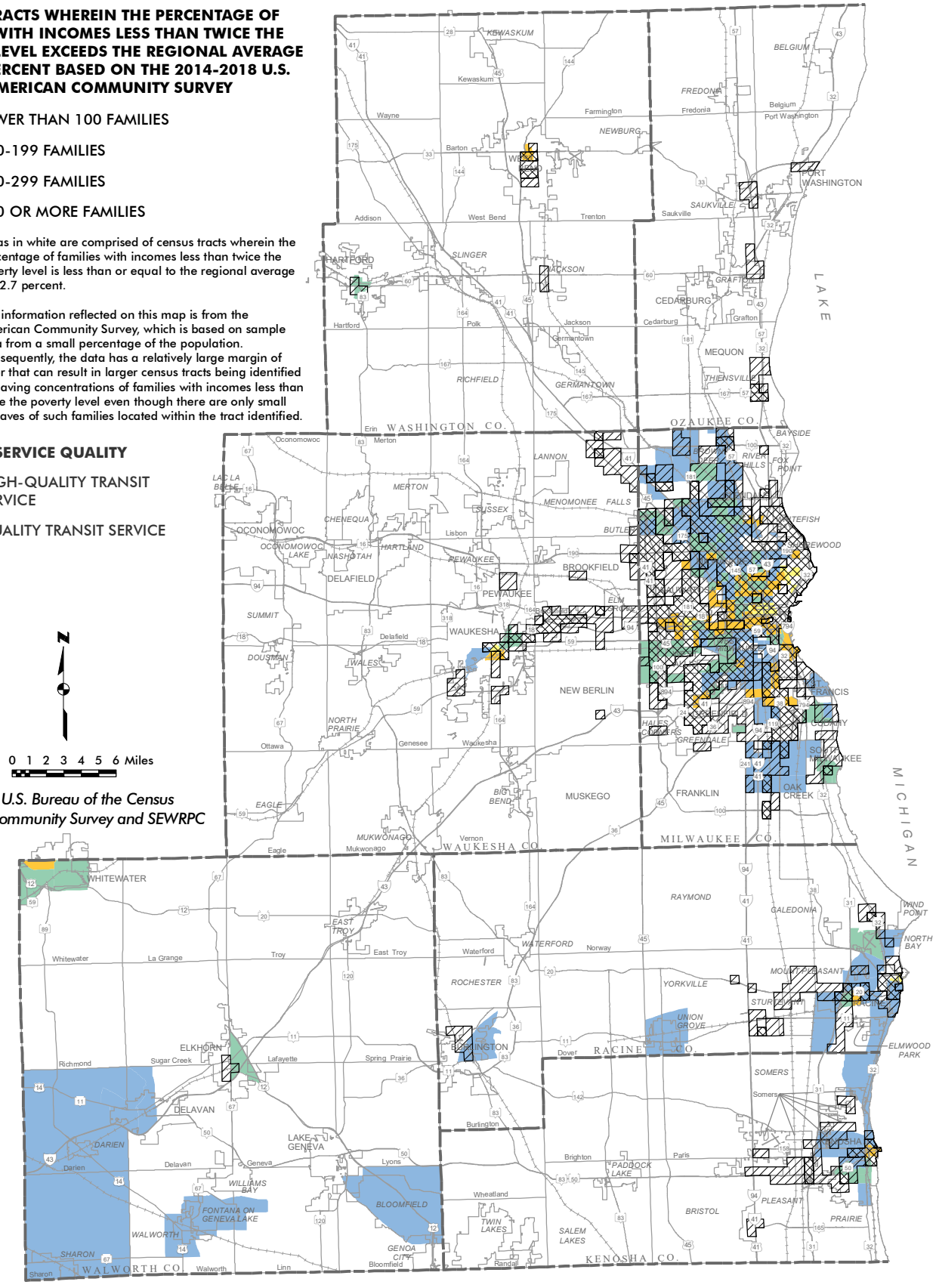
- FEWER THAN 100 FAMILIES
- 100-199 FAMILIES
- 200-299 FAMILIES
- 300 OR MORE FAMILIES

Notes: Areas in white are comprised of census tracts wherein the percentage of families with incomes less than twice the poverty level is less than or equal to the regional average of 22.7 percent.

The information reflected on this map is from the American Community Survey, which is based on sample data from a small percentage of the population. Consequently, the data has a relatively large margin of error that can result in larger census tracts being identified as having concentrations of families with incomes less than twice the poverty level even though there are only small enclaves of such families located within the tract identified.

TRANSIT SERVICE QUALITY

- HIGH-QUALITY TRANSIT SERVICE
- QUALITY TRANSIT SERVICE



Source: U.S. Bureau of the Census American Community Survey and SEWRPC

Map N.56
Comparison of Existing Concentrations of Families with Incomes Less Than Twice the Poverty Level to transit Service Quality: FCTS

CENSUS TRACTS WHEREIN THE PERCENTAGE OF FAMILIES WITH INCOMES LESS THAN TWICE THE POVERTY LEVEL EXCEEDS THE REGIONAL AVERAGE OF 22.7 PERCENT BASED ON THE 2014-2018 U.S. CENSUS AMERICAN COMMUNITY SURVEY

- FEWER THAN 100 FAMILIES
- 100-199 FAMILIES
- 200-299 FAMILIES
- 300 OR MORE FAMILIES

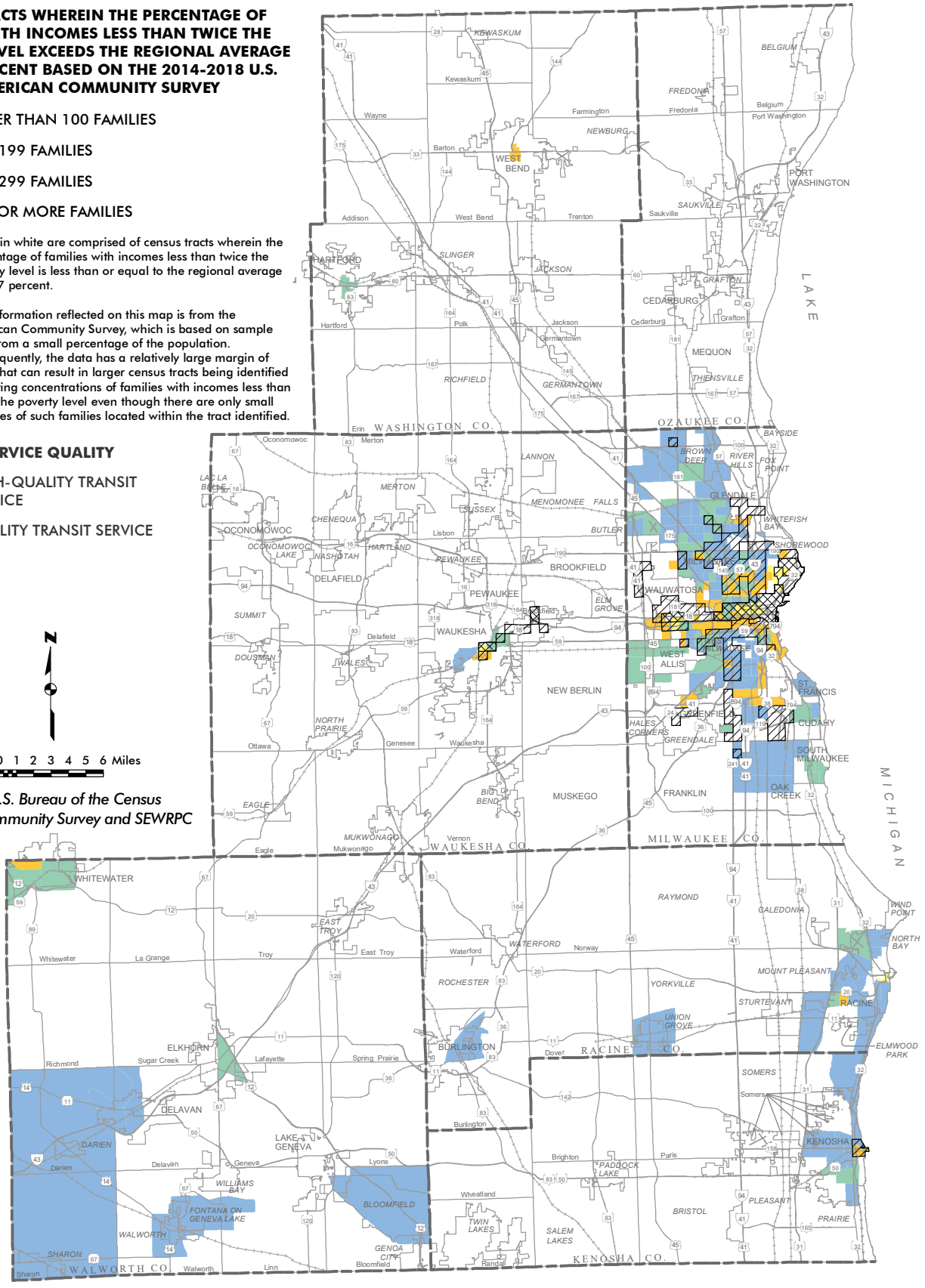
Notes: Areas in white are comprised of census tracts wherein the percentage of families with incomes less than twice the poverty level is less than or equal to the regional average of 22.7 percent.

The information reflected on this map is from the American Community Survey, which is based on sample data from a small percentage of the population. Consequently, the data has a relatively large margin of error that can result in larger census tracts being identified as having concentrations of families with incomes less than twice the poverty level even though there are only small enclaves of such families located within the tract identified.

TRANSIT SERVICE QUALITY

- HIGH-QUALITY TRANSIT SERVICE
- QUALITY TRANSIT SERVICE

Source: U.S. Bureau of the Census American Community Survey and SEWRPC



Map N.57
Comparison of Existing Concentrations of People with Disabilities to Transit Service Quality: Existing

CENSUS TRACTS WHEREIN THE PERCENTAGE OF PEOPLE WITH DISABILITIES EXCEEDS THE REGIONAL AVERAGE OF 11.8 PERCENT BASED ON THE 2014-2018 U.S. CENSUS AMERICAN COMMUNITY SURVEY

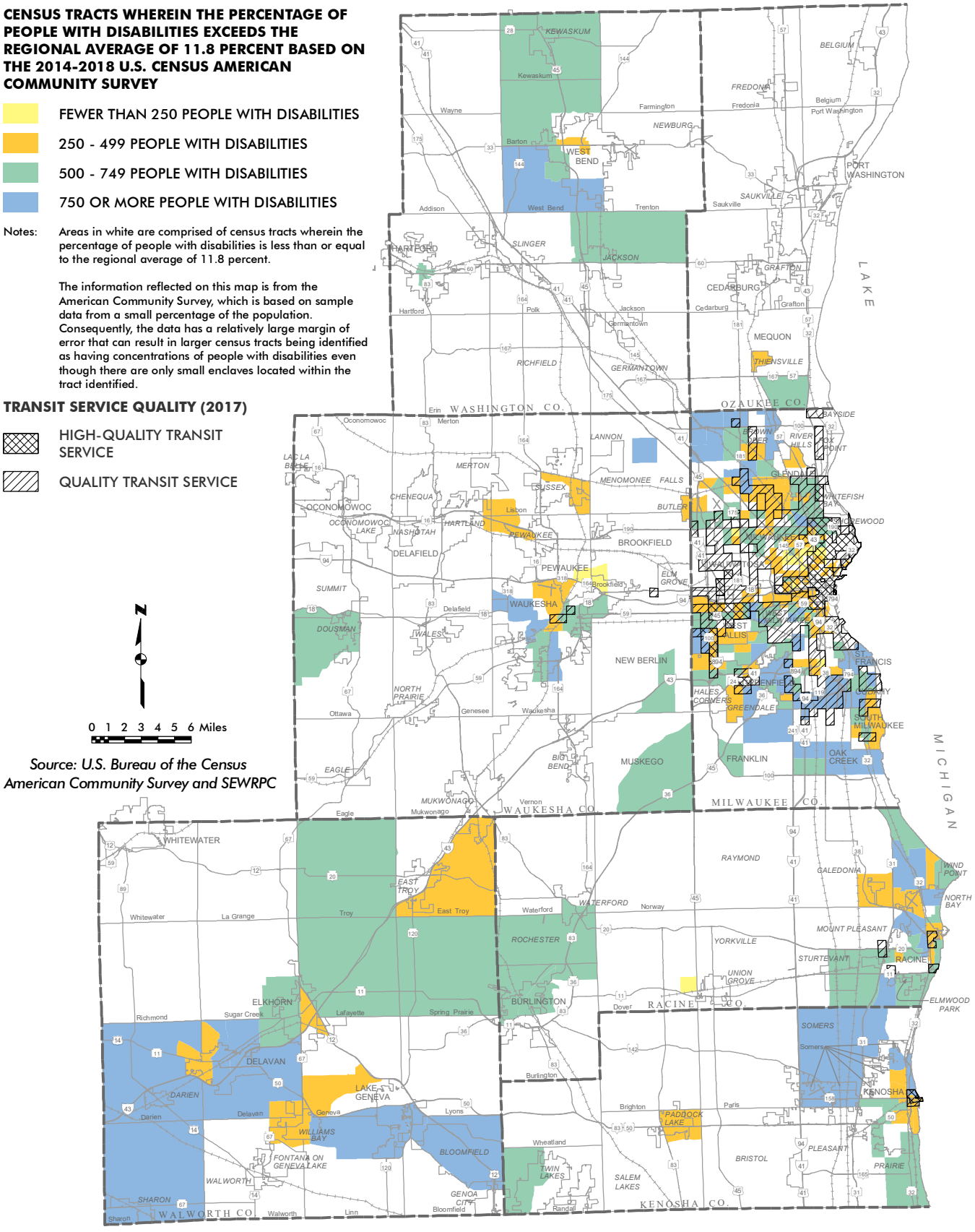
- FEWER THAN 250 PEOPLE WITH DISABILITIES
- 250 - 499 PEOPLE WITH DISABILITIES
- 500 - 749 PEOPLE WITH DISABILITIES
- 750 OR MORE PEOPLE WITH DISABILITIES

Notes: Areas in white are comprised of census tracts wherein the percentage of people with disabilities is less than or equal to the regional average of 11.8 percent.

The information reflected on this map is from the American Community Survey, which is based on sample data from a small percentage of the population. Consequently, the data has a relatively large margin of error that can result in larger census tracts being identified as having concentrations of people with disabilities even though there are only small enclaves located within the tract identified.

TRANSIT SERVICE QUALITY (2017)

- HIGH-QUALITY TRANSIT SERVICE
- QUALITY TRANSIT SERVICE



Source: U.S. Bureau of the Census American Community Survey and SEWRPC

Map N.58
Comparison of Existing Concentrations of People with Disabilities to Transit Service Quality: VISION 2050

CENSUS TRACTS WHEREIN THE PERCENTAGE OF PEOPLE WITH DISABILITIES EXCEEDS THE REGIONAL AVERAGE OF 11.8 PERCENT BASED ON THE 2014-2018 U.S. CENSUS AMERICAN COMMUNITY SURVEY

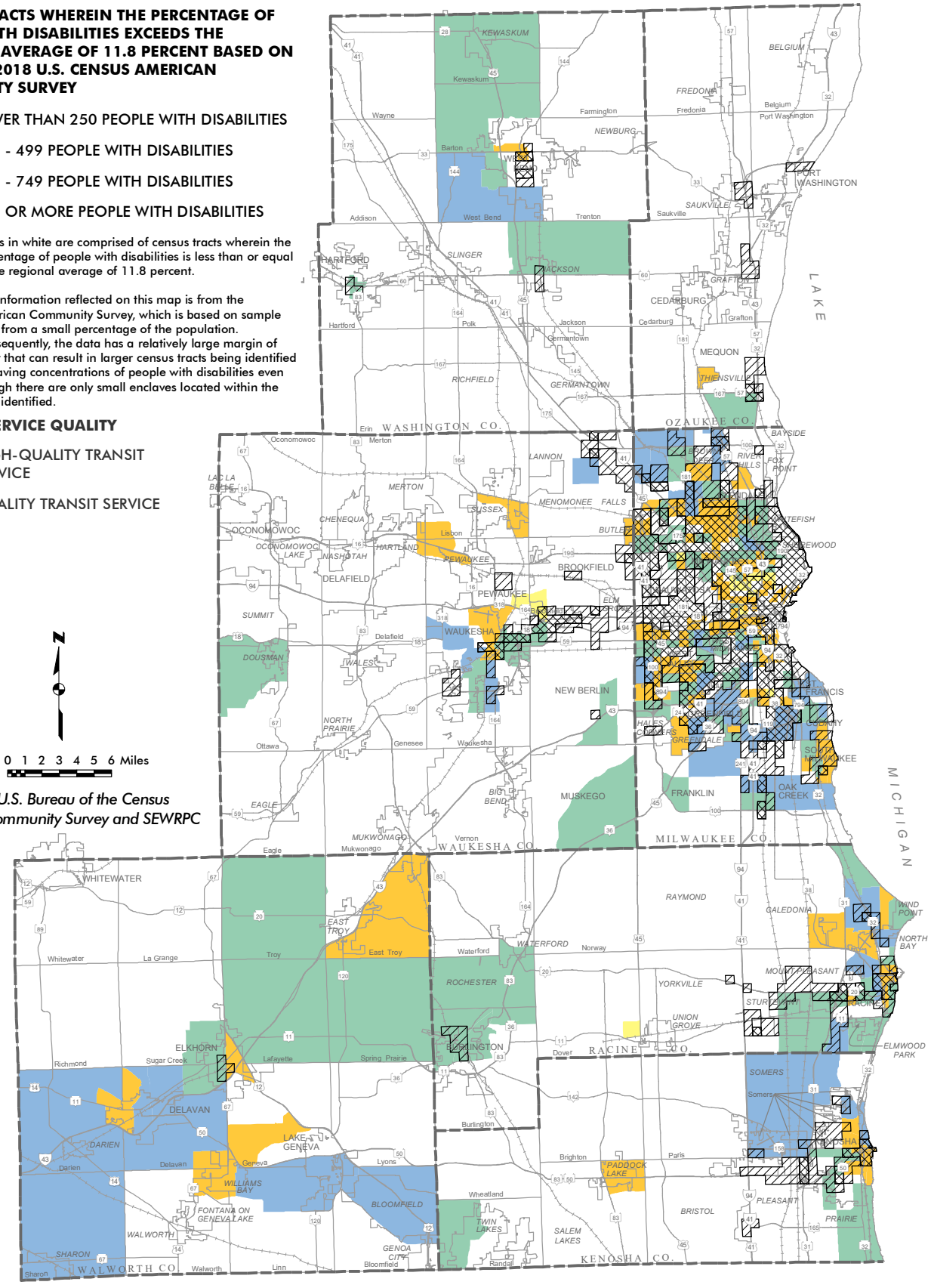
- FEWER THAN 250 PEOPLE WITH DISABILITIES
- 250 - 499 PEOPLE WITH DISABILITIES
- 500 - 749 PEOPLE WITH DISABILITIES
- 750 OR MORE PEOPLE WITH DISABILITIES

Notes: Areas in white are comprised of census tracts wherein the percentage of people with disabilities is less than or equal to the regional average of 11.8 percent.

The information reflected on this map is from the American Community Survey, which is based on sample data from a small percentage of the population. Consequently, the data has a relatively large margin of error that can result in larger census tracts being identified as having concentrations of people with disabilities even though there are only small enclaves located within the tract identified.

TRANSIT SERVICE QUALITY

- HIGH-QUALITY TRANSIT SERVICE
- QUALITY TRANSIT SERVICE



Source: U.S. Bureau of the Census American Community Survey and SEWRPC

Map N.59
Comparison of Existing Concentrations of People with Disabilities to Transit Service Quality: FCTS

CENSUS TRACTS WHEREIN THE PERCENTAGE OF PEOPLE WITH DISABILITIES EXCEEDS THE REGIONAL AVERAGE OF 11.8 PERCENT BASED ON THE 2014-2018 U.S. CENSUS AMERICAN COMMUNITY SURVEY

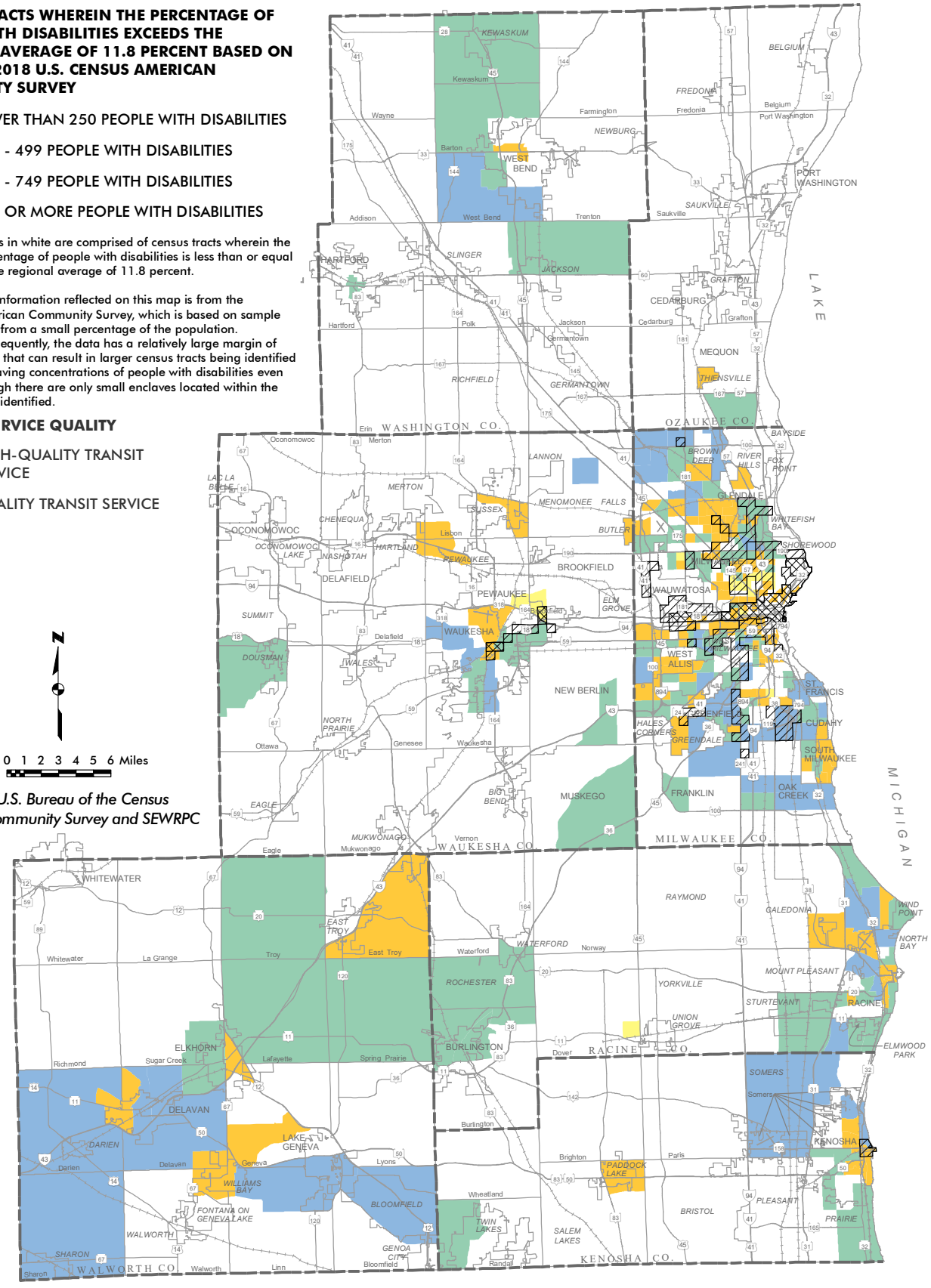
- FEWER THAN 250 PEOPLE WITH DISABILITIES
- 250 - 499 PEOPLE WITH DISABILITIES
- 500 - 749 PEOPLE WITH DISABILITIES
- 750 OR MORE PEOPLE WITH DISABILITIES

Notes: Areas in white are comprised of census tracts wherein the percentage of people with disabilities is less than or equal to the regional average of 11.8 percent.

The information reflected on this map is from the American Community Survey, which is based on sample data from a small percentage of the population. Consequently, the data has a relatively large margin of error that can result in larger census tracts being identified as having concentrations of people with disabilities even though there are only small enclaves located within the tract identified.

TRANSIT SERVICE QUALITY

- HIGH-QUALITY TRANSIT SERVICE
- QUALITY TRANSIT SERVICE



Source: U.S. Bureau of the Census American Community Survey and SEWRPC

population) and 238,600 non-minority people (or 17 percent of the total non-minority population) are served by quality transit service—Excellent, Very Good, and Good—under existing conditions. With respect to lower-income populations, 21,500 (or 44 percent of) families in poverty and 89,700 (or 20 percent of) families not in poverty are served by quality transit service under existing conditions. About 43,600 (or 38 percent of) families with incomes less than twice the poverty level and 67,600 (or 17 percent of) families with incomes more than twice the poverty level are served by quality transit service under existing conditions. With respect to people with disabilities, 69,600 (or 29 percent of) people with disabilities and 455,300 (or 26 percent of) people not having a disability are served by quality transit service under existing conditions.

With respect to high-quality transit service (Excellent or Very Good), about 62,300 minority people (or 11 percent of the total minority population) and 61,000 non-minority people (or 4 percent of the total non-minority population) are served by high-quality transit service under existing conditions. With respect to lower-income populations, 5,300 (or 11 percent of) families in poverty and 16,700 (or 4 percent of) families not in poverty are served by high-quality transit service under existing conditions. About 9,700 (or 8 percent of) families with incomes less than twice the poverty level and 12,300 (or 3 percent of) families with incomes more than twice the poverty level are served by high-quality transit service under existing conditions. With respect to people with disabilities, 16,100 (or 7 percent of) people with disabilities and 107,100 (or 6 percent of) people not having a disability are served by high-quality transit service under existing conditions.

- **VISION 2050:** The extensive improvement and expansion of transit service under VISION 2050 would result in about 424,000 minority people (or 73 percent of the total minority population) and 469,300 non-minority people (or 33 percent of the total non-minority population) being served by quality transit service (Excellent, Very Good, and Good) under VISION 2050. With respect to lower-income populations, 32,300 (or 67 percent of) families in poverty and 169,200 (or 37 percent of) families not in poverty and about 69,600 (or 60 percent of) families with incomes less than twice the poverty level and 132,100 (or 34 percent of) families with incomes more than twice the poverty level would be served by quality transit service under VISION 2050. With respect to people with disabilities, 116,000 (or 49 percent of) people with disabilities and 777,400 (or 44 percent of) people not having a disability would be served by quality transit service under VISION 2050.

  It is expected that implementing VISION 2050 would result in the increase in the percent of the minority population with quality transit service (24 additional percentage points) being greater than that of the non-minority population (16 additional percentage points). Similarly, the increase in the percent of families in poverty with quality transit service (22 additional percentage points) would be greater than that of families not in poverty (17 additional percentage points), and the increase in the percent of families with incomes less than twice the poverty level with quality transit service (23 additional percentage points) would be greater than that of families with incomes more than twice the poverty level (16 additional percentage points). The increase in the percent of people with disabilities with quality transit service (20

additional percentage points) would be greater than that of people without disabilities (18 additional percentage points).

With respect to high-quality transit service (Excellent or Very Good), about 275,000 minority people (or 47 percent of the total minority population) and 246,200 non-minority people (or 17 percent of the total non-minority population) would be served by high-quality transit service under VISION 2050. With respect to lower-income populations, 20,700 (or 43 percent of) families in poverty and 90,700 (or 20 percent of) families not in poverty and about 42,800 (or 37 percent of) families with incomes less than twice the poverty level and 68,700 (or 18 percent of) families with incomes more than twice the poverty level would be served by high-quality transit service under VISION 2050. With respect to people with disabilities, 68,000 (or 29 percent of) people with disabilities and 453,300 (or 25 percent of) people not having a disability would be served by high-quality transit service under VISION 2050.

It is expected that implementing VISION 2050 would result in the increase in the percent of minority population with high-quality transit service (37 additional percentage points) being greater than that of the non-minority population (13 additional percentage points). Similarly, the estimated increase in the percent of families in poverty with high-quality transit service (32 additional percentage points) would be greater than that of families not in poverty (16 additional percentage points), and the increase in the percent of families with incomes less than twice the poverty level with high-quality transit service (29 additional percentage points) would be greater than that of families with incomes more than twice the poverty level (14 additional percentage points). The estimated increase in the percent of people with disabilities with high-quality transit service (22 additional percentage points) would be greater than that of people without disabilities (19 percentage points).

- **FCTS:** With the expected decrease in transit service hours and shift times covered under the FCTS, overall transit quality is expected to decline. Additionally, the service areas providing quality transit service (Excellent, Very Good, and Good) under the FCTS would serve a smaller proportion of existing minority populations, lower-income populations, and people with disabilities, including in areas where these populations are concentrated. Specifically, about 113,600 minority people (or 20 percent of the total minority population) and 80,500 non-minority people (or 6 percent of the total non-minority population) would be served by quality transit service under the FCTS. With respect to lower-income populations, 8,500 (or 18 percent of) families in poverty and 28,100 (or 6 percent of) families not in poverty, and about 16,200 (or 14 percent of) families with incomes less than twice the poverty level and 20,400 (or 5 percent of) families with incomes more than twice the poverty level, would be served by quality transit service under the FCTS. With respect to people with disabilities, 26,600 (or 11 percent of) people with disabilities and 167,600 (or 10 percent of) people without disabilities would be served by quality transit service under the FCTS.

  It is expected that implementing the FCTS would result in the decline in the percent of the minority population with quality transit service (30 fewer percentage points) being greater than that of the non-minority

population (11 fewer percentage points). Similarly, the decline in the percent of families in poverty with quality transit service (27 fewer percentage points) would be greater than that of families not in poverty (13 fewer percentage points), and the decline in the percent of families with incomes less than twice the poverty level with quality transit service (24 fewer percentage points) would be greater than that of families with incomes more than twice the poverty level (12 fewer percentage points). The decline in the percent of people with disabilities with quality transit service (18 fewer percentage points) would be slightly greater than that of people without disabilities (16 fewer percentage points).

With respect to high-quality transit service (Excellent or Very Good), about 19,300 minority people (or 3 percent of the total minority population) and 30,100 non-minority people (or 2 percent of the total non-minority population) would be served by high-quality transit service under the FCTS. With respect to lower-income populations, 1,500 (or 3 percent of) families in poverty and 4,900 (or 1 percent of) families not in poverty would be served by high-quality transit service under the FCTS. Similarly, 2,300 (or 2 percent of) families with incomes less than twice the poverty level and 4,000 (or 1 percent of) families with incomes more than twice the poverty level would be served by high-quality transit service under the FCTS. With respect to people with disabilities, 5,800 (or 3 percent of) people with disabilities and 43,700 (or 3 percent of) people without a disability would be served by high-quality transit service under the FCTS.

It is expected that implementing the FCTS would result in the decline in the percent of the minority population with high-quality transit service (7 fewer percentage points) being greater than that of the non-minority population (2 fewer percentage points). Similarly, the decline in the percent of families in poverty with high-quality transit service (8 fewer percentage points) would be greater than that of families not in poverty (3 fewer percentage points), and the decline in the percent of families with incomes less than twice the poverty level with high-quality transit service (7 fewer percentage points) would be greater than that of families with incomes more than twice the poverty level (2 fewer percentage points). The decline in the percent of both people with disabilities and people without disabilities with high-quality transit service would be about the same (4 fewer percentage points).

MINORITY POPULATIONS AND LOW-INCOME POPULATIONS BENEFITED AND IMPACTED BY NEW AND WIDENED ARTERIAL STREET AND HIGHWAY FACILITIES

An evaluation was conducted as to whether the existing minority populations and low-income populations within the Region would receive a disproportionate share of the impacts—both costs and benefits—of the highway improvements under VISION 2050 and the FCTS. Specifically, an analysis was conducted to determine the extent to which the existing minority populations and low-income populations living in these areas would receive benefits—such as improved accessibility and improved safety—from the new and widened arterials under VISION 2050 and the FCTS. As part of this analysis, a select link analysis was conducted to determine whether existing minority populations and low-income populations would be expected to utilize the segments of arterial streets and highways that would be improved under VISION 2050 and the FCTS. An analysis was also conducted to

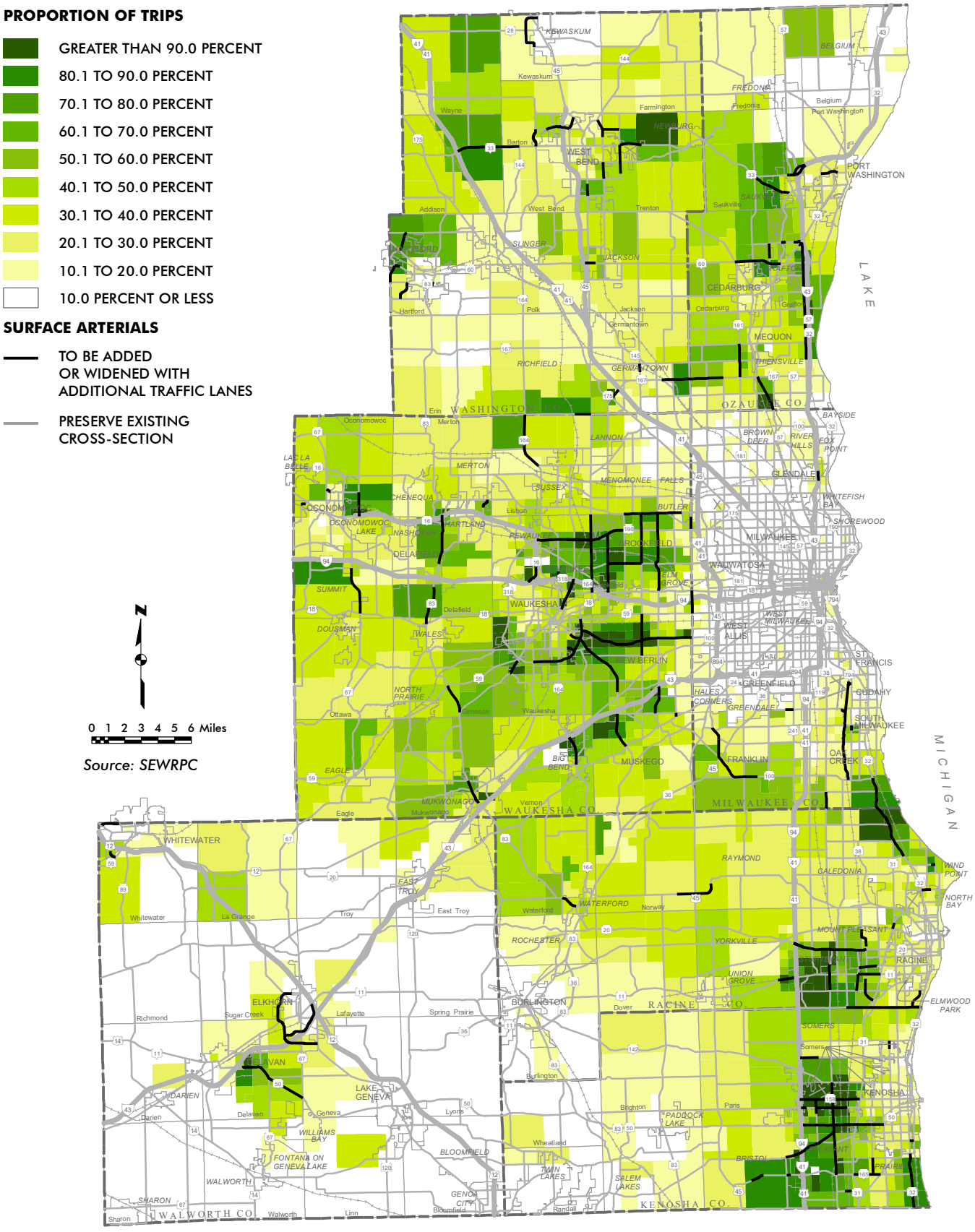
determine whether the existing minority populations and low-income populations would disproportionately bear any potential impacts from the new and widened facilities.

- **Benefits from Arterial Improvements:** While minority populations and low-income populations utilize public transit at a higher proportion relative to other modes of travel than do non-Hispanic white and higher-income populations in the Region, the automobile is by far the dominant mode of travel for minority populations and low-income populations. In Milwaukee County, about 80 to 89 percent of travel by minority populations to and from work is by automobile (depending on the race or ethnicity), compared to 87 percent of the white population. Similarly, in Milwaukee County about 70 percent of travel by low-income populations to and from work is by automobile, compared to 89 percent for populations of higher income. More robust and detailed data available by county from the year 2014-2018 ACS indicate a similar pattern by race and ethnic group for work trips in Southeastern Wisconsin as for all travel. However, as these data only include travel to and from work, they exclude those without employment who are more likely to be among the poorest people in the Region. Data as robust as the 2014-2018 ACS data are not available for modes of travel for non-work trips within Southeastern Wisconsin by race and ethnicity. Given that automobile travel is the dominant mode, improvements in accessibility by automobile to jobs and other activities would likely benefit a significant proportion of minority populations and low-income populations. The Region would generally be able to modestly improve accessibility via automobile with implementation of the highway improvements—new roadways and highway widenings—under both VISION 2050 and the FCTS. Should these improvements not be implemented, access to jobs and other activities via automobile would be expected to decline for the Region's residents, particularly residents in Milwaukee County, including for minority populations and low-income populations.

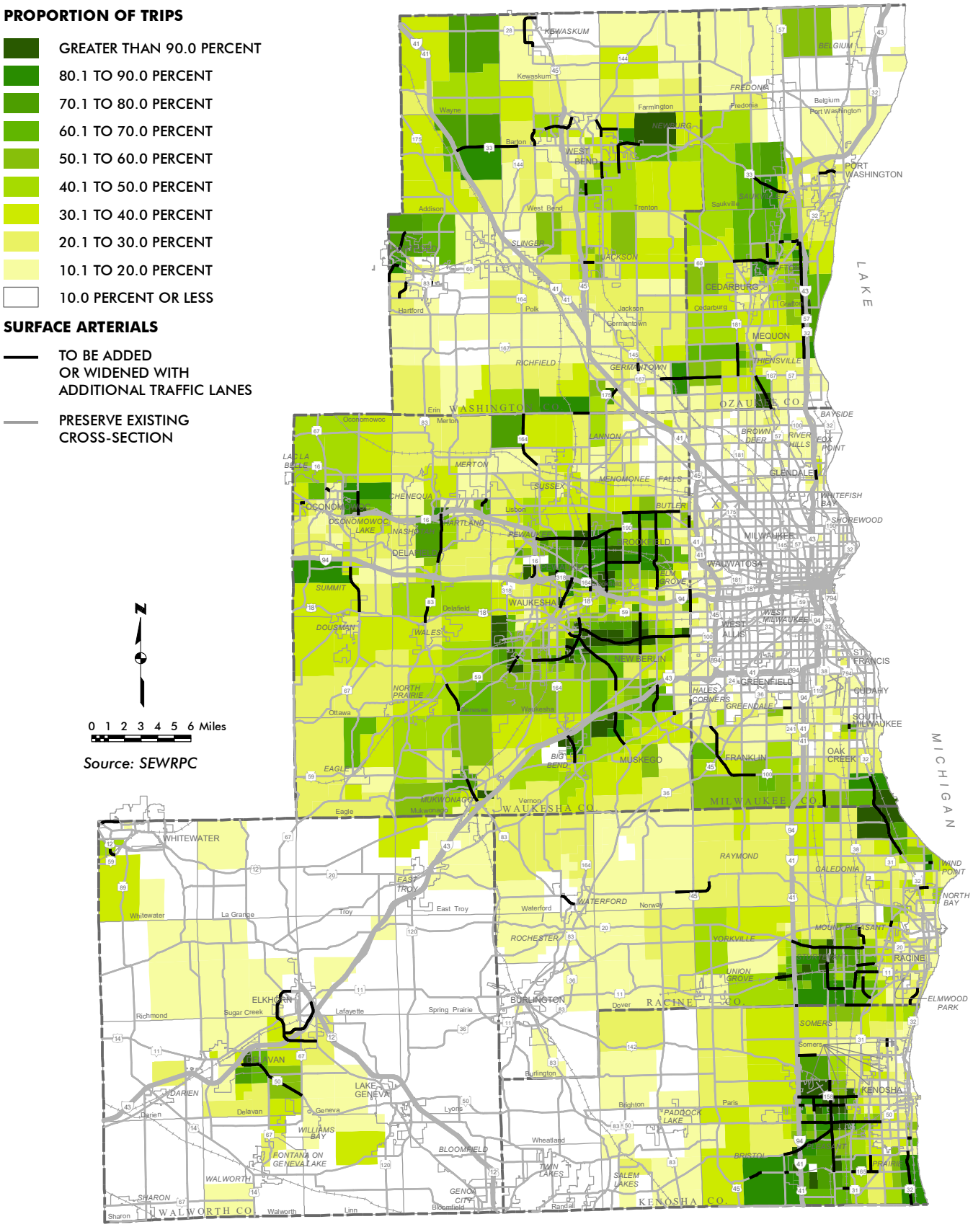
  Maps N.60 and N.61 show the proportion of automobile trips within each traffic analysis zone (TAZ) that would utilize the new or widened surface arterial segments under VISION 2050 and the FCTS. These maps were compared to locations of current concentrations of minority populations and low-income populations (as shown on Maps N.6 and N.8). The areas that would have the greatest use of these improved arterials are largely adjacent to, or near, the new or widened surface arterials under VISION 2050 and the FCTS. The new and widened surface arterials would largely be located outside of existing areas of minority populations and low-income populations.

  Maps N.62 and N.63 show the percentage of the automobile trips within each TAZ that would utilize the new or widened freeway segments under VISION 2050 and the FCTS. These maps were compared to locations of current concentrations of minority populations and low-income populations (as shown on Maps N.6 and N.8). The segments of freeway recommended to be widened under VISION 2050 and the FCTS would directly serve areas of minority populations and low-income population, particularly those residing in Milwaukee County. As a result, it is expected that minority populations and low-income populations, particularly those residing adjacent to the freeway widenings, would be utilizing and experiencing benefit

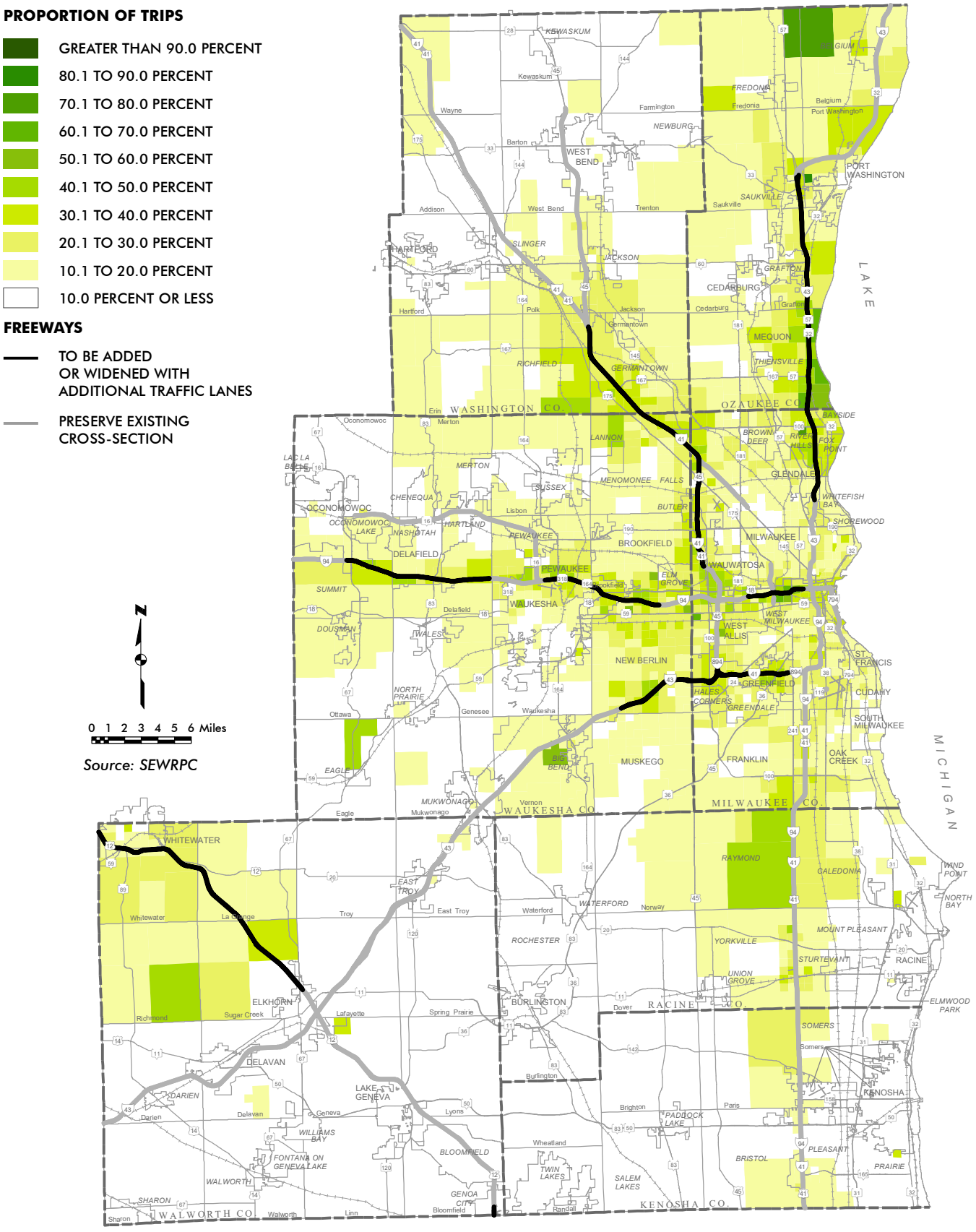
Map N.60
Proportion of Automobile Trips Using the New or Widened Surface Arterial Segments Within Each Traffic Analysis Zone: VISION 2050



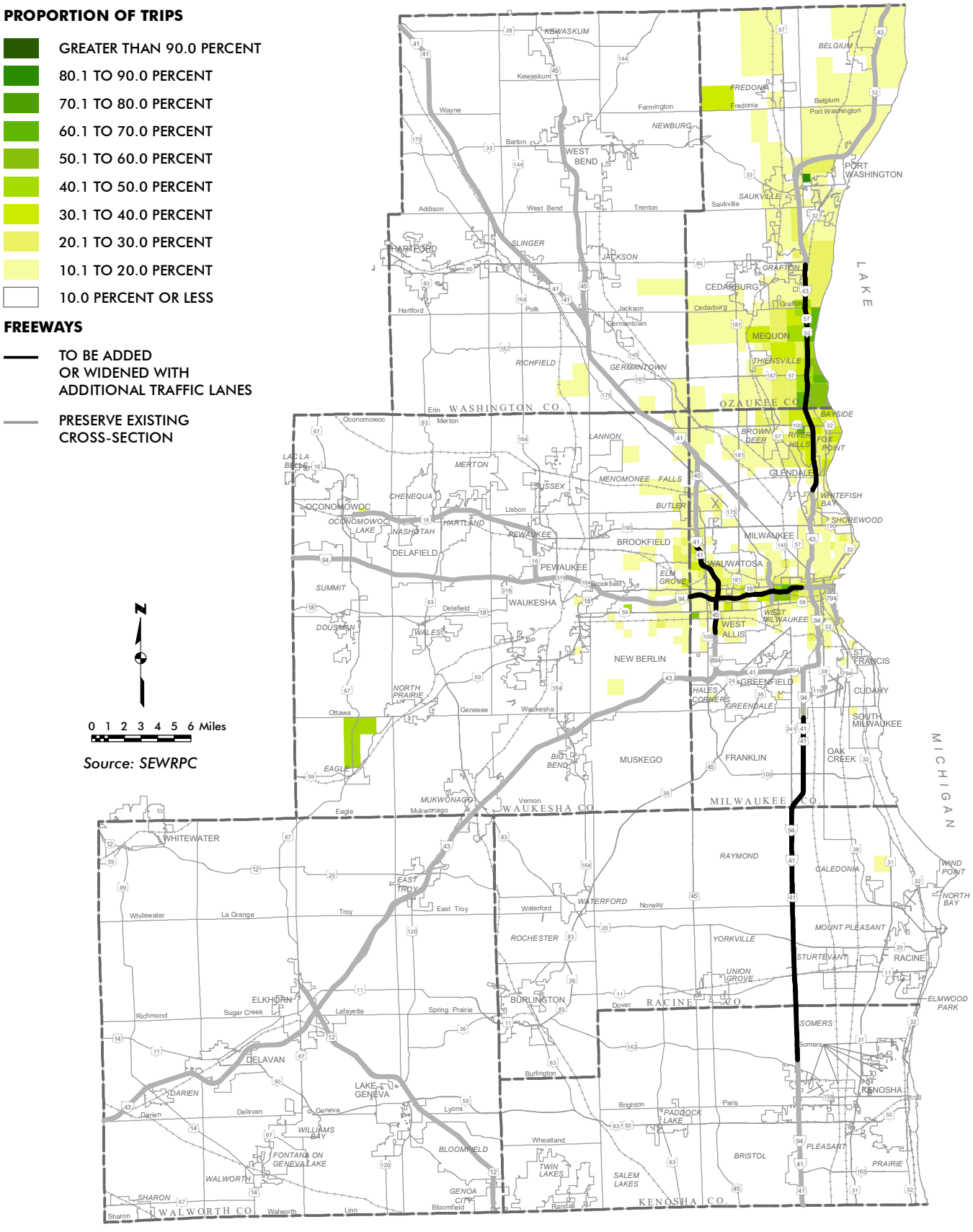
Map N.61
Proportion of Automobile Trips Using the New or Widened Surface Arterial Segments Within Each Traffic Analysis Zone: FCTS



Map N.62
Proportion of Automobile Trips Using the New or Widened Freeway Segments Within Each Traffic Analysis Zone: VISION 2050



Map N.63
Proportion of Automobile Trips Using the New or Widened Freeway Segments Within Each Traffic Analysis Zone: FCTS



from the expected improvement in accessibility associated with the widenings. VISION 2050 does not make any recommendation with respect to whether the segment of IH 43 between Howard Avenue and Silver Spring Drive, when reconstructed, should be reconstructed with or without additional lanes. The determination as to whether this segment of IH 43 would be reconstructed with or without additional lanes would be made during preliminary engineering. Following the conclusion of the preliminary engineering for the reconstruction, VISION 2050 would be amended to reflect the decision made as to how this segment IH 43 would be reconstructed. If it is ultimately determined that this segment of IH 43 is to be reconstructed with additional lanes, the minority populations and low-income populations residing adjacent to this freeway widening would directly benefit from the resulting improvement in accessibility. The reconstruction of this segment of IH 43 is not included in the FCTS.

As previously noted, even as traffic volumes increase through the year 2050, the additional arterial street and highway system capacity under VISION 2050 and the FCTS would modestly improve accessibility to jobs and other activity centers for minority populations and low-income populations.

With respect to safety, rear-end collision rates have historically been 5 to 20 times higher on congested freeways (with the highest rear-end crash rates on the most extremely congested freeways). By improving safety through the reduction in congestion along the freeway segments that would be widened, there would also be direct benefits to the existing minority populations and low-income populations that would use the widened freeway segments under VISION 2050 and the FCTS, with the freeway widening under VISION 2050 having a greater impact on freeway safety than the FCTS.

- **Impacts of Widenings and New Facilities:** Maps N.64 through N.69 compare the locations of the highway capacity improvements under VISION 2050 and the FCTS to the areas with current concentrations of minority populations and low-income populations. In general, no area of the Region, or minority or low-income community, would be expected to disproportionately bear the impact of these highway improvements. Recommended surface arterial improvements are largely located outside areas of existing minority populations and low-income populations, and therefore their widening, new construction, and subsequent operation would be expected to have minimal negative impacts on minority populations and low-income populations. With respect to the recommended freeway widenings and new construction, some segments are located adjacent to existing minority populations, but most segments are not, for both VISION 2050 and the FCTS.

- **Impacts from Freeway Widenings:** Maps N.70 through N.73 show the locations of freeways that would be widened under VISION 2050 and the FCTS compared to the areas with current concentrations of minority populations and low-income populations. Table N.20 shows the estimated existing minority populations and low-income populations residing in proximity (one-quarter mile to one-half mile) to freeway widenings. Under VISION 2050, about 23,500 minority people and 2,300 families in poverty would reside within one-half mile of a freeway widening while 10,200 minority people

Map N.64
Comparison of Existing Concentrations of Total Minority Population to Highway Element: VISION 2050

CENSUS BLOCKS WHEREIN THE PERCENTAGE OF MINORITY PEOPLE, INCLUDING HISPANIC PEOPLE, EXCEEDS THE REGIONAL AVERAGE OF 28.9 PERCENT BASED ON THE 2010 U.S. CENSUS

- 500 OR MORE MINORITY PEOPLE
- 200 TO 499 MINORITY PEOPLE
- 100 TO 199 MINORITY PEOPLE
- 25 TO 99 MINORITY PEOPLE
- 10 TO 24 MINORITY PEOPLE
- 1 TO 9 MINORITY PEOPLE
- * MINORITY CONCENTRATIONS ARE ATTRIBUTABLE TO CORRECTIONAL INSTITUTIONS IN THESE LOCATIONS

Note: Areas in white are comprised of census blocks wherein the percentage of minority people, including Hispanic people, is less than or equal to the regional average of 28.9 percent.

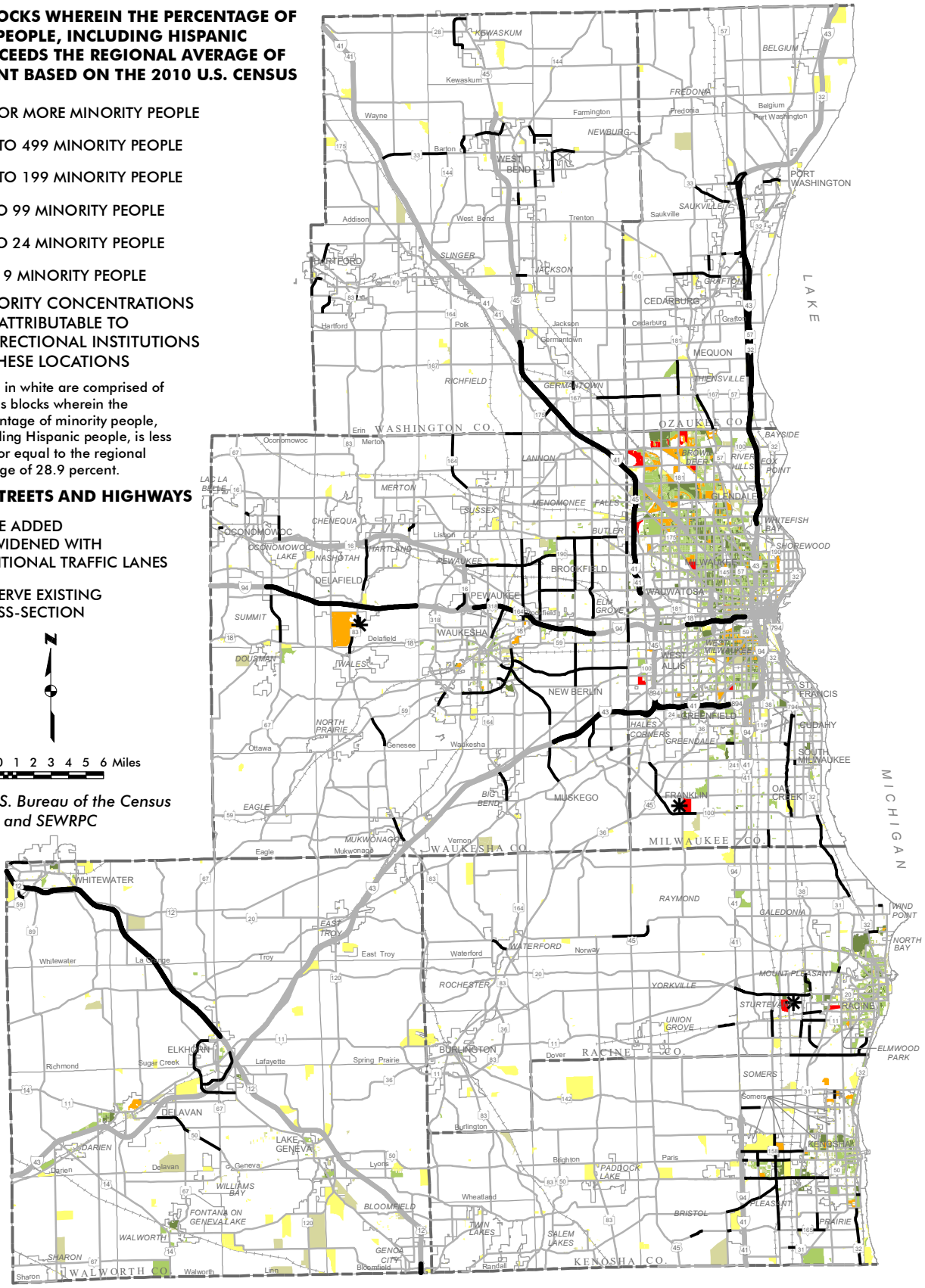
ARTERIAL STREETS AND HIGHWAYS

- TO BE ADDED OR WIDENED WITH ADDITIONAL TRAFFIC LANES
- PRESERVE EXISTING CROSS-SECTION

N

0 1 2 3 4 5 6 Miles

Source: U.S. Bureau of the Census and SEWRPC



Map N.65
Comparison of Existing Concentrations of Families in Poverty to Highway Element: VISION 2050

CENSUS TRACTS WHEREIN THE PERCENTAGE OF FAMILIES IN POVERTY EXCEEDS THE REGIONAL AVERAGE OF 9.5 PERCENT BASED ON THE 2014-2018 U.S. CENSUS AMERICAN COMMUNITY SURVEY

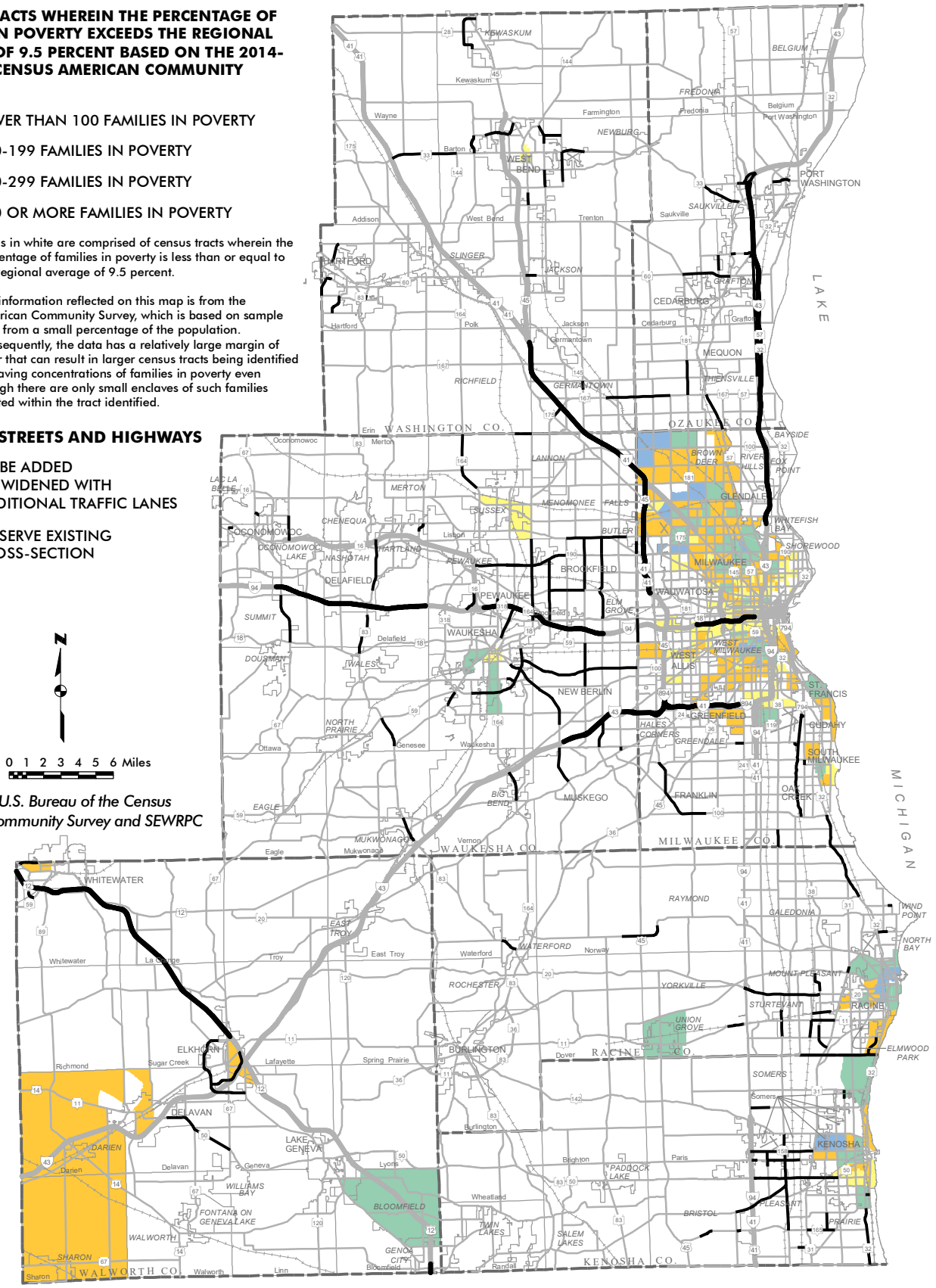
- FEWER THAN 100 FAMILIES IN POVERTY
- 100-199 FAMILIES IN POVERTY
- 200-299 FAMILIES IN POVERTY
- 300 OR MORE FAMILIES IN POVERTY

Notes: Areas in white are comprised of census tracts wherein the percentage of families in poverty is less than or equal to the regional average of 9.5 percent.

The information reflected on this map is from the American Community Survey, which is based on sample data from a small percentage of the population. Consequently, the data has a relatively large margin of error that can result in larger census tracts being identified as having concentrations of families in poverty even though there are only small enclaves of such families located within the tract identified.

ARTERIAL STREETS AND HIGHWAYS

- TO BE ADDED OR WIDENED WITH ADDITIONAL TRAFFIC LANES
- PRESERVE EXISTING CROSS-SECTION



Source: U.S. Bureau of the Census American Community Survey and SEWRPC

Map N.66
Comparison of Concentrations of Year 2010 Races/Ethnicities to Highway Element: VISION 2050

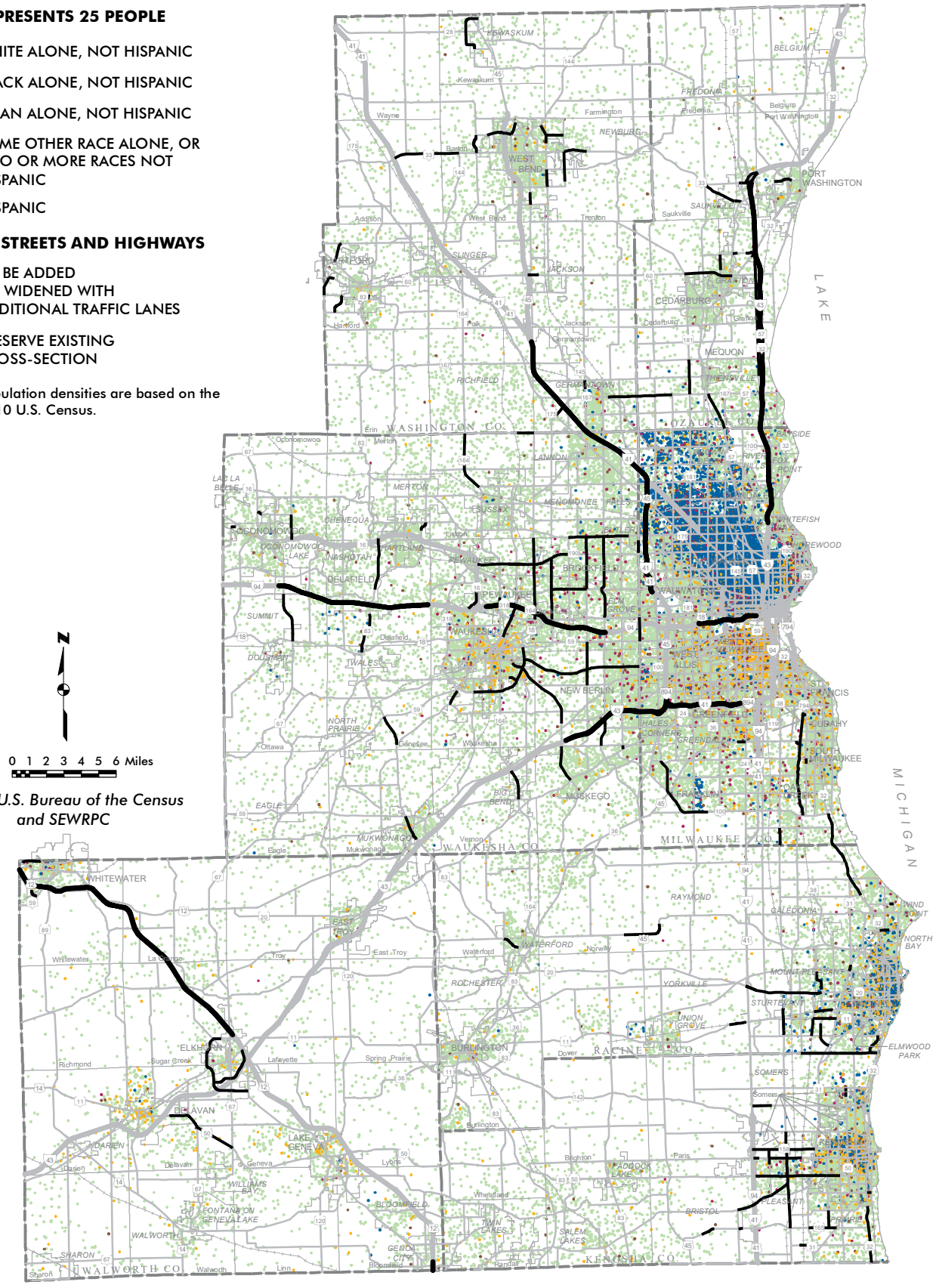
1 DOT REPRESENTS 25 PEOPLE

- WHITE ALONE, NOT HISPANIC
- BLACK ALONE, NOT HISPANIC
- ASIAN ALONE, NOT HISPANIC
- SOME OTHER RACE ALONE, OR TWO OR MORE RACES NOT HISPANIC
- HISPANIC

ARTERIAL STREETS AND HIGHWAYS

- TO BE ADDED OR WIDENED WITH ADDITIONAL TRAFFIC LANES
- PRESERVE EXISTING CROSS-SECTION

Note: Population densities are based on the 2010 U.S. Census.



Source: U.S. Bureau of the Census and SEWRPC

Map N.67
Comparison of Existing Concentrations of Total Minority Population to Highway Element: FCTS

CENSUS BLOCKS WHEREIN THE PERCENTAGE OF MINORITY PEOPLE, INCLUDING HISPANIC PEOPLE, EXCEEDS THE REGIONAL AVERAGE OF 28.9 PERCENT BASED ON THE 2010 U.S. CENSUS

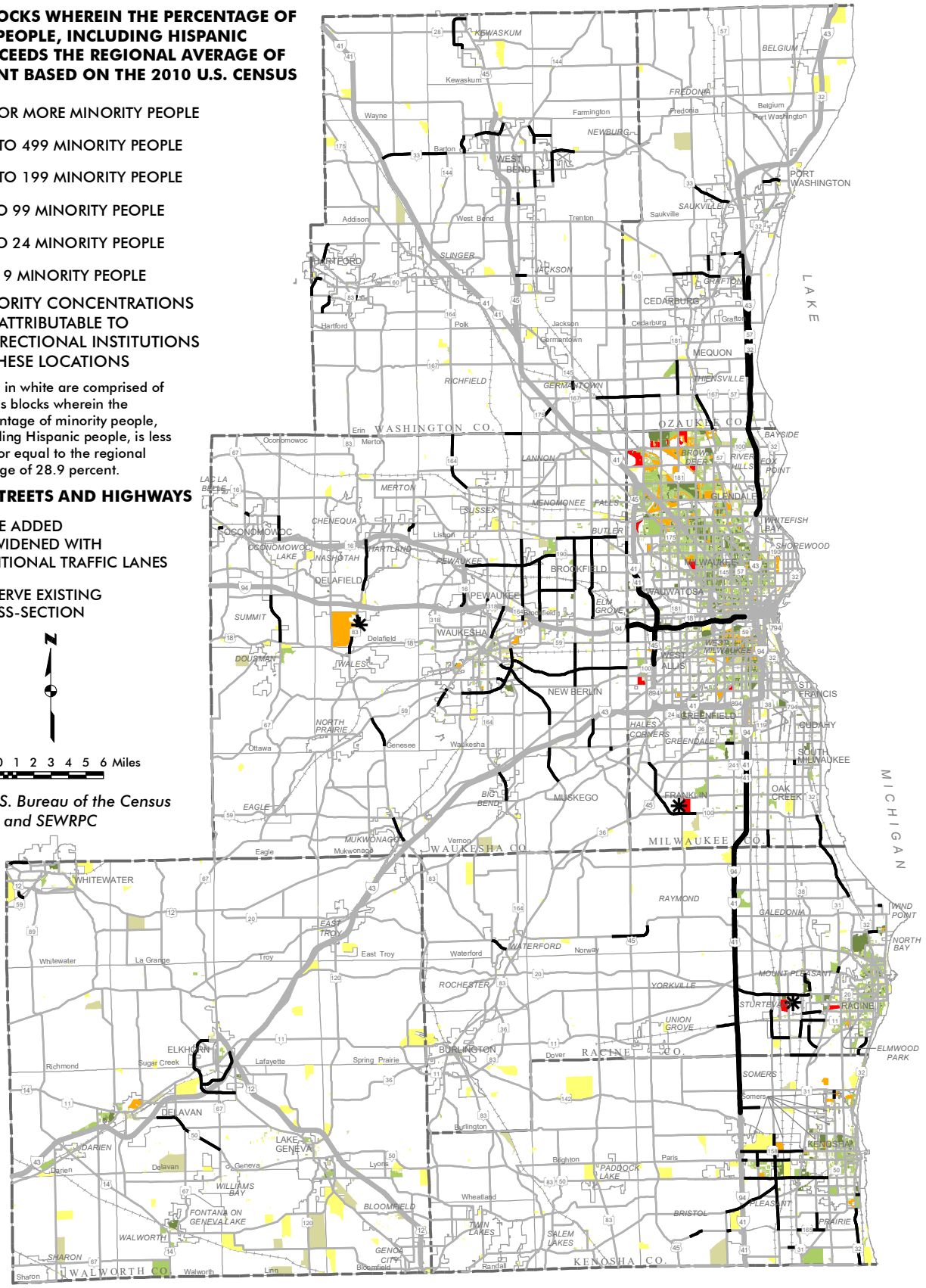
- 500 OR MORE MINORITY PEOPLE
- 200 TO 499 MINORITY PEOPLE
- 100 TO 199 MINORITY PEOPLE
- 25 TO 99 MINORITY PEOPLE
- 10 TO 24 MINORITY PEOPLE
- 1 TO 9 MINORITY PEOPLE
- * MINORITY CONCENTRATIONS ARE ATTRIBUTABLE TO CORRECTIONAL INSTITUTIONS IN THESE LOCATIONS

Note: Areas in white are comprised of census blocks wherein the percentage of minority people, including Hispanic people, is less than or equal to the regional average of 28.9 percent.

ARTERIAL STREETS AND HIGHWAYS

- TO BE ADDED OR WIDENED WITH ADDITIONAL TRAFFIC LANES
- PRESERVE EXISTING CROSS-SECTION

Source: U.S. Bureau of the Census and SEWRPC



Map N.68
Comparison of Existing Concentrations of Families in Poverty to Highway Element: FCTS

CENSUS TRACTS WHEREIN THE PERCENTAGE OF FAMILIES IN POVERTY EXCEEDS THE REGIONAL AVERAGE OF 9.5 PERCENT BASED ON THE 2014-2018 U.S. CENSUS AMERICAN COMMUNITY SURVEY

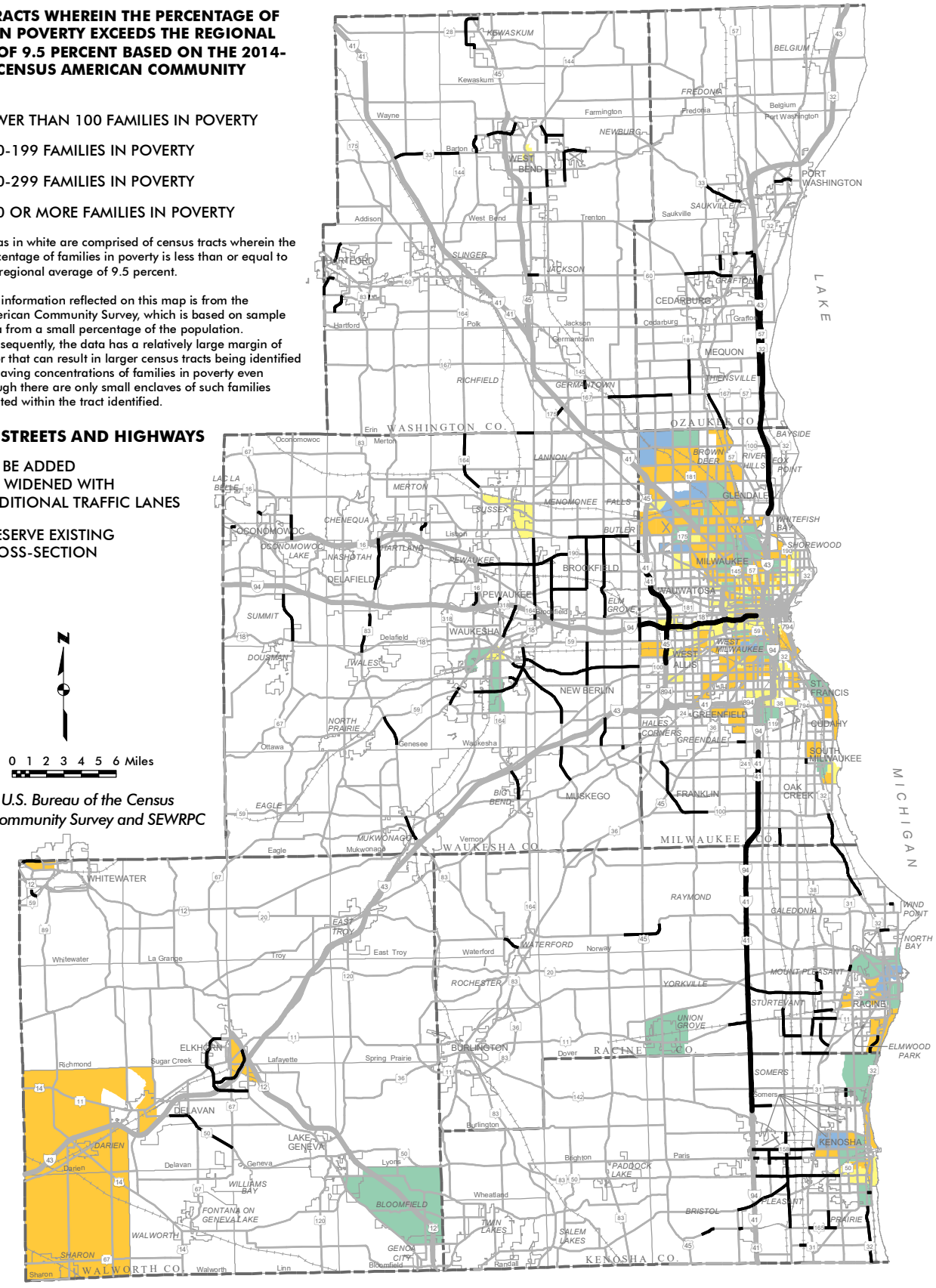
- FEWER THAN 100 FAMILIES IN POVERTY
- 100-199 FAMILIES IN POVERTY
- 200-299 FAMILIES IN POVERTY
- 300 OR MORE FAMILIES IN POVERTY

Notes: Areas in white are comprised of census tracts wherein the percentage of families in poverty is less than or equal to the regional average of 9.5 percent.

The information reflected on this map is from the American Community Survey, which is based on sample data from a small percentage of the population. Consequently, the data has a relatively large margin of error that can result in larger census tracts being identified as having concentrations of families in poverty even though there are only small enclaves of such families located within the tract identified.

ARTERIAL STREETS AND HIGHWAYS

- TO BE ADDED OR WIDENED WITH ADDITIONAL TRAFFIC LANES
- PRESERVE EXISTING CROSS-SECTION



Source: U.S. Bureau of the Census American Community Survey and SEWRPC

Map N.69
Comparison of Concentrations of Year 2010 Races/Ethnicities to Highway Element: FCTS

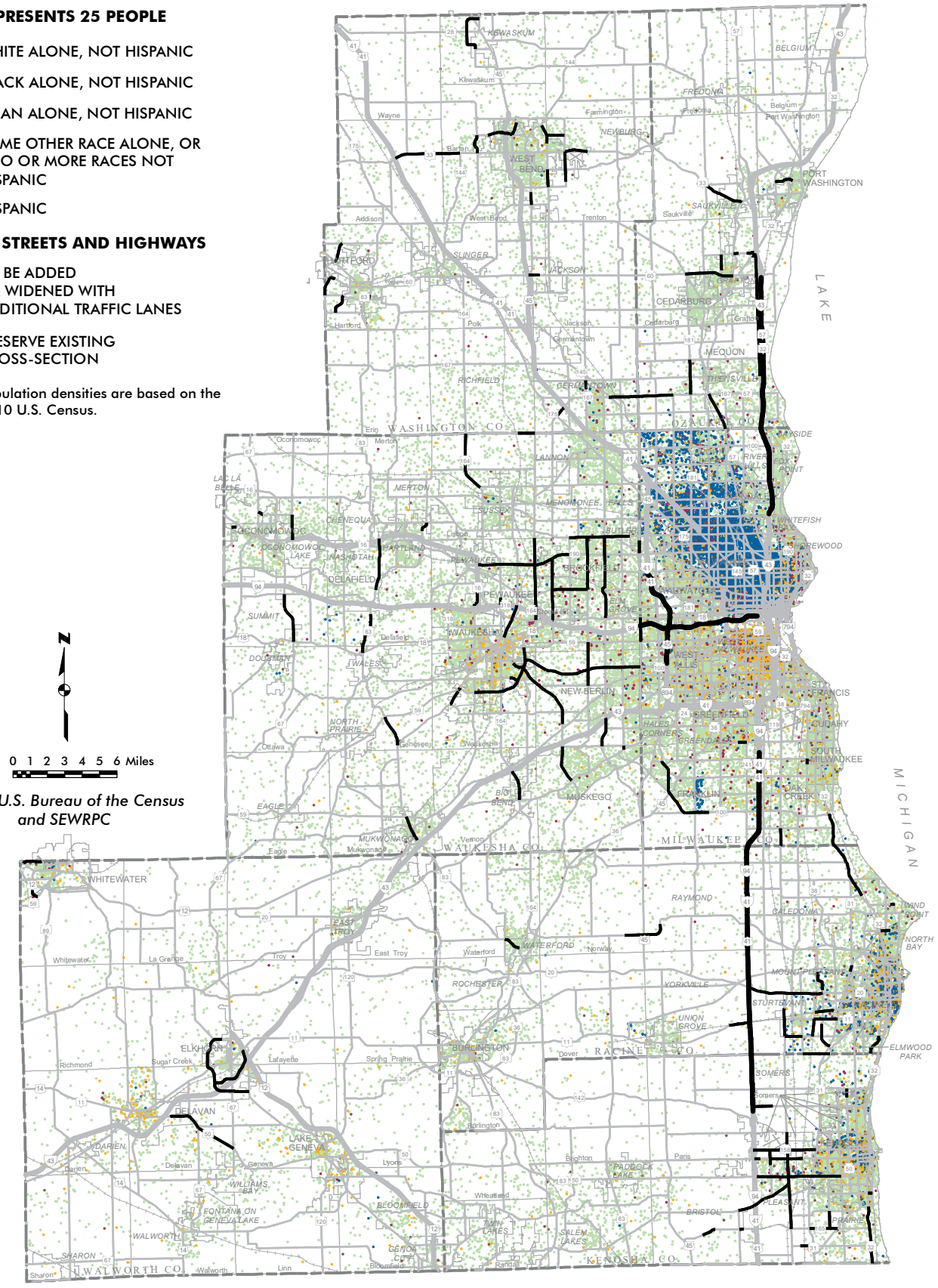
1 DOT REPRESENTS 25 PEOPLE

- WHITE ALONE, NOT HISPANIC
- BLACK ALONE, NOT HISPANIC
- ASIAN ALONE, NOT HISPANIC
- SOME OTHER RACE ALONE, OR TWO OR MORE RACES NOT HISPANIC
- HISPANIC

ARTERIAL STREETS AND HIGHWAYS

- TO BE ADDED OR WIDENED WITH ADDITIONAL TRAFFIC LANES
- PRESERVE EXISTING CROSS-SECTION

Note: Population densities are based on the 2010 U.S. Census.



Source: U.S. Bureau of the Census and SEWRPC

Map N.70
Comparison of Existing Concentrations of Total Minority Population to Freeways: VISION 2050

CENSUS BLOCKS WHEREIN THE PERCENTAGE OF MINORITY PEOPLE, INCLUDING HISPANIC PEOPLE, EXCEEDS THE REGIONAL AVERAGE OF 28.9 PERCENT BASED ON THE 2010 U.S. CENSUS

- 500 OR MORE MINORITY PEOPLE
- 200 TO 499 MINORITY PEOPLE
- 100 TO 199 MINORITY PEOPLE
- 25 TO 99 MINORITY PEOPLE
- 10 TO 24 MINORITY PEOPLE
- 1 TO 9 MINORITY PEOPLE
- * MINORITY CONCENTRATIONS ARE ATTRIBUTABLE TO CORRECTIONAL INSTITUTIONS IN THESE LOCATIONS

Note: Areas in white are comprised of census blocks wherein the percentage of minority people, including Hispanic people, is less than or equal to the regional average of 28.9 percent.

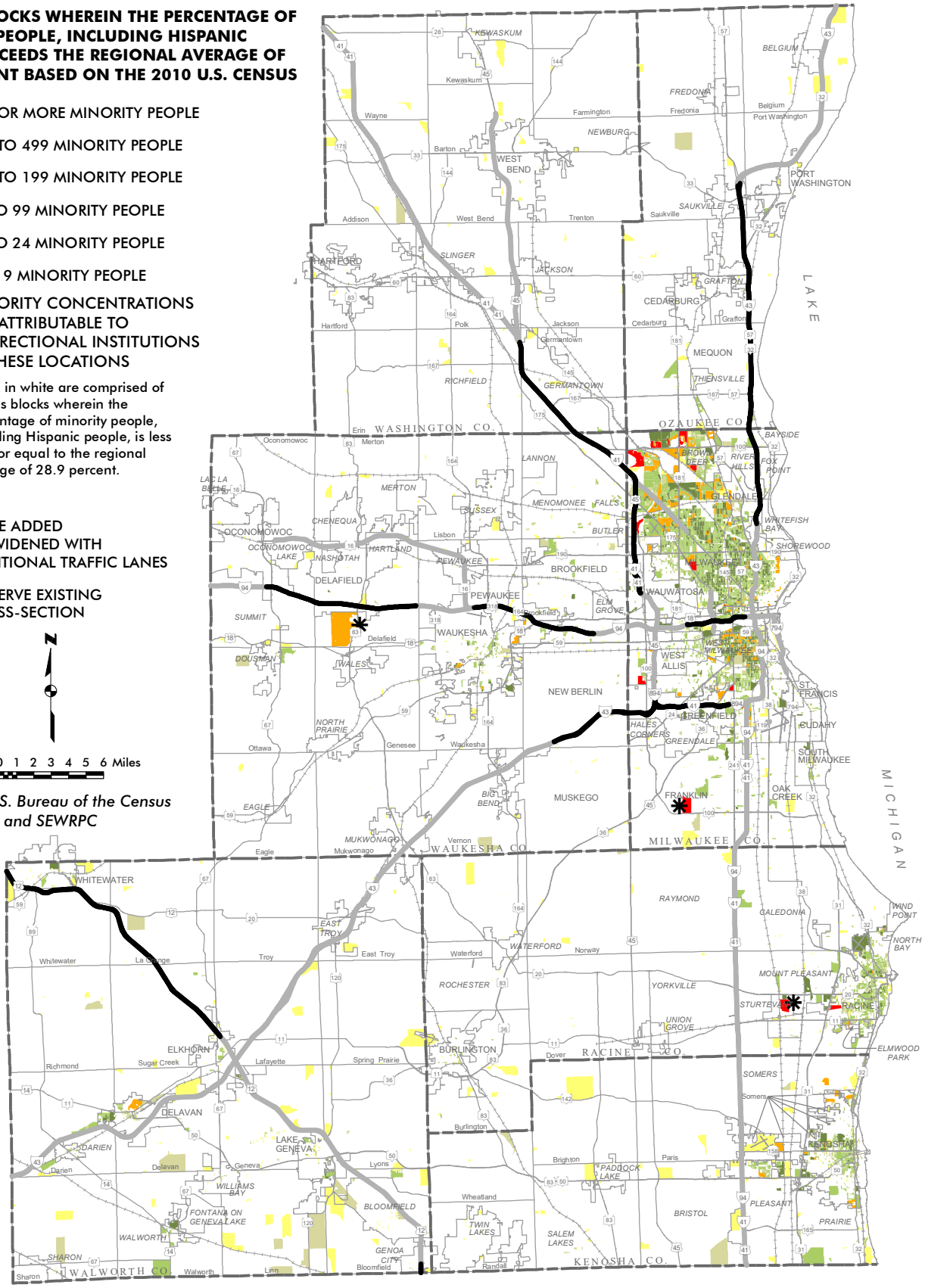
FREEWAYS

- TO BE ADDED OR WIDENED WITH ADDITIONAL TRAFFIC LANES
- PRESERVE EXISTING CROSS-SECTION

N

0 1 2 3 4 5 6 Miles

Source: U.S. Bureau of the Census and SEWRPC



Map N.71
Comparison of Existing Concentrations of Families in Poverty to Freeways: VISION 2050

CENSUS TRACTS WHEREIN THE PERCENTAGE OF FAMILIES IN POVERTY EXCEEDS THE REGIONAL AVERAGE OF 9.5 PERCENT BASED ON THE 2014-2018 U.S. CENSUS AMERICAN COMMUNITY SURVEY

- FEWER THAN 100 FAMILIES IN POVERTY
- 100-199 FAMILIES IN POVERTY
- 200-299 FAMILIES IN POVERTY
- 300 OR MORE FAMILIES IN POVERTY

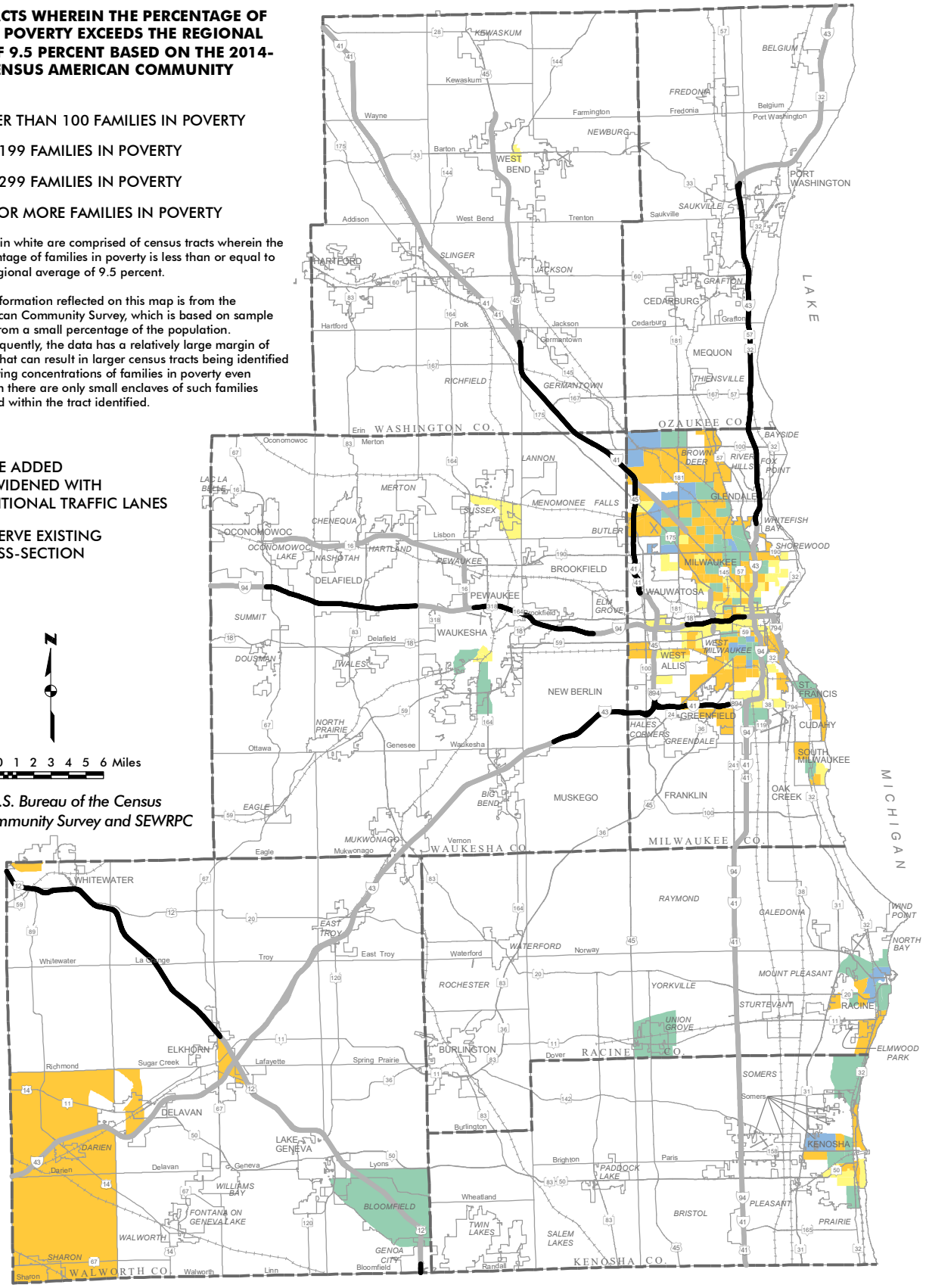
Notes: Areas in white are comprised of census tracts wherein the percentage of families in poverty is less than or equal to the regional average of 9.5 percent.

The information reflected on this map is from the American Community Survey, which is based on sample data from a small percentage of the population. Consequently, the data has a relatively large margin of error that can result in larger census tracts being identified as having concentrations of families in poverty even though there are only small enclaves of such families located within the tract identified.

FREEWAYS

- TO BE ADDED OR WIDENED WITH ADDITIONAL TRAFFIC LANES
- PRESERVE EXISTING CROSS-SECTION

Source: U.S. Bureau of the Census American Community Survey and SEWRPC



Map N.72
Comparison of Existing Concentrations of Total Minority Population to Freeways: FCTS

CENSUS BLOCKS WHEREIN THE PERCENTAGE OF MINORITY PEOPLE, INCLUDING HISPANIC PEOPLE, EXCEEDS THE REGIONAL AVERAGE OF 28.9 PERCENT BASED ON THE 2010 U.S. CENSUS

- 500 OR MORE MINORITY PEOPLE
- 200 TO 499 MINORITY PEOPLE
- 100 TO 199 MINORITY PEOPLE
- 25 TO 99 MINORITY PEOPLE
- 10 TO 24 MINORITY PEOPLE
- 1 TO 9 MINORITY PEOPLE
- * MINORITY CONCENTRATIONS ARE ATTRIBUTABLE TO CORRECTIONAL INSTITUTIONS IN THESE LOCATIONS

Note: Areas in white are comprised of census blocks wherein the percentage of minority people, including Hispanic people, is less than or equal to the regional average of 28.9 percent.

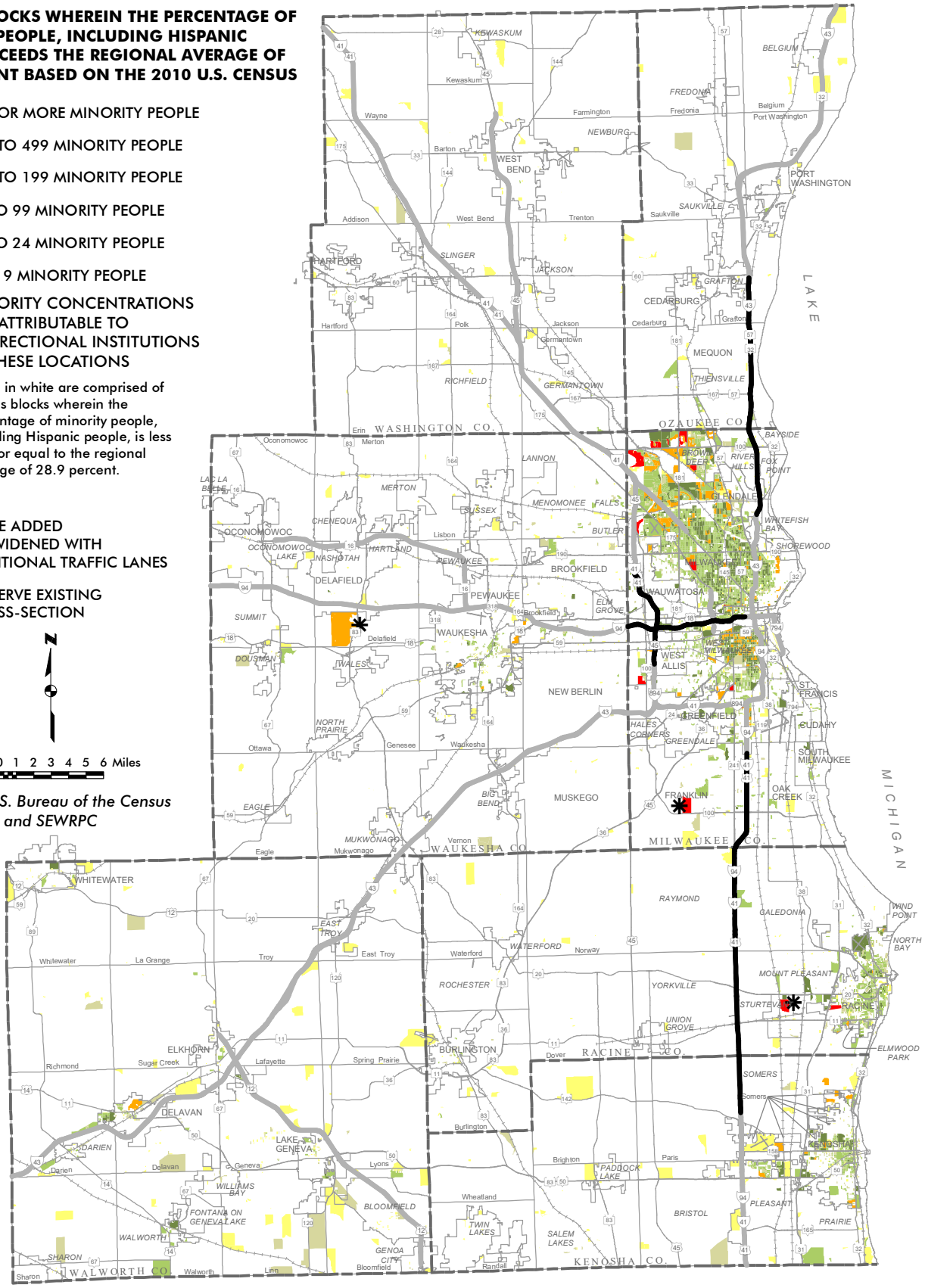
FREEWAYS

- TO BE ADDED OR WIDENED WITH ADDITIONAL TRAFFIC LANES
- PRESERVE EXISTING CROSS-SECTION

N

0 1 2 3 4 5 6 Miles

Source: U.S. Bureau of the Census and SEWRPC



Map N.73
Comparison of Existing Concentrations of Families in Poverty to Freeways: FCTS

CENSUS TRACTS WHEREIN THE PERCENTAGE OF FAMILIES IN POVERTY EXCEEDS THE REGIONAL AVERAGE OF 9.5 PERCENT BASED ON THE 2014-2018 U.S. CENSUS AMERICAN COMMUNITY SURVEY

- FEWER THAN 100 FAMILIES IN POVERTY
- 100-199 FAMILIES IN POVERTY
- 200-299 FAMILIES IN POVERTY
- 300 OR MORE FAMILIES IN POVERTY

Notes: Areas in white are comprised of census tracts wherein the percentage of families in poverty is less than or equal to the regional average of 9.5 percent.

The information reflected on this map is from the American Community Survey, which is based on sample data from a small percentage of the population. Consequently, the data has a relatively large margin of error that can result in larger census tracts being identified as having concentrations of families in poverty even though there are only small enclaves of such families located within the tract identified.

FREEWAYS

- TO BE ADDED OR WIDENED WITH ADDITIONAL TRAFFIC LANES
- PRESERVE EXISTING CROSS-SECTION

Source: U.S. Bureau of the Census American Community Survey and SEWRPC

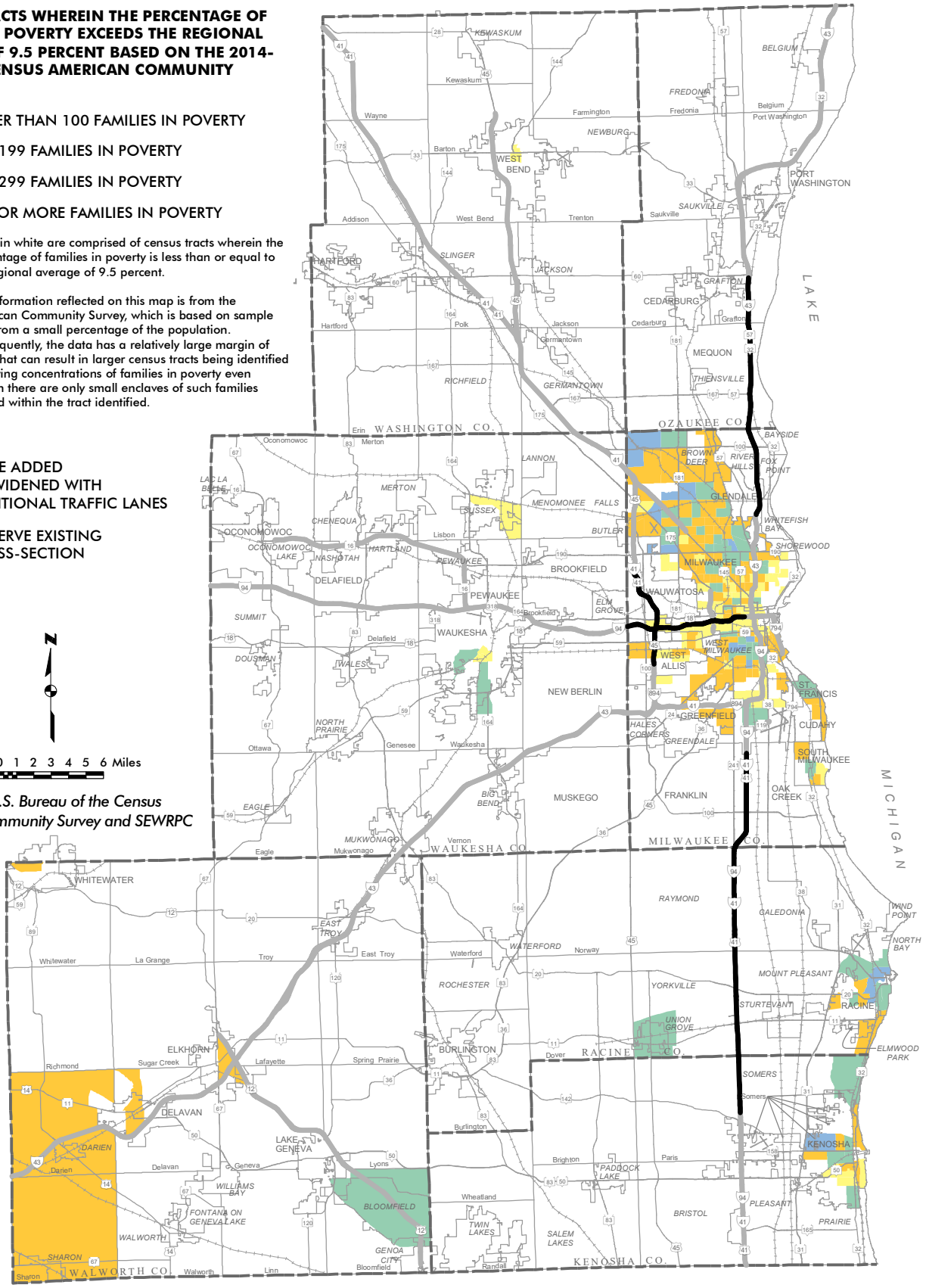


Table N.20
Minority Population and Families in Poverty Residing in Proximity to a Freeway Widening[a]

Population and Families Within One-Half Mile

Plan	Total Population Near a Freeway Widening	Minority Population		Total Families Near a Freeway Widening	Families in Poverty	
		Near a Freeway Widening	Percent of Total		Near a Freeway Widening	Percent of Total
VISION 2050	106,500	23,500	22.1	28,400	2,300	8.1
FCTS - 2050	47,400	13,300	28.1	9,500	1,200	12.6

Population and Families Within One-Quarter Mile

Plan	Total Population Near a Freeway Widening	Minority Population		Total Families Near a Freeway Widening	Families in Poverty	
		Near a Freeway Widening	Percent of Total		Near a Freeway Widening	Percent of Total
VISION 2050	44,200	10,200	23.1	13,500	1,100	8.1
FCTS - 2050	18,300	5,500	30.1	4,400	540	12.3

[a] *Total population and minority population are based on the 2010 U.S. Census and total families and families in poverty are based on the 2014-2018 American Community Survey.*

Source: U.S. Bureau of the Census, U.S. Census and American Community Survey; and SEWRPC

and 1,100 families in poverty would reside within one-quarter mile. The proportion of the minority population (about 22 percent) and families in poverty (about 8 percent) residing within one-half mile or one-quarter mile would be below the proportion of the regional population that is minority (about 23 percent) and the proportion of the Region's families in poverty (about 8 percent).

With respect to VISION 2050, if it is ultimately determined that the segment of IH 43 between Howard Avenue and Silver Spring Drive is widened, then about 81,800 minority people and 4,100 families in poverty would reside within one-half mile of a freeway widening while 38,300 minorities and 1,800 families in poverty would reside within one-quarter mile. Accordingly, the proportion of the minority population (about 40 percent) and families in poverty (about 12 percent) residing within one-half mile or one-quarter mile would exceed the regional averages of 28.9 percent and 9.5 percent, respectively.

Under the FCTS, about 13,300 minority people and 1,200 families in poverty would reside within one-half mile of a freeway widening while 5,500 minorities and 540 families in poverty would reside within one-quarter mile. The proportion of the minority population (about 28 percent) and families in poverty (about 13 percent) residing within one-half mile or one-quarter mile would be at or slightly above the regional averages of 28.9 percent and 9.5 percent. The reconstruction of the segment of IH 43 between Howard Avenue and Silver Spring Drive is not included in the FCTS as it is not expected to be completed by the year 2050 given the expected available funding.

Another way of examining the relative impact of freeway widenings is to compare the proportion of minority population and families in poverty to the proportion of non-minority population and families not in poverty that reside in proximity to the freeway widenings, as shown in Table N.21. Under VISION 2050, the existing minority population and families in poverty that reside within one-half mile of freeway widenings would represent about 4 and 5 percent of the total minority population and families in poverty, respectively, compared to about 6 percent of the non-minority population and families not in poverty. The existing minority population and families in poverty that reside

Table N.21
Percent of Total Minority/Non-Minority Populations and Families in Poverty/Families Not in Poverty Residing in Proximity to a Freeway Widening[a]

Population and Families Within One-Half Mile

Plan	Minority Population	Non-Minority Population	Families in Poverty	Families Not in Poverty
VISION 2050	4	6	5	6
FCTS - 2050	2	2	2	2

Population and Families Within One-Quarter Mile

Plan	Minority Population	Non-Minority Population	Families in Poverty	Families Not in Poverty
VISION 2050	2	3	2	3
FCTS - 2050	1	1	1	1

[a] *Minority population and non-minority population are based on the 2010 U.S. Census and families in poverty and families not in poverty are based on the 2014-2018 American Community Survey.*

Source: U.S. Bureau of the Census, U.S. Census and American Community Survey; and SEWRPC

within one-quarter mile of freeway widenings would represent about 2 percent of the total minority population and families in poverty, compared to about 3 percent of the non-minority population and families not in poverty.

Under the FCTS, the existing minority population and families in poverty that reside within one-half mile of freeway widenings would represent about 2 percent of the total minority population and families in poverty, which is about the same as the non-minority population and families not in poverty. The existing minority population and families in poverty that reside within one-quarter mile of freeway widenings would represent about 1 percent of the total minority population and families in poverty, which is about the same as the non-minority population and families not in poverty.

TRANSPORTATION-RELATED AIR POLLUTION IMPACTS ON MINORITY POPULATIONS AND LOW-INCOME POPULATIONS

Automobiles and trucks traveling on arterial streets and highways emit air pollutants that generally exist in higher concentrations in the atmosphere near the arterial streets and highways with the most traffic, such as the Region's freeways. The lower speeds and starting/stopping of vehicles associated with congested conditions increase the level of transportation air pollutant emissions. Individuals living in proximity to the Region's freeways may be exposed to higher levels of transportation-related air pollutants.

Due in large part to past, current, and future Federal fuel and vehicle fuel economy standards and improved emissions controls, transportation-related air pollutant emissions in the Region have been declining and are expected to continue to decline in the future. This decline is expected to continue through the year 2050, even with the projected approximately 27 percent increase in vehicle-miles of travel under both VISION 2050 and the FCTS. Table N.22 shows that both VISION 2050 and the FCTS would be expected to result in lower levels of transportation-related air pollutant emissions (generally about a 20 to 38 percent decrease in greenhouse gases and up to 88 percent decrease in other transportation-related air pollutants compared to existing conditions), thereby reducing exposure of residents of the Region to these pollutants, including minority populations and low-income populations.

Table N.22
Transportation-Related Greenhouse Gas Emissions and Other Air Pollutants

Pollutant Name	Type	Average Annual Emissions from Transportation Sources (tons)		
		Existing (2017)	VISION 2050	FCTS (2050)
Carbon Dioxide (CO_2)	GHG	9,878,000	7,866,000	7,910,000
Methane (CH_4) (in CO_2 equivalents)	GHG	9,700	7,600	7,700
Nitrous Oxide (N_2O) (in CO_2 equivalents)	GHG	57,300	35,600	35,900
Carbon Monoxide (CO)	Criteria	108,500	31,500	36,000
Fine Particulate Matter ($PM_{2.5}$)	Criteria	752	228	273
Sulfur Dioxide (SO_2)	Criteria and precursor for $PM_{2.5}$	70	57	117
Nitrogen Oxides (NO_x)	Precursor for Ozone/$PM_{2.5}$	14,150	3,250	3,430
Volatile Organic Compounds (VOC)	Precursor for Ozone/$PM_{2.5}$	8,120	2,280	2,240
Acetaldehyde (C_2H_4O)	Air toxic	92	27	21
Acrolein (C_3H_4O)	Air toxic	9	3	3
Ammonia (NH_3)	Air toxic	485	480	482
Benzene (C_6H_6)	Air toxic	173	32	53
Butadiene (C_4H_6)	Air toxic	26	3	4
Formaldehyde (CH_2O)	Air toxic	139	57	55

Source: SEWRPC

Even with the expected significant reductions in transportation-related air pollutant emissions, residents of the Region, including minority populations and families in poverty, living in proximity to roads with higher traffic volumes, such as freeways, may be exposed to higher levels of transportation-related air pollutants. The following is an assessment of whether there would be an expected disproportionate impact on, or over-representation of, existing minority populations and low-income populations residing along the planned freeway systems under both VISION 2050 and the FCTS.

- **Evaluation Results:** Tables N.23 and N.24 show the existing total and minority population and the existing total number of families and families in poverty that reside in proximity to the freeway system under VISION 2050 and the FCTS. Maps N.70 through N.73 show the freeway system, including those freeway segments to be widened, under VISION 2050 and the FCTS compared to locations of current concentrations of minority populations and low-income populations. The percentages of the total population located in proximity to the freeway system under VISION 2050 and the FCTS that are of minority populations or of low-income populations are generally similar (equal or within several percentage points lower or higher) relative to the percentage of the total minority population and low-income population residing within each county. At the regional level, about 36 percent of the existing population residing within one-half mile or one-quarter mile of a freeway are minority residents, compared to about 29 percent of the total population of the Region that are minority residents. With regards to existing low-income populations, about 12 to 14 percent of the families residing within one-half mile or one-quarter mile of a freeway are in poverty, compared to 10 percent of the total families in the Region.

  As shown in Table N.25, at the regional level, about 20 to 24 percent each of existing minorities and of families in poverty are located within one-half mile of a freeway, while about 9 to 10 percent are located within one-quarter mile, compared to about 15 percent each of existing non-minorities and of families not in poverty that reside within one-half mile of a freeway and about 8 percent of those same

Table N.23
Total and Minority Populations Residing in Proximity to a Freeway[a]

VISION 2050

Population Within One-Half Mile

County	Total and Minority Populations in the Region			Total and Minority Populations Within One-Half Mile of Freeways		
	Total Population	Minority Population		Total Population	Minority Population	
		Population	Percent of Total		Population	Percent of Total
Kenosha	166,426	36,534	22.0	1,550	230	14.8
Milwaukee	947,735	432,777	45.7	239,200	110,400	46.2
Ozaukee	86,395	5,706	6.6	9,500	800	8.4
Racine	195,408	49,994	25.6	1,200	90	7.5
Walworth	102,228	13,538	13.2	16,600	2,400	14.5
Washington	131,887	7,539	5.7	15,200	840	5.5
Waukesha	389,891	36,777	9.4	46,300	4,400	9.5
Region	2,019,970	582,865	28.9	329,550	119,160	36.2

Population Within One-Quarter Mile

County	Total and Minority Populations in the Region			Total and Minority Populations Within One-Quarter Mile of Freeways		
	Total Population	Minority Population		Total Population	Minority Population	
		Population	Percent of Total		Population	Percent of Total
Kenosha	166,426	36,534	22.0	520	35	6.7
Milwaukee	947,735	432,777	45.7	109,700	49,900	45.5
Ozaukee	86,395	5,706	6.6	3,400	310	9.1
Racine	195,408	49,994	25.6	530	45	8.5
Walworth	102,228	13,538	13.2	6,100	780	12.8
Washington	131,887	7,539	5.7	7,100	370	5.2
Waukesha	389,891	36,777	9.4	21,300	2,200	10.3
Region	2,019,970	582,865	28.9	148,650	53,640	36.1

Fiscally Constrained Transportation System

Population Within One-Half Mile

County	Total and Minority Populations in the Region			Total and Minority Populations Within One-Half Mile of Freeways		
	Total Population	Minority Population		Total Population	Minority Population	
		Population	Percent of Total		Population	Percent of Total
Kenosha	166,426	36,534	22.0	1,550	230	14.8
Milwaukee	947,735	432,777	45.7	239,200	110,400	46.2
Ozaukee	86,395	5,706	6.6	9,500	800	8.4
Racine	195,408	49,994	25.6	1,200	90	7.5
Walworth	102,228	13,538	13.2	13,300	2,000	15.0
Washington	131,887	7,539	5.7	15,200	840	5.5
Waukesha	389,891	36,777	9.4	46,300	4,400	9.5
Region	2,019,970	582,865	28.9	329,550	119,160	36.2

Population Within One-Quarter Mile

County	Total and Minority Populations in the Region			Total and Minority Populations Within One-Quarter Mile of Freeways		
	Total Population	Minority Population		Total Population	Minority Population	
		Population	Percent of Total		Population	Percent of Total
Kenosha	166,426	36,534	22.0	520	35	6.7
Milwaukee	947,735	432,777	45.7	109,700	49,900	45.5
Ozaukee	86,395	5,706	6.6	3,400	310	9.1
Racine	195,408	49,994	25.6	530	45	8.5
Walworth	102,228	13,538	13.2	5,100	650	12.7
Washington	131,887	7,539	5.7	7,100	370	5.2
Waukesha	389,891	36,777	9.4	21,300	2,200	10.3
Region	2,019,970	582,865	28.9	148,650	53,640	36.1

[a] *Total population and minority population are based on the 2010 U.S. Census.*

Source: U.S. Bureau of the Census and SEWRPC

Table N.24
Families in Poverty Residing in Proximity to a Freeway[a]

VISION 2050

Families Within One-Half Mile

County	Total Families and Families in Poverty in the Region			Total Families and Families in Poverty Within One-Half Mile of Freeways		
		Families in Poverty			Families in Poverty	
	Total Families	Families	Percent of Total	Total Families	Families	Percent of Total
Kenosha	41,876	4,027	9.6	1,000	30	3.0
Milwaukee	215,024	32,691	15.2	52,700	9,200	17.5
Ozaukee	25,144	866	3.4	3,200	110	3.4
Racine	53,393	5,049	9.4	630	20	3.2
Walworth	26,787	1,801	6.7	4,900	380	7.8
Washington	38,089	1,178	3.1	4,400	150	3.4
Waukesha	110,394	3,454	3.1	14,800	440	3.0
Region	510,707	49,066	9.6	81,630	11,510	14.1

Families Within One-Quarter Mile

County	Total Families and Families in Poverty in the Region			Total Families and Families in Poverty Within One-Quarter Mile of Freeways		
		Families in Poverty			Families in Poverty	
	Total Families	Families	Percent of Total	Total Families	Families	Percent of Total
Kenosha	41,876	4,027	9.6	510	20	3.9
Milwaukee	215,024	32,691	15.2	25,500	4,400	17.3
Ozaukee	25,144	866	3.4	1,600	50	3.1
Racine	53,393	5,049	9.4	320	10	3.1
Walworth	26,787	1,801	6.7	2,600	200	7.7
Washington	38,089	1,178	3.1	2,200	70	3.2
Waukesha	110,394	3,454	3.1	7,500	220	2.9
Region	510,707	49,066	9.6	40,230	4,970	12.4

Fiscally Constrained Transportation System

Families Within One-Half Mile

County	Total Families and Families in Poverty in the Region			Total Families and Families in Poverty Within One-Half Mile of Freeways		
		Families in Poverty			Families in Poverty	
	Total Families	Families	Percent of Total	Total Families	Families	Percent of Total
Kenosha	41,876	4,027	9.6	1,000	30	3.0
Milwaukee	215,024	32,691	15.2	52,700	9,200	17.5
Ozaukee	25,144	866	3.4	3,200	110	3.4
Racine	53,393	5,049	9.4	630	20	3.2
Walworth	26,787	1,801	6.7	3,800	310	8.2
Washington	38,089	1,178	3.1	4,400	150	3.4
Waukesha	110,394	3,454	3.1	14,800	440	3.0
Region	510,707	49,066	9.6	80,530	10,260	12.7

Families Within One-Quarter Mile

County	Total Families and Families in Poverty in the Region			Total Families and Families in Poverty Within One-Quarter Mile of Freeways		
		Families in Poverty			Families in Poverty	
	Total Families	Families	Percent of Total	Total Families	Families	Percent of Total
Kenosha	41,876	4,027	9.6	510	20	3.9
Milwaukee	215,024	32,691	15.2	25,500	4,400	17.3
Ozaukee	25,144	866	3.4	1,600	50	3.1
Racine	53,393	5,049	9.4	320	10	3.1
Walworth	26,787	1,801	6.7	2,000	170	8.5
Washington	38,089	1,178	3.1	2,200	70	3.2
Waukesha	110,394	3,454	3.1	7,500	220	2.9
Region	510,707	49,066	9.6	39,630	4,940	12.5

[a] *Total families and families in poverty are based on the 2014-2018 American Community Survey.*

Source: U.S. Bureau of the Census American Community Survey and SEWRPC

Table N.25
Minority/Non-Minority Populations and Families in Poverty/ Families Not in Poverty Residing in Proximity to a Freeway[a]

VISION 2050

Population and Families Within One-Half Mile

County	Percent of Population Within One-Half Mile of Freeways		Percent of Families Within One-Half Mile of Freeways	
	Minority Population	Non-Minority Population	Families in Poverty	Families Not in Poverty
Kenosha	0.6	1.0	0.7	2.6
Milwaukee	25.5	25.0	28.1	23.9
Ozaukee	14.0	10.8	12.7	12.7
Racine	0.2	0.8	0.4	1.3
Walworth	17.7	16.0	21.1	18.1
Washington	11.1	11.5	12.7	11.5
Waukesha	12.0	11.9	12.7	13.4
Region	20.4	14.6	23.5	15.2

Population and Families Within One-Quarter Mile

County	Percent of Population Within One-Quarter Mile of Freeways		Percent of Families Within One-Quarter Mile of Freeways	
	Minority Population	Non-Minority Population	Families in Poverty	Families Not in Poverty
Kenosha	0.1	0.4	0.5	1.3
Milwaukee	11.5	11.6	13.5	11.6
Ozaukee	5.4	3.8	5.8	6.4
Racine	0.1	0.3	0.2	0.6
Walworth	5.8	6.0	11.1	9.6
Washington	4.9	5.4	5.9	5.8
Waukesha	6.0	5.4	6.4	6.8
Region	9.2	6.6	10.1	7.6

Fiscally Constrained Transportation System

Population and Families Within One-Half Mile

County	Percent of Population Within One-Half Mile of Freeways		Percent of Families Within One-Half Mile of Freeways	
	Minority Population	Non-Minority Population	Families in Poverty	Families Not in Poverty
Kenosha	0.6	1.0	0.7	2.6
Milwaukee	25.5	25.0	28.1	23.9
Ozaukee	14.0	10.8	12.7	12.7
Racine	0.2	0.8	0.4	1.3
Walworth	14.8	12.7	17.2	14.0
Washington	11.1	11.5	12.7	11.5
Waukesha	12.0	11.9	12.7	13.4
Region	20.4	14.6	20.9	15.2

Population and Families Within One-Quarter Mile

County	Percent of Population Within One-Quarter Mile of Freeways		Percent of Families Within One-Quarter Mile of Freeways	
	Minority Population	Non-Minority Population	Families in Poverty	Families Not in Poverty
Kenosha	0.1	0.4	0.5	1.3
Milwaukee	11.5	11.6	13.5	11.6
Ozaukee	5.4	3.8	5.8	6.4
Racine	0.1	0.3	0.2	0.6
Walworth	4.8	5.0	9.4	7.3
Washington	4.9	5.4	5.9	5.8
Waukesha	6.0	5.4	6.4	6.8
Region	9.2	6.6	10.1	7.5

[a] *Minority population and non-minority population are based on the 2010 U.S. Census and families in poverty and families not in poverty are based on the 2014-2018 American Community Survey.*

Source: U.S. Bureau of the Census, U.S. Census and American Community Survey; and SEWRPC

categories who are within one-quarter mile of a freeway. Within each county, the percentages of existing total minority populations and non-minority populations, and the percentages of existing families in poverty and families not in poverty, that reside within one-half mile or one-quarter mile of a freeway are generally equal or within several percent lower or higher.

SUMMARY AND CONCLUSIONS

This section summarizes the conclusions of the evaluation conducted to determine whether the minority populations or low-income populations within Southeastern Wisconsin receive a disproportionate share of the estimated impacts—both costs and benefits—of VISION 2050 and the FCTS.

Based on comparisons of the location of the freeway and surface arterial street and highway capacity improvements under VISION 2050 and the FCTS to areas of the Region with concentrations of minority populations and low-income populations, it was concluded that no area of the Region, including minority populations and low-income populations, would disproportionately bear the impact of the planned freeway and surface arterial capacity improvements. As the segments of freeway to be widened under either VISION 2050 or the FCTS would directly serve areas of minority populations and low-income populations, these populations would benefit from the expected modest improvement in highway accessibility to employment associated with the freeway widenings, with the improvement under VISION 2050 being greater than the FCTS. Similarly, the anticipated improved safety that would potentially occur from a reduction in congestion would directly benefit minority populations and low-income populations that would be served by the widened freeway segments under VISION 2050 and the FCTS.

With respect to public transit, implementing the more than doubling of transit service recommended under VISION 2050 would significantly improve the transit access of minority populations, low-income populations, and people with disabilities to jobs, healthcare, education, and other activities. While the number of additional members of minority populations and low-income populations and of people with disabilities with access to transit service would only modestly increase under VISION 2050, the number of such populations with access to higher-quality transit, including fixed-guideway transit service, would significantly increase.

The 35 percent reduction in transit service and minimal addition of higher-quality transit service expected under the FCTS would result in significantly less access to jobs, healthcare, education, and other daily needs, and an overall reduction in transit service quality when compared to both VISION 2050 and the transit system that exists today. For the 1 in 10 households in the Region without access to an automobile, households that are more likely to be minority or low income than their overall proportion of the Region's population, mobility and access to jobs and activities within the Region would be limited. In addition, a large number of the Region's jobs would be inaccessible to those households without an automobile due to excessive transit travel times. This inaccessibility to jobs for households may be even more limited than indicated in this analysis, as it is difficult to account for the potential reduction in job access due to reduced hours of the day in which transit service is available or due to the potential elimination of service on weekends. This inaccessibility to jobs via transit particularly impacts minority populations, low-income populations, and people with disabilities, who utilize public transit at a rate proportionately higher than other population groups.

Therefore, should the reasonably available and expected funding for implementing the public transit element of VISION 2050 continue as estimated under the FCTS, a disparate impact on the Region's minority populations, low-income populations, and people with disabilities is likely to occur. Given current limitations at the State level on both local government revenue generation and on the Wisconsin Department of Transportation's ability to allocate funds between different programs, the ability for the Region to avoid such a disparate impact is dependent on the State Legislature and Governor providing additional State funding for transit services or allowing local units of government and transit operators to generate such funds on their own.

Table O.1
Population in the Region by Sewer Service Area: Existing 2010, 2050 Recommended Plan, and 2050 High-Growth Scenario

	Sewer Service Area	Existing Population: 2010			Sewered Population: 2050	
		Sewered	Unsewered[a]	Total	Recommended Plan	High-Growth Scenario
Kenosha County	Bristol[b]	1,780	690	2,470	5,080	7,400
	Kenosha	124,870	2,870	127,740	188,510	210,550
	Paddock Lake	3,000	20	3,020	5,890	7,100
	Powers Lake (part)	--	1,600	1,600	1,730	2,610
	Racine (part)	1,010	--	1,010	1,430	1,430
	Salem	11,130	400	11,530	21,310	26,050
	Silver Lake	2,380	870	3,250	5,670	5,750
	Twin Lakes	5,980	660	6,640	11,530	12,700
Milwaukee County	Franklin	35,980	710	36,690	51,150	54,900
	Oak Creek	34,760	60	34,820	49,800	56,730
	South Milwaukee	21,130	--	21,130	21,230	21,680
	Balance of Milwaukee County	855,090	10	855,100	896,910	1,002,770
Ozaukee County	Belgium	2,260	10	2,270	3,000	5,220
	Cedarburg	11,610	1,770	13,380	16,550	24,280
	Fredonia	2,260	30	2,290	3,330	6,750
	Grafton	11,950	1,400	13,350	18,440	25,480
	Lake Church	--	520	520	550	550
	Mequon/Thiensville	23,700	200	23,900	30,040	34,930
	Newburg (part)	120	60	180	330	730
	Port Washington	11,470	510	11,980	15,640	18,230
	Saukville	4,460	540	5,000	6,310	9,490
	Waubeka	--	620	620	600	600
Racine County	Bohner Lake	2,160	200	2,360	2,330	2,790
	Burlington[c]	12,880	370	13,250	16,510	21,440
	Caddy Vista	600	70	670	1,110	1,840
	Eagle Lake	1,640	70	1,710	2,170	3,770
	Ives Grove	250	90	340	380	570
	Racine (part)	134,930	1,860	136,790	170,490	213,810
	Union Grove[d]	5,730	220	5,950	7,910	11,440
	Western Racine County Sewerage District	12,370	380	12,750	16,360	21,930
	Wind Lake	5,580	70	5,650	5,810	8,200
Walworth County	Darien	1,630	80	1,710	2,990	3,600
	Delavan/Delavan Lake	12,920	530	13,450	19,810	30,560
	East Troy[e]	5,690	750	6,440	11,320	13,620
	Elkhorn	10,120	1,050	11,170	15,840	21,790
	Fontana/Walworth	4,700	380	5,080	6,990	11,380
	Geneva National/Lake Como	3,020	170	3,190	4,120	5,630
	Genoa City	3,070	10	3,080	4,260	6,990
	Lake Geneva	8,600	670	9,270	14,520	16,010
	Lyons[f]	1,390	210	1,600	2,770	3,640
	Mukwonago (part)	50	260	310	2,280	3,080
	Pell Lake	3,670	50	3,720	5,040	5,780
	Powers Lake (part)	--	490	490	1,080	1,080
	Sharon	1,640	10	1,650	2,660	3,020
	Whitewater (part)	11,110	230	11,340	14,950	17,820
	Williams Bay	2,840	460	3,300	4,500	6,190

Table continued on next page.

Table O.1 (Continued)

	Sewer Service Area	Existing Population: 2010			Sewered Population: 2050	
		Sewered	Unsewered[a]	Total	Recommended Plan	High-Growth Scenario
Washington County	Allenton	740	130	870	1,810	3,620
	Germantown	16,670	930	17,600	29,080	34,500
	Hartford (part)	15,190	830	16,020	20,570	34,030
	Jackson	7,350	430	7,780	11,570	15,160
	Kewaskum	4,030	100	4,130	6,330	9,800
	Newburg (part)	1,170	460	1,630	2,010	3,490
	Slinger	5,530	460	5,990	9,850	13,200
	West Bend	33,630	1,570	35,200	53,770	64,210
Waukesha County	Big Bend	--	2,600	2,600	2,760	3,850
	Brookfield East[g]	17,360	--	17,360	19,160	21,320
	Brookfield West[h]	26,760	120	26,880	32,290	34,140
	Butler	1,800	--	1,800	1,830	1,830
	Delafield[i]	8,140	2,970	11,110	14,010	15,880
	Dousman[J]	2,710	2,020	4,730	5,950	10,310
	Eagle Spring Lake/Mukwonago Park/ Rainbow Springs	--	600	600	570	570
	Elm Grove	5,370	--	5,370	5,670	6,960
	Golden Lake	--	170	170	180	180
	Hartland	10,070	850	10,920	12,770	14,330
	Lake Country[k]	2,650	10,960	13,610	15,060	18,040
	Lannon	1,300	90	1,390	2,360	3,930
	Menomonee Falls East[l]	31,290	540	31,830	35,810	40,780
	Menomonee Falls West[m]	2,790	300	3,090	8,940	12,030
	Mukwonago (part)	7,380	1,330	8,710	13,900	15,350
	Muskego[n]	21,840	210	22,050	33,510	37,740
	Muskego South[o]	1,080	170	1,250	1,460	2,240
	New Berlin[p]	33,060	920	33,980	38,240	39,420
	Oconomowoc[q]	17,790	880	18,670	26,090	41,380
	Pewaukee[r]	23,520	1,640	25,160	36,410	43,410
	Sussex/Lisbon	12,650	1,170	13,820	21,490	27,100
	Wales	--	770	770	870	2,310
	Waukesha	73,580	8,080	81,660	96,290	113,610

[a] *Existing 2010 unsewered population within sewer service areas envisioned under the land use component of VISION 2050—proposed to be sewered under plan conditions.*

[b] *Includes George Lake Sewer Service Area.*

[c] *Includes Browns Lake Sewer Service Area.*

[d] *Includes Southern Wisconsin Center area.*

[e] *Includes Alpine Valley and Potter Lake Sewer Service Areas.*

[f] *Includes Country Estates Sanitary District Sewer Service Area.*

[g] *Includes area of the City of Brookfield tributary to the Milwaukee Metropolitan Sewerage District.*

[h] *Includes area of the City of Brookfield tributary to the Fox River Water Pollution Control Commission sewage treatment plant, along with small areas of the Village of Menomonee Falls and the City of New Berlin tributary to that treatment plant.*

[i] *Includes Village of Nashotah and Nemahbin Lakes Sewer Service Area.*

[J] *Includes Lower Genesee Lake, Pretty Lake, and School Section Lake Sewer Service Areas.*

[k] *Includes the following sewer service areas located generally east of the City of Oconomowoc: Ashippun Lake, Beaver Lake, Lake Keesus, North Lake, Oconomowoc Lake, Okauchee Lake, Pine Lake, and the Village of Merton.*

[l] *Includes area of the Village of Menomonee Falls tributary to the Milwaukee Metropolitan Sewerage District.*

[m] *Includes area of the Village of Menomonee Falls tributary to the Sussex sewage treatment plant.*

[n] *Includes area of the City of Muskego tributary to the Milwaukee Metropolitan Sewerage District.*

[o] *Includes area of the City of Muskego tributary to the Town of Norway Sanitary District No. 1 sewage treatment plant.*

[p] *Includes area of the City of New Berlin tributary to the Milwaukee Metropolitan Sewerage District.*

[q] *Includes the Village of Lac La Belle Sewer Service Area.*

[r] *Includes the City and Village of Pewaukee and Pewaukee Lake Sewer Service Areas.*

Source: SEWRPC

APPENDIX P
REVIEW OF TARGETS ESTABLISHED FOR THE NATIONAL PERFORMANCE MEASURES

INTRODUCTION

To establish a consistent nationwide process for monitoring the effectiveness of Federal transportation investments, the Moving Ahead for Progress in the 21st Century (MAP-21), enacted in 2012, created a framework for a national performance management approach to transportation decision-making on investments with Federal highway and transit funding. In implementing the performance management approach, the Federal Highway Administration (FHWA) and Federal Transit Administration (FTA) have developed specific highway and transit performance measures, and requirements for States, transit operators, and metropolitan planning organizations (MPOs) in establishing and reporting short-term (two- to four-year) targets, along with monitoring achievement of the targets, for each performance measure. The performance measures established by FHWA and FTA can be found in Table P.1. The transit asset management (TAM) and highway safety targets are to be established annually, and the National Highway System (NHS) condition and reliability, freight reliability, and congestion mitigation and air quality improvement (CMAQ) performance measures are to be established every four years. Depending on the performance measure, the targets are required to be established for the Southeastern Wisconsin metropolitan planning area (MPA) or for a specific urbanized area—initially the Milwaukee urbanized area. Map P.1 shows the MPA and the urbanized areas in Southeastern Wisconsin.

As part of implementing the national framework, the Commission has established targets for nearly all performance measures for Southeastern Wisconsin, which were amended into VISION 2050 in June 2018 for the highway safety targets and June 2019 for the TAM, NHS condition and reliability, freight reliability, and CMAQ performance measures.[84] The remaining transit safety performance measures will be added to VISION 2050 following the establishment of transit safety targets by the Region's transit operators in coordination with the Commission and State. The Commission has also included in the current transportation improvement program (TIP)[85] a description of how the projects programmed in the TIP would promote the achievement of the performance targets.

[84] *The development of the highway safety targets is documented in a SEWRPC report entitled,* First Amendment to VISION 2050: A Regional Land Use and Transportation Plan for Southeastern Wisconsin, Establishing Targets for Federal Performance Measures: Highway Safety. *The remaining targets established to date are documented in a SEWRPC report entitled,* Third Amendment to VISION 2050: A Regional Land Use and Transportation Plan for Southeastern Wisconsin, Establishing Targets for Federal Performance Measures: Transit Asset Management, National Highway System Condition and Performance, Freight Performance, and Congestion Mitigation and Air Quality Improvement.

[85] *The current TIP is documented in a SEWRPC report entitled,* A Transportation Improvement Program for Southeastern Wisconsin: 2019-2022.

Table P.1
Transit Asset Management, Transit Safety, Highway Safety, National Highway System, Freight, and Congestion Mitigation and Air Quality Transportation Performance Measures Developed by the Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA)

Performance Measure Area	Performance Measure
FHWA Highway Safety Improvement Program (HSIP)	
Number of Fatalities and Serious Injuries	Number of Fatalities Number of Serious Injuries Number of Non-Motorized Fatalities and Non-Motorized Serious Injuries
Rate of Fatalities and Serious Injuries	Rate of Fatalities per 100 Million Vehicle-Miles Traveled (MVMT) Rate of Serious Injuries per 100 MVMT
FHWA National Highway Performance Program (NHPP)	
Condition of Pavements on the Interstate System	Percentage of Pavement of the Interstate System in Good Condition Percentage of Pavement of the Interstate System in Poor Condition
Condition of Pavements on the National Highway System (NHS) Excluding the Interstate	Percentage of Pavement of the Non-Interstate NHS in Good Condition Percentage of Pavement of the Non-Interstate NHS in Poor condition
Condition of Bridges on the NHS	Percentage of NHS Bridges Classified as in Good Condition Percentage of NHS Bridges Classified as in Poor Condition
Performance of the Interstate System	Percentage of the Person-Miles Traveled on the Interstate that are Reliable
Performance of the NHS Excluding the Interstate	Percentage of the Person-Miles Traveled on the Non-interstate NHS that are Reliable
FHWA National Highway Freight Program (NHFP)	
Freight Movement on the Interstate System	Freight Reliability Index
FHWA Congestion Mitigation and Air Quality Improvement Program (CMAQ)	
On-Road Source Emissions	Estimate of Emission Reductions for Projects Funded by CMAQ
Traffic Congestion	Peak Hour Excessive Delay (PHED) Per Capita Percentage of Non-Single Occupancy Vehicles
FTA Section 53 Funding (including Sections 5307, 5310, 5311, 5337, and 5339)	
Transit Asset Management	Percentage of Revenue Vehicles At or Exceeding the Useful Life Benchmark (ULB) Percentage of Vehicles and Equipment At or Exceeding the ULB Percentage of Facilities Exceeding the Transit Economic Requirements Model (TERM) Scale Percentage of Track Segments Having Performance Restrictions
Transit Safety	Number of Reportable Fatalities Rate of Reportable Fatalities per Vehicle-Revenue Mile Number of Reportable Injuries Rate of Reportable Injuries per Vehicle-Revenue Mile Number of Reportable Events Rate of Reportable Events per Vehicle-Revenue Mile Mean Distance Between Major Mechanical Failures

Source: Federal Highway Administration, Federal Transit Administration, and SEWRPC

Given the requirement to include the short-range target-setting process into VISION 2050, a long-range plan, it was determined that long-term regional targets should be established, as appropriate, for the TAM, highway safety, NHS, freight, and CMAQ performance measures. The establishment of the short-term targets for the MPA, as required as part of the national performance measure framework, was based on the long-term regional targets.

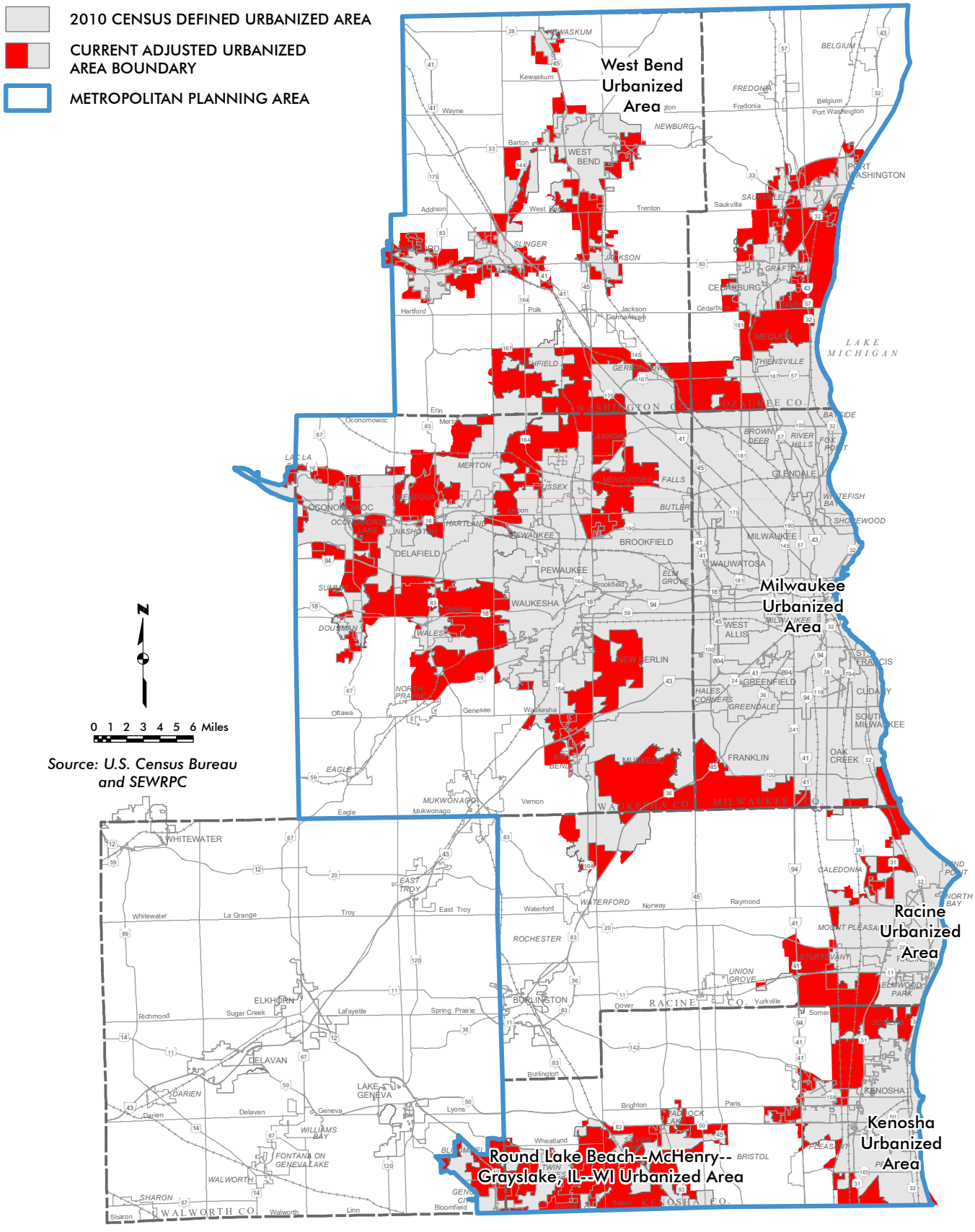
With respect to establishing long-term TAM, highway safety, NHS, freight, and CMAQ targets, the following process was used:

1. Baseline data for each of the measures was developed for the Region, plus those portions of Jefferson and Dodge Counties within the MPA.

2. The methodologies used by transit operators and WisDOT to establish their targets were reviewed.

3. Historical regional trends, as available, of the performance measures were reviewed.

Map P.1
The Southeastern Wisconsin Metropolitan Planning Area and Census Defined and Adjusted Urbanized Area Boundaries: 2010



Source: U.S. Census Bureau and SEWRPC

4. The relevant recommendations of VISION 2050 and other State and regional plans were reviewed to determine their potential effect on the performance measures in the Region.

5. Based on the evaluations of the historical trends and the review of relevant recommendations of VISION 2050 and other plans, preliminary recommended year 2050 targets for each performance measure were developed for inclusion in VISION 2050.

The remainder of this appendix summarizes the targets established for the each of the performance measures. In addition, this appendix compares the established targets to available data to determine whether progress is being made towards achieving the targets. While there may be consequences for the State for not making progress towards achieving targets or meeting minimum thresholds, as indicated in Federal Regulations, there are no such consequences for MPOs not doing so.

TRANSIT ASSET MANAGEMENT TARGETS

As part of the National Performance Management Framework, FTA developed regulations for monitoring the condition of transit assets nationwide. Specifically, FTA developed four transit performance measures for target-setting purposes: 1) the percentage of revenue vehicles at or exceeding the Useful Life Benchmark (ULB), 2) the percentage of vehicles and equipment at or exceeding the ULB, 3) the percentage of facilities exceeding the Transit Economic Requirements Model (TERM) scale, and 4) the percentage of track segments having performance restrictions. The methodology for calculating these measures is shown in Figure P.1. The TAM performance measures are calculated based on the data that transit operators annually submit to FTA on their assets and system operation for inclusion in the National Transit Database (NTD). Transit operators are required, as part of the framework, to report asset inventory, condition, and performance information to the NTD beginning in 2019 for reporting year 2018. The 2017 NTD includes only the number and age of the transit rolling stock. Baseline performance of transit equipment, facilities, and infrastructure are addressed in TAM plans, to be submitted to FTA for reporting year 2019.

Table P.2 shows the year 2050 targets for each of the TAM performance measures. While current funding levels make it difficult for transit operators to maintain the desired replacement of buses every 12 years, the TAM targets were established based on the VISION 2050 recommendations for the more than doubling of transit service by the year 2050 and the associated substantial investment in transit assets that would occur if that doubling is achieved. Specifically, the year 2050 targets for the rolling stock (revenue and non-revenue vehicles) owned by the transit operators were based on a vehicle being replaced on average one year before exceeding its Federally defined maximum useful life. The targets for the remaining measures were set as 0 percent based on the assumption that investment levels needed to implement the VISION 2050 recommendations would be sufficient to achieve these targets. With respect to the short-term targets, more achievable targets were established for the year 2018 targets based on current State and Federal transit capital levels not being sufficient for achieving the long-term targets. The future short-term targets (beyond 2018) for the rolling stock-related measure are to be based on the year 2018 targets, as shown in Table P.2, until additional Federal and State funding becomes available for transit capital projects.

Figure P.1
Methodology for Calculating the Transit Asset Management Performance Measures

The following is the methodology developed by FTA for calculating the following four TAM performance measures:

- Percent of revenue vehicles that have either met or exceeded their useful life benchmarks (ULB)
- Percent of vehicles and equipment that have either met or exceeded their ULB
- Percent of segments that have performance restrictions
- Percent of facilities exceeding the Transit Economic Requirements Model (TERM) scale

1. As part of the national performance management framework, transit operators are required to conduct an inventory of their transit assets as outlined in the following table:

Transit Asset Category	Asset Class	Applicable Assets
Rolling Stock	All revenue vehicles used in the provision of public transit	Only revenue vehicles with direct capital responsibility
Equipment	All non-revenue service vehicles and equipment over $50,000 used in the provision of public transit, except third-party equipment assets	Only non-revenue service vehicles with direct capital responsibility
Infrastructure	All guideway infrastructure used in the provision of public transit	Only fixed-rail guideway with direct capital responsibility
Facilities	All passenger stations and all exclusive-use maintenance facilities used in the provision of public transit, excluding bus shelters	Maintenance and administrative facilities with direct capital responsibility. Passenger stations (buildings) and parking facilities with direct capital responsibility.

2. Calculate each performance measure, based on the number of assets under each transit asset category that are not in state-of-good repair. For rolling stock and non-revenue service vehicles, the state-of-good repair is identified based on the useful life benchmarks (ULB) from FTA's *Transit Database Asset Inventory Module*. The identification of the state-of-good repair for infrastructure and facilities is based on FTA's Transit Economic Requirements Model (TERM) scale, as provided in the *TAM Facility Performance Measure Reporting Guidebook: Condition Assessment Calculation*.

Source: Federal Transit Administration and SEWRPC

Table P.2
Years 2018 and 2050 Regional Transit Asset Management Targets[a]

Asset Class	Asset Examples	Performance Measure	Recommended Year 2050 Target	Year 2018 Target[a]
		Rolling Stock		
Buses, Other Passenger Vehicles, and Railcars	Bus, Cutaway, Van, Minivan, and Streetcars	Percent of revenue vehicles that have either met or exceeded their useful life benchmark	< 10	< 30
		Equipment		
Non-Revenue Service Vehicles and Equipment Over $50,000	Route Supervisor Vehicles, Maintenance Trucks, Pool Vehicles, DPF Cleaning System, Bus Wash Systems, Fare Collection Systems, Vehicle Lifts	Percent of vehicles and equipment that have either met or exceeded their useful life benchmark	< 20	< 30
		Facilities		
Support	Maintenance and Administrative Facilities	Percent of facilities within an asset class rated below 3 on condition reporting system	0	< 15
Passenger	Rail Terminals, Bus Transfer Stations	Percent of facilities within an asset class rated below 3 on condition reporting system	0	0
Parking	Park-Ride Lots with Direct Capital Responsibility	Percent of facilities within an asset class rated below 3 on condition reporting system	0	0
		Infrastructure		
Fixed Guideway	Track Segments, Exclusive Bus Rights-of-Way, Catenary Segments, and Bridges	Percent of segments that have performance restrictions	0	0

[a] *Future short-term targets (beyond 2018) for these performance measures will be based on the year 2018 target until additional Federal and State funding becomes available for transit capital projects.*

Source: SEWRPC

TRANSIT SAFETY TARGETS

FTA has developed regulations for the monitoring of transit safety for transit operators nationwide. Specifically, FTA established seven performance measures for target-setting purposes: 1) the total number of reportable fatalities, 2) the rate of reportable fatalities per total vehicle-revenue miles, 3) total number of reportable injuries, 4) the rate of reportable injuries per total vehicle-revenue miles, 5) the total number of reportable safety events (derailments, collisions, fires, and evacuations), 6) the rate of reportable events per total vehicle miles, and 7) the mean distance between major mechanical failures. Per the FTA regulations, the Commission will be establishing transit safety-related targets in 2021 following the development of transit safety plans by transit operators and WisDOT due to be completed by late 2020.

HIGHWAY SAFETY TARGETS

FHWA has developed five safety-related performance measures that are to be established annually for all public roadways: 1) the number of fatalities, 2) the rate of fatalities per one hundred million vehicle-miles traveled (HMVMT), 3) number of serious injuries, 4) the rate of serious injuries per HMVMT, and 5) the number of non-motorized fatalities and serious injuries.[86] The targets are set for each of the five performance measures as a rolling five-year average[87] ending the year after the reporting year. The methodology for calculating these measures is shown in Figure P.2. The targets are compared to a base rolling five-year average ending in the year previous to the reporting year. Table P.3 shows the years 2012-2016 five-year rolling average (representing the baseline) for the five safety performance measures for the Region, including the portions of Jefferson and Dodge Counties within the MPA.

Table P.3 shows the years 2046-2050 targets for each of the five safety performance measures. These targets were established based on an evaluation of short-term and long-term trends in the number of fatalities and serious injuries and consideration of the safety improvement recommendations of the State's 2017-2020 Strategic Highway Safety Plan (SHSP) and VISION 2050. Specifically, the targets were established based on a continuation of the overall trend of a long-term reduction of fatalities and serious injuries that have occurred over the last 20 to 40 years. Table P.4 shows the resulting short-term years 2014-2018 through years 2018-2022 safety targets for both the MPA and the seven-county Region.

Figure P.3 shows a comparison of the actual and target five-year averages from the baseline years of 2012-2016 through years 2046-2050 for the number and rate of fatalities, the number and rate of serious injuries, and the number of non-motorized fatalities and serious injuries. Table P.5 shows a comparison of the actual and target five-year 2014-2018 averages for both the MPA and the Region. As shown in these figures and table, none of the actual five-year averages met the established targets. In addition,

[86] *A non-motorized fatality or serious injury involves any vehicular crash that results in the death or serious injury of a pedestrian, bicyclist, or person utilizing a wheelchair (manual or motorized).*

[87] *Due to the somewhat random nature of crashes, the frequency of crashes from year-to-year can fluctuate, and it is possible that the number of crashes in one year may be lower or higher than a typical year. Thus, to avoid annual anomalies, the annual average of the number of crashes over a certain time period is commonly used (such as three or five years).*

Figure P.2
Methodology for Calculating the Highway Safety Performance Measures

The following is the methodology developed by FHWA for calculating the following five highway safety performance measures:

- Number of Fatalities
- Number of Serious Injuries
- Number of Non-Motorized Fatalities and Non-Motorized Serious Injuries
- Rate of Fatalities per 100 Million Vehicle-Miles Traveled (HMVMT)
- Rate of Serious Injuries per HMVMT

1. Assemble fatality, serious injury, and vehicle-miles traveled (VMT) data for all public roadways over a five-year period from the following sources:

Data	Source
Fatalities	National Highway Transportation Safety Association (NHTSA) Fatality Analysis Reporting System (FARS)
Serious Injuries	State DOT-supplied Data Source
VMT	MPO-Documented VMT Methodology

2. Calculate the five-year average for each performance measure, based on the following formula:

$$Number\ of\ Fatalities = \frac{\sum(Number\ of\ Fatalities)_{Years\ 1-5}}{5\ Years}$$

$$Number\ of\ Serious\ Injuries = \frac{\sum(Number\ of\ Serious\ Injuries)_{Years\ 1-5}}{5\ Years}$$

$$Number\ of\ Non\text{-}Motorized\ Fatalities\ and\ Serious\ Injuries = \frac{\sum\left(_{Fatalities\ and\ Serious\ Injuries}^{Number\ of\ Non\text{-}Motorized}\right)_{Years\ 1-5}}{5\ Years}$$

$$Rate\ of\ Fatalities\ Per\ HMVMT = \frac{\sum\left(\frac{Number\ of\ Fatalities\ \mathrm{x}\ 100{,}000{,}000}{Annual\ VMT}\right)_{Years\ 1-5}}{5\ Years}$$

$$Rate\ of\ Serious\ Injuries\ Per\ HMVMT = \frac{\sum\left(\frac{Number\ of\ Serious\ Injuries\ \mathrm{x}\ 100{,}000{,}000}{Annual\ VMT}\right)_{Years\ 1-5}}{5\ Years}$$

Source: Federal Highway Administration and SEWRPC

Table P.3
Years 2046-2050 Regional Targets for National Safety-Related Performance Measures

Performance Measure	2012-2016 Baseline Data	2046-2050 Target	Percent Change from 2012-2016 Base Year
Number of Fatalities	152.2	91.9	-39.6
Rate of Fatalities	0.962	0.488	-49.3
Number of Serious Injuries	798.2	144.1	-82.0
Rate of Serious Injuries	5.053	0.766	-84.8
Number of Non-Motorized Fatalities and Serious Injuries	167.2	45.7	-72.7

Source: Fatality Analysis Reporting System (FARS), Wisconsin Traffic Operations and Safety (TOPS) Laboratory, and SEWRPC

Table P.4
Years 2014-2018 through 2018-2022 Targets for the National Safety-Related Performance Measures for the Metropolitan Planning Area and Seven-County Region

Metropolitan Planning Area

Performance Measure	2012-2016 Baseline Data	2014-2018 Target	2015-2019 Target	2016-2020 Target	2017-2021 Target	2018-2022 Target
Number of Fatalities	137.2	133.2	131.2	129.3	127.4	125.5
Fatality Rate	0.923	0.884	0.862	0.843	0.827	0.811
Number of Serious Injuries	743.8	672.5	639.5	608.1	578.2	549.9
Serious Injury Rate	5.005	4.464	4.203	3.968	3.754	3.554
Number of Non-Motorized Fatalities and Serious Injuries	161.0	149.2	143.6	138.2	133.0	128.1

Seven-County Region

Performance Measure	2012-2016 Baseline Data	2014-2018 Target	2015-2019 Target	2016-2020 Target	2017-2021 Target	2018-2022 Target
Number of Fatalities	152.2	147.7	145.6	143.4	141.3	139.2
Fatality Rate	0.962	0.922	0.899	0.879	0.861	0.844
Number of Serious Injuries	798.2	729.7	686.3	652.6	620.5	590.1
Serious Injury Rate	5.053	4.504	4.241	4.002	3.784	3.579
Number of Non-Motorized Fatalities and Serious Injuries	167.2	154.9	149.1	143.5	138.2	133.0

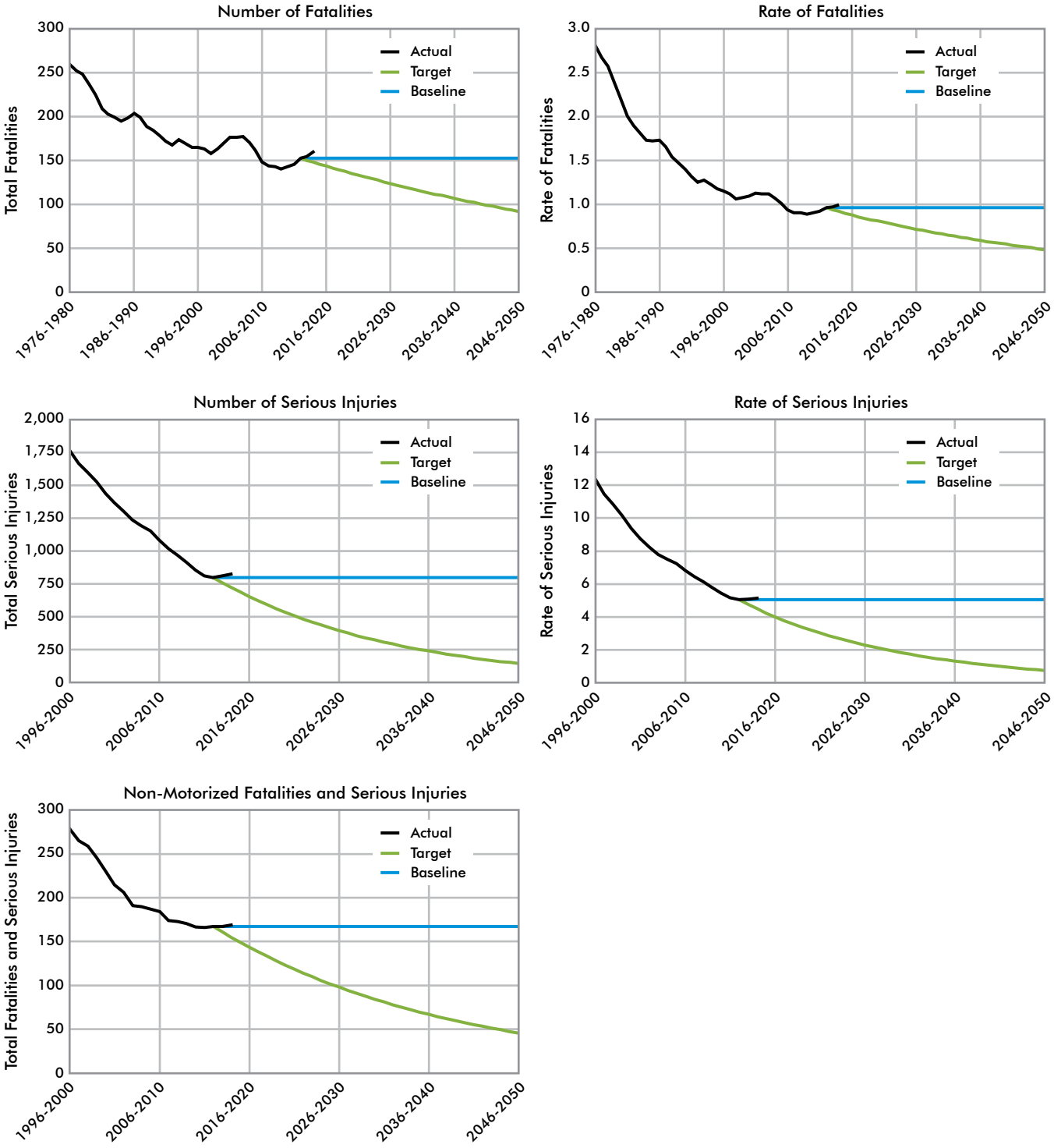
Source: Fatality Analysis Reporting System (FARS), Wisconsin Traffic Operations and Safety (TOPS) Laboratory, and SEWRPC

the actual five-year results for all five performance measures exceed the baseline levels. The increases in the five-year averages for the performance measures are a result of continuous increases in the number of fatalities and serious injuries that occurred following the achievement of their all-time lows of 2013 and 2015, respectively. Specifically, the annual number of fatalities increased from 125 fatalities in 2013 to a peak of 179 in 2016 (an 11-year high), and the annual number of serious injuries increased from 716 in 2015 to a peak of 955 in 2017 (an eight-year high). However, by 2018, there were slight drops in both fatalities and serious injuries, with 151 fatalities and 908 serious injuries occurring that year. Should these declines continue in subsequent years through efforts in implementing recommendations of statewide and regional safety recommendations, along with other efforts (such as improved vehicle technology), it is expected that the long-term decline in fatalities and serious injuries would resume.

NHS PAVEMENT CONDITION TARGETS

As part of the National Performance Management Framework, FHWA developed four performance measures to monitor pavement condition: 1) percentage of the Interstate system in good condition, 2) percentage of the Interstate system in poor condition, 3) percentage of the non-Interstate NHS in good condition, and 4) percentage of the non-Interstate NHS in poor condition. The methodology for calculating each of the four pavement condition performance measures is provided in Figure P.4. The data utilized to develop the performance measures are based on data submitted annually by WisDOT to FHWA through its Highway Performance Monitoring System (HPMS). Based on the methodology developed by FHWA, a rating of good, fair, or poor is determined based on the criteria established for various types of pavement. Then, the performance measures are calculated by dividing the lane-miles of good or poor pavement by the total lane-miles of evaluated pavement for both the Interstate system and the non-Interstate NHS. Map P.2 shows the base year 2017 pavement condition of each segment of highway for the NHS. Table P.6 shows the total lane-miles and percentage of NHS roadways in Southeastern Wisconsin that have a condition of good, fair, and poor in 2017.

Figure P.3
Comparison of Actual and Target Five-Year Averages for the National Highway Safety Performance Measures



Source: Fatality Analysis Reporting System (FARS), Wisconsin Traffic Operations and Safety (TOPS) Laboratory, and SEWRPC

Table P.5
Years 2014-2018 Actual Data and Targets for the National Safety-Related Performance Measures for the Metropolitan Planning Area and Seven-County Region

Metropolitan Planning Area

Performance Measure	2012-2016 Baseline Data	2014-2018 Target	2014-2018 Actual	Progress Made in Achieving Target
Number of Fatalities	137.2	133.2	144.4	No
Fatality Rate	0.923	0.884	0.957	No
Number of Serious Injuries	743.8	672.5	774.2	No
Serious Injury Rate	5.005	4.464	5.129	No
Number of Non-Motorized Fatalities and Serious Injuries	161.0	149.2	163.4	No

Seven-County Region

Performance Measure	2012-2016 Baseline Data	2014-2018 Target	2014-2018 Actual	Progress Made in Achieving Target
Number of Fatalities	152.2	147.7	159.8	No
Fatality Rate	0.962	0.922	0.996	No
Number of Serious Injuries	798.2	729.7	824.4	No
Serious Injury Rate	5.053	4.504	5.135	No
Number of Non-Motorized Fatalities and Serious Injuries	167.2	154.9	169.0	No

Note: Progress is made in achieving target by either meeting target outright or by improving upon baseline data.

Source: Fatality Analysis Reporting System (FARS), Wisconsin Traffic Operations and Safety (TOPS) Laboratory, and SEWRPC

Table P.7 shows the year 2050 pavement targets for the Interstate system and the non-Interstate NHS in the Region. These targets were established based on an evaluation of recent trends in the pavement condition on the Region's arterial roadways and the recommendation in VISION 2050 related to maintaining or improving the condition of Region's arterial roadways. Specifically, the targets for the NHS pavement performance measures were established based on the amount of existing lane-miles in good condition increasing by 10 percent and the amount of lane-miles in poor condition decreasing by 10 percent between 2017 (the base year of the data) and the design year 2050. Table P.8 shows the resulting year 2021 targets for the MPA and Region.

Establishing targets would have ideally been done with detailed information on where each segment of roadway is in its life cycle and an asset management model that would allow the evaluation of the effect on pavement condition of different pavement management programs. As part of future target setting, the Commission staff intends to work with WisDOT and county/local governments having portions of the NHS under their jurisdiction to assemble detailed historical information on each segment of roadway and to develop a long-range asset management model.

NHS BRIDGE CONDITION TARGETS

FHWA developed two performance measures to monitor bridge condition: 1) percentage of NHS bridges in good condition and 2) percentage of NHS bridges in poor condition. The methodology for calculating the two bridge condition performance measures is provided in Figure P.5. A rating of good, fair, or poor is determined based on the criteria established by FHWA for bridges and culverts. Then, the performance measures are calculated by dividing the total deck area of good or poor bridges by the total deck area of evaluated pavement for both the Interstate system and the non-Interstate NHS. Map P.3 shows the base year 2017 condition of each bridge on the NHS in Southeastern Wisconsin. Table P.9 shows the total bridge area

Figure P.4
Methodology for Calculating the National Pavement Performance Measures for the Interstate System and the Non-Interstate National Highway System (NHS)

The following is the methodology developed by FHWA for calculating the four pavement-related performance measures:

- Percent of Lane-Miles of Interstate Highway System with Good Pavement Condition
- Percent of Lane-Miles of Interstate Highway System with Poor Pavement Condition
- Percent of Lane-Miles of Non-Interstate NHS with Good Pavement Condition
- Percent of Lane-Miles of Non-Interstate NHS with Poor Pavement Condition

1. The following four criteria from data submitted by the State to the Highway Performance Management System (HPMS) are utilized for asphalt and concrete pavement, as follows:

Pavement Type	International Roughness Index (IRI)	Percent Cracking	Average Rutting	Average Faulting
Asphaltic Pavement (AP)	X	X	X	
Jointed Concrete Pavement (JCP)	X	X		X
Continuous Reinforced Concrete Pavement (CRCP)	X	X		

2. For every segment of the Interstate system or the Non-Interstate NHS having pavement condition data in the HPMS, identify the Good and Poor condition for each of the relevant criteria based on the following thresholds:

Measure Criteria	Good	Fair	Poor
IRI	<95	95-170	>170
Percent Cracking	<5	AP: 5-20 JCP: 5-15 CRCP: 5-10	AP: >20 JCP: >15 CRCP: >10
Average Rutting (Inches)	<0.20	0.20-0.40	>0.40
Average Faulting (Inches)	<0.10	0.10-0.15	>0.15

3. Determine the overall Good or Poor pavement condition for every segment of Interstate system or the Non-Interstate NHS, based on the following:

Good	AP and JCP: All Three Criteria Good CRCP: Both Criteria Good
Poor	AP and JCP: Two Criteria Poor CRCP: Both Criteria Poor
Fair	All Other Conditions

4. Calculate the respective performance measure by the following formula:

$$\underset{\text{Having Good or Poor Pavement}}{\text{Percent of Interstate or Non-Interstate NHS}} = \frac{\text{Lane-Miles of Good or Poor Pavement}}{\text{Total Lane Miles}}$$

Source: Federal Highway Administration and SEWRPC

and percentage of arterial bridges in Southeastern Wisconsin that have a condition of good, fair, or poor in 2017.

Table P.10 shows the year 2050 bridge targets for the NHS in the Region. These targets were established based on an evaluation of recent trends in bridge condition on the Region's arterial roadways and the recommendation in VISION 2050 related to maintaining or improving the condition of the Region's bridges on the arterial roadway system. Specifically, the targets for the NHS bridge performance measures were established based on the amount of existing bridge deck in good condition increase by 10 percent and the amount of deck area in poor condition decrease by 10 percent between 2017 (the base year of the data) and the design year 2050. Establishing targets would have ideally been done with detailed information on where bridges are in their life cycle and an asset management model that would

Map P.2
Pavement Condition of the National Highway System in the Region: 2017

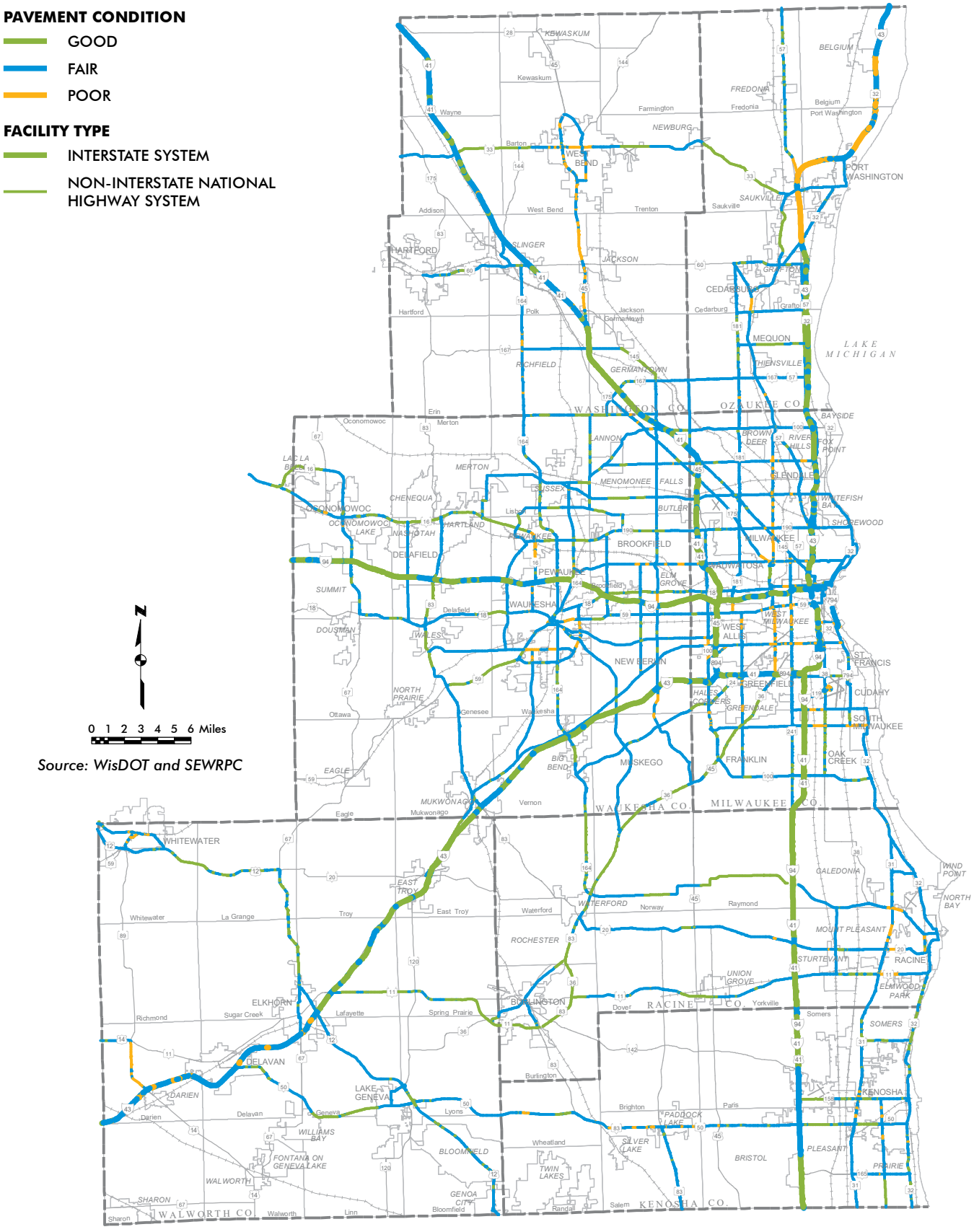


Table P.6
Pavement Condition on Interstate System and Non-Interstate National Highway System: Base Year 2017

Rating	Interstate System		Non-Interstate National Highway System	
	Lane-Miles	Percent of Lane-Miles	Lane-Miles	Percent of Lane-Miles
Good	604	59.0	627	18.9
Fair	373	36.4	2,477	74.5
Poor	47	4.6	220	6.6
Total	1,024	100.0	3,324	100.0

Source: WisDOT and SEWRPC

Table P.7
Year 2050 Regional Targets for the National Highway System (NHS) Pavement Performance Measures

Performance Measure	Year 2017 Regional Baseline Data	Year 2050 Regional Target
Interstate NHS Pavement Condition		
Percentage of Lane-Miles in Good Condition	59.0	≥ 64.9
Percentage of Lane-Miles in Poor Condition	4.6	≤ 4.1
Non-Interstate NHS Pavement Condition		
Percentage of Lane-Miles in Good Condition	18.9	≥ 20.8
Percentage of Lane-Miles in Poor Condition	6.6	≤ 5.9

Source: WisDOT and SEWRPC

Table P.8
Year 2021 Targets for the National Highway System (NHS) Pavement Performance Measures for the Metropolitan Planning Area and Seven-County Region Based on the Year 2050 Regional Targets

Performance Measure	Metropolitan Planning Area		Seven-County Region	
	Year 2017 Baseline Data	Year 2021 Target	Year 2017 Baseline Data	Year 2021 Target
Interstate NHS Pavement Condition				
Percentage of Lane-Miles in Good Condition	61.1	≥ 61.8	59.0	≥ 59.7
Percentage of Lane-Miles in Poor Condition	4.4	≤ 4.3	4.6	≤ 4.5
Non-Interstate NHS Pavement Condition				
Percentage of Lane-Miles in Good Condition	17.6	≥ 17.8	18.9	≥ 19.1
Percentage of Lane-Miles in Poor Condition	6.8	≤ 6.7	6.6	≤ 6.5

Source: WisDOT and SEWRPC

allow the evaluation of the effect on bridge condition of different bridge management programs. However, such a model has not yet been developed for the NHS in the Region. As such, the Commission staff intends to work with WisDOT and county/local governments having portions of the NHS under their jurisdiction to assemble detailed historical information on each bridge and to develop an asset management model. Table P.11 shows the resulting year 2021 targets for the MPA and Region.

Federal regulations do not require a comparison of the actual and target information on bridge condition until year 2021 data are available. However, Commission staff will monitor the progress of achieving these targets as data become available. Table P.12 compares actual year 2018 NHS bridge condition to year 2018 targets that would result from the established year 2050 targets. As expected, there has not been a significant change in bridge condition since 2017—the baseline year.

Figure P.5
Methodology for Calculating the National Bridge Performance Measures for the National Highway System (NHS)

The following is the methodology developed by FHWA for calculating the two bridge-related performance measures:

- Percent of Deck Area of NHS Bridges in Good Condition
- Percent of Deck Area of NHS Bridges in Poor Condition

1. Identify the Good and Poor condition for each of the relevant criteria based on the following thresholds for the ratings as reported to the National Bridge Inventory:

Measure Criteria	Good	Fair	Poor
Deck	≥7	5 or 6	≤4
Superstructure	≥7	5 or 6	≤4
Substation	≥7	5 or 6	≤4
Culvert	≥7	5 or 6	≤4

2. Calculate overall bridge condition based on the lowest condition of the three criteria for bridges—Deck, Superstructure, and Substation—and the Culvert criteria for culverts.

3. Calculate the respective performance measure by the following formula:

$$\begin{matrix}\textit{Percent of NHS Bridges} \\ \textit{Having Good or Poor Pavement}\end{matrix} = \frac{\textit{Deck Area of Good or Poor Pavement}}{\textit{Total Deck Area}}$$

Source: Federal Highway Administration and SEWRPC

NHS SYSTEM RELIABILITY AND FREIGHT RELIABILITY TARGETS

As part of the National Performance Management Framework, FHWA developed three reliability-based performance measures[88]: 1) percent of the Interstate system that is reliable, 2) percent of the non-Interstate NHS that is reliable, and 3) freight reliability ratio. Figures P.6 and P.7 show the methodology that is to be utilized to calculate the three performance measures. The travel time data that are to be used to calculate these performance measures come from a data set provided by FHWA, called the National Performance Management Research Data Set (NPMRDS). These data are based on probe data that are collected from a third-party and geo-referenced to segments of the NHS. For the year 2017, NPMRDS data are available for nearly the entire Interstate System in Southeastern Wisconsin. However, NPMRDS data are only available for about 80 percent of the non-Interstate NHS. As these data are updated annually, it is expected that the quality and quantity of NPMRDS data will increase. Map P.4 shows the segments of the NHS in 2017 that are reliable and unreliable in the Region under the NHS reliability measures, and Map P.5 shows the freight reliability index for each segment of the Interstate system in 2017. Table P.13 shows the regional base year 2017 performance for the three performance measures.

[88] *Transportation system reliability reflects the degree to which travelers are able to reach their destinations on time. Travelers using a less reliable transportation system would be more likely to experience unexpected delays that can result in negative impacts, such as increased total travel time delay for personal vehicles and public transit, increased vehicle emissions, increased energy use, and increased freight shipping travel time and costs. Improving the ability of travelers to reach their destinations on time depends on a variety of factors, including: 1) reducing overall congestion; 2) reducing the frequency of vehicular crashes on arterial streets and highways, which can cause non-recurring congestion; 3) improving alternative routes and modes that can provide an opportunity for travelers to avoid congestion; and 4) expanding transportation options (such as commuter rail, light rail, and bus rapid transit) that are less impacted by inclement weather and crashes.*

Map P.3
Bridge Condition of the National Highway System in the Region: 2017

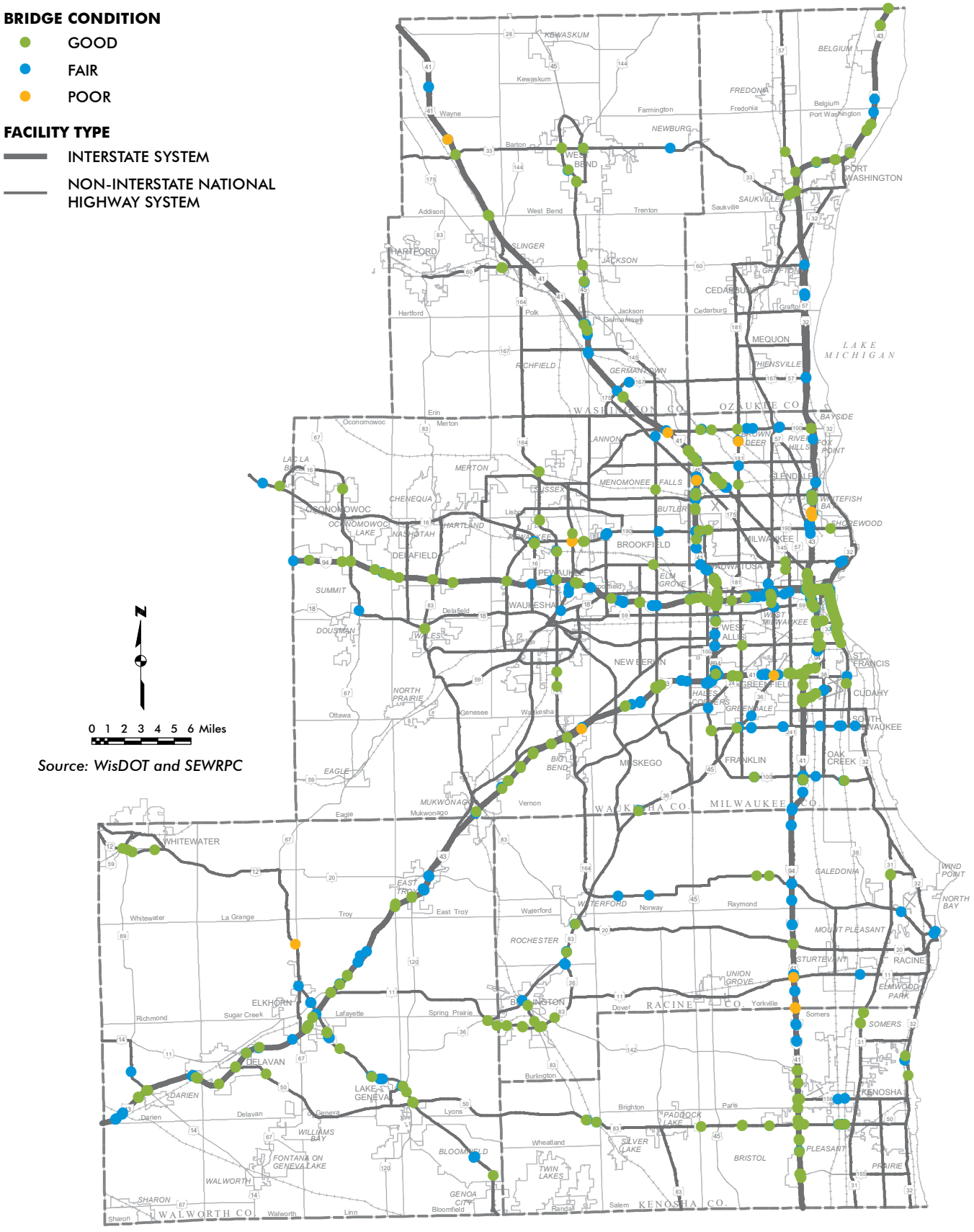


Table P.9
Condition of Bridges on the National Highway System: Base Year 2017

Rating	Number of Bridges	Total Deck Area (square feet)	Percent of Total Deck Area
Good	422	607,406	58.0
Fair	334	426,379	40.7
Poor	15	13,468	1.3
Total	771	1,047,257	100.0

Source: WisDOT and SEWRPC

Table P.10
Year 2050 Regional Targets for National Highway System (NHS) Bridge Performance Measures

Performance Measure	Year 2017 Regional Baseline Data	Year 2050 Regional Target
Percentage of NHS Bridge Deck Area in Good Condition	58.0	≥ 63.8
Percentage of NHS Bridge Deck Area in Poor Condition	1.3	≤ 1.2

Source: WisDOT and SEWRPC

Table P.11
Year 2021 Target for the National Highway System (NHS) Bridge Performance Measures for the Metropolitan Planning Area and Seven-County Region Based on the Year 2050 Regional Targets

	Metropolitan Planning Area		Seven-County Region	
Performance Measure	Year 2017 Baseline Data	Year 2021 Target	Year 2017 Baseline Data	Year 2021 Target
Percentage of NHS Bridge Deck Area in Good Condition	58.3	≥ 59.0	58.0	≥ 58.7
Percentage of NHS Bridge Deck Area in Poor Condition	1.3	≤ 1.3	1.3	≤ 1.3

Source: WisDOT and SEWRPC

Table P.13 shows the year 2050 targets for the three reliability-based targets. These targets were established based on an evaluation of recent trends and the recommendations of VISION 2050 expected to assist in improving the reliability of the NHS, such as the planned improvement and expansion of transit, expansion of bicycle/pedestrian facilities, expansion of transportation systems and demand management measures, widening of existing arterials, and construction of new arterials. Specifically, the year 2050 regional reliability targets are based on a modest 5 percent improvement over the short-term average. For the two NHS performance measures, this would result in an improvement over the year 2017 levels. With respect to the freight measure, the preliminary target would result in a decline from 2017 levels. However, this may be reasonable given how much lower the 2017 level was compared to the short-term average. Table P.13 shows the resulting year 2021 reliability targets for the MPA and Region. Initially, the short-term targets for the MPA and Region are the same. As more years of NPMRDS data become available, the Commission staff will study the effect certain measures have on system reliability within the Region for consideration when these targets are reviewed and improved.

Table P.12
Year 2018 Actual Data and Targets for the National Highway System (NHS) Bridge Performance Measures for the Metropolitan Planning Area and Seven-County Region

Performance Measure	Metropolitan Planning Area			Seven-County Region		
	Year 2017 Baseline Data	Year 2018 Target	Year 2018 Actual	Year 2017 Baseline Data	Year 2018 Target	Year 2018 Actual
Percentage of NHS Bridge Deck Area in Good Condition	58.3	≥ 58.5	57.3	58.0	≥ 58.2	57.6
Percentage of NHS Bridge Deck Area in Poor Condition	1.3	≤ 1.3	1.6	1.3	≤ 1.3	1.7

Source: WisDOT and SEWRPC

Figure P.6
Methodology for Calculating the Travel Time Reliability Performance Measures for the Intestate System and the Non-Interstate National Highway System (NHS)

The following is the methodology developed by FHWA for calculating the two NHS reliability performance measures:

- Percent of Person-Miles on Interstate System that is Reliable
- Percent of Person-Miles on Non-Interstate NHS that is Reliable

1. Utilizing travel time data from the National Performance Management Research Data Set (NPMRDS), calculate the 80th percentile and the 50th percentile highest travel time for every segment of the Interstate system or the Non-Interstate NHS for each of the following four time periods from January 1st through December 31st of a given year:

   a. 6 a.m. – 10 a.m. (Monday through Friday)
   b. 10 a.m. – 4 p.m. (Monday through Friday)
   c. 4 p.m. – 8 p.m. (Monday through Friday)
   d. 6 a.m. – 8 p.m. (Saturday and Sunday)

2. For each time period, calculate the level of travel time reliability (LOTTR) for every reporting segment of Interstate system or Non-Interstate NHS for by the following formula:

$$Segment\ Level\ of\ Travel\ Time\ Reliability = \frac{80th\ Percentile\ Travel Time\ of\ Segment}{50th\ Percentile\ Travel Time\ of\ Segment}$$

3. Identify as reliable any reporting segment of the Interstate system or the Non-Interstate NHS that has an LOTTR of below a threshold of 1.50 for all four time periods.

4. Calculate for each reporting segment of the Interstate system or Non-Interstate NHS the annual person-miles of travel (APMT) based on the Annual Average Daily Traffic (AADT) volumes provided by the State for the national Highway Performance Monitoring System (HPMS) by the following formula:

$$Segment\ APMT = Segment\ Length \times AADT \times Directional\ Factor \times Occupancy\ Factor$$

   With the directional factor based on data provided to the HPMS and the occupancy factor provided by the State or MPO.

5. Calculate each of the performance measures by the following formula:

$$Percent\ of\ System\ APMT\ that\ is\ Reliable = 100 \times \frac{Total\ APMT\ of\ Reliable\ Segments}{Total\ System\ APMT}$$

Source: Federal Highway Administration and SEWRPC

Figure P.7
Methodology for Calculating the Freight Travel Time Reliability Performance Measure for the Interstate System

The following is the methodology developed by FHWA for calculating the Freight reliability performance measure—the Freight reliability ratio.

1. Utilizing travel time data from the National Performance Management Research Data Set (NPMRDS), calculate the 95th percentile and the 50th percentile highest truck travel time for every reporting segment of the Interstate system for each of the following five time periods from January 1st through December 31st of a given year:

   a. 6 a.m. – 10 a.m. (Monday through Friday)
   b. 10 a.m. – 4 p.m. (Monday through Friday)
   c. 4 p.m. – 8 p.m. (Monday through Friday)
   d. 6 a.m. – 8 p.m. (Saturday and Sunday)
   e. 8 p.m. – 6 a.m. (Monday through Sunday)

2. For each time period, compute the truck travel time reliability (TTTR) for each reporting segment by the following formula:

$$TTTR = \frac{95th\ Percentile\ Travel\ Time\ of\ Reporting\ Segment}{50th\ Percentile\ Travel\ Time\ of\ Reporting\ Segment}$$

3. Identify for each reporting segment the maximum TTTR of all of the five time periods.

4. Calculate each of the performance measures for the reporting segments by the following formula:

$$Freight\ Reliability\ Ratio = \frac{\sum(Segment\ Length \times Segment\ maxTTTR)}{Total\ System\ Length}$$

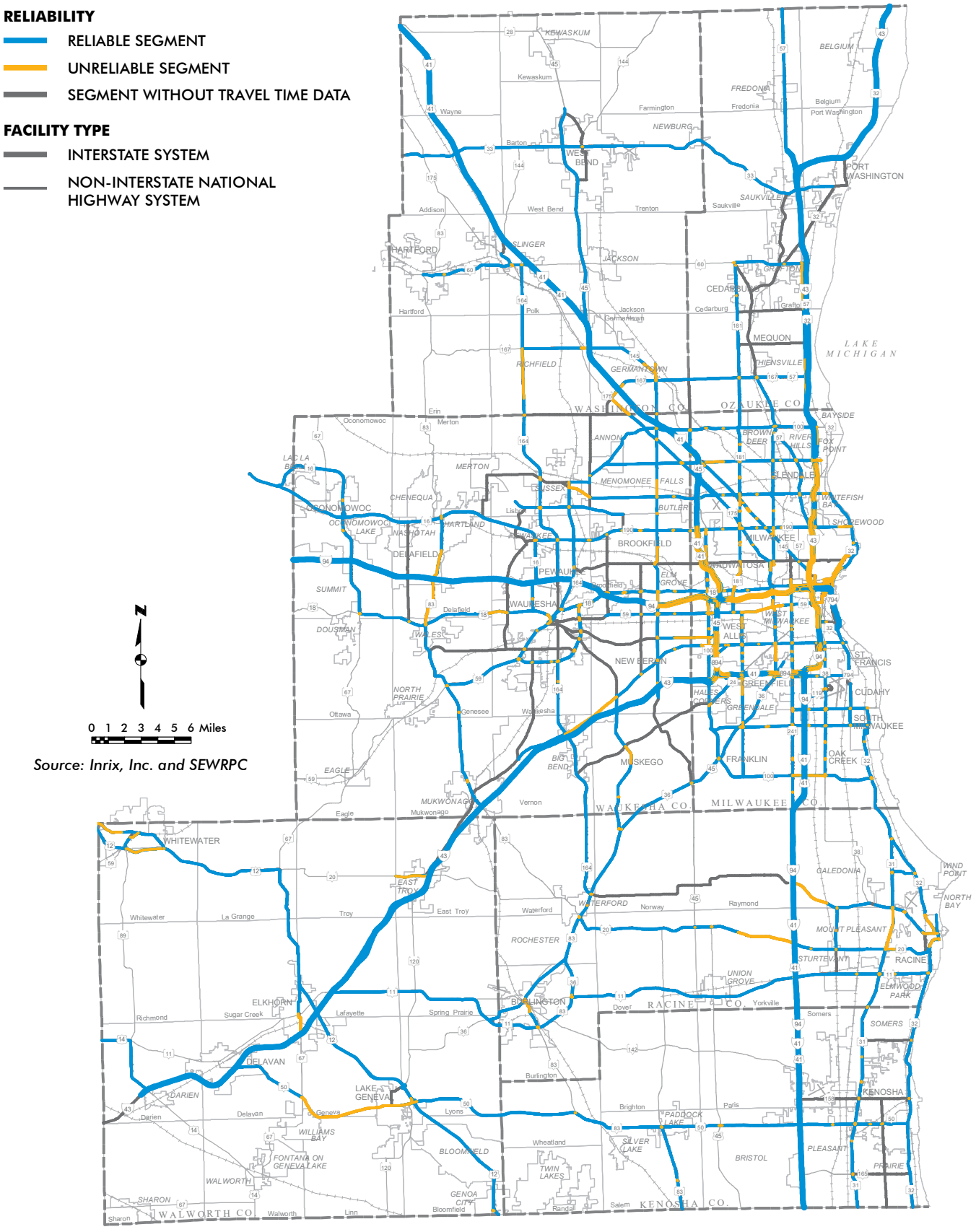
Source: Federal Highway Administration and SEWRPC

CONGESTION MITIGATION AND AIR QUALITY

As part of the National Performance Management Framework, FHWA developed three CMAQ-related performance measures:[89] 1) annual peak hour excessive delay per capita (PHED) measure, 2) the percent of travel occurring via non-single occupancy vehicles (non-SOV) measure, and 3) the on-road mobile source (i.e., vehicle) emissions measure. Per the regulations, applicability of these measures is dependent upon whether the geographic areas subject to the performance measures contained a nonattainment area or maintenance area under the 2008 ozone standard and the 2016 fine particulate standards on October 1, 2017. For the two capacity-related measures (the PHED and non-SOV measures), the geographic area is only for large urbanized areas (having a population over 1 million). For the emissions-based measure, the geographic area is the MPA. As shown on Map P.6, both the Milwaukee urbanized area and the MPA contain 2008 ozone or 2016 fine particulate nonattainment and maintenance areas. Thus, targets for all three CMAQ-related performance measures are required to be established for Southeastern Wisconsin—PHED and non-SOV targets for the Milwaukee urbanized area and emission reduction targets for the MPA.

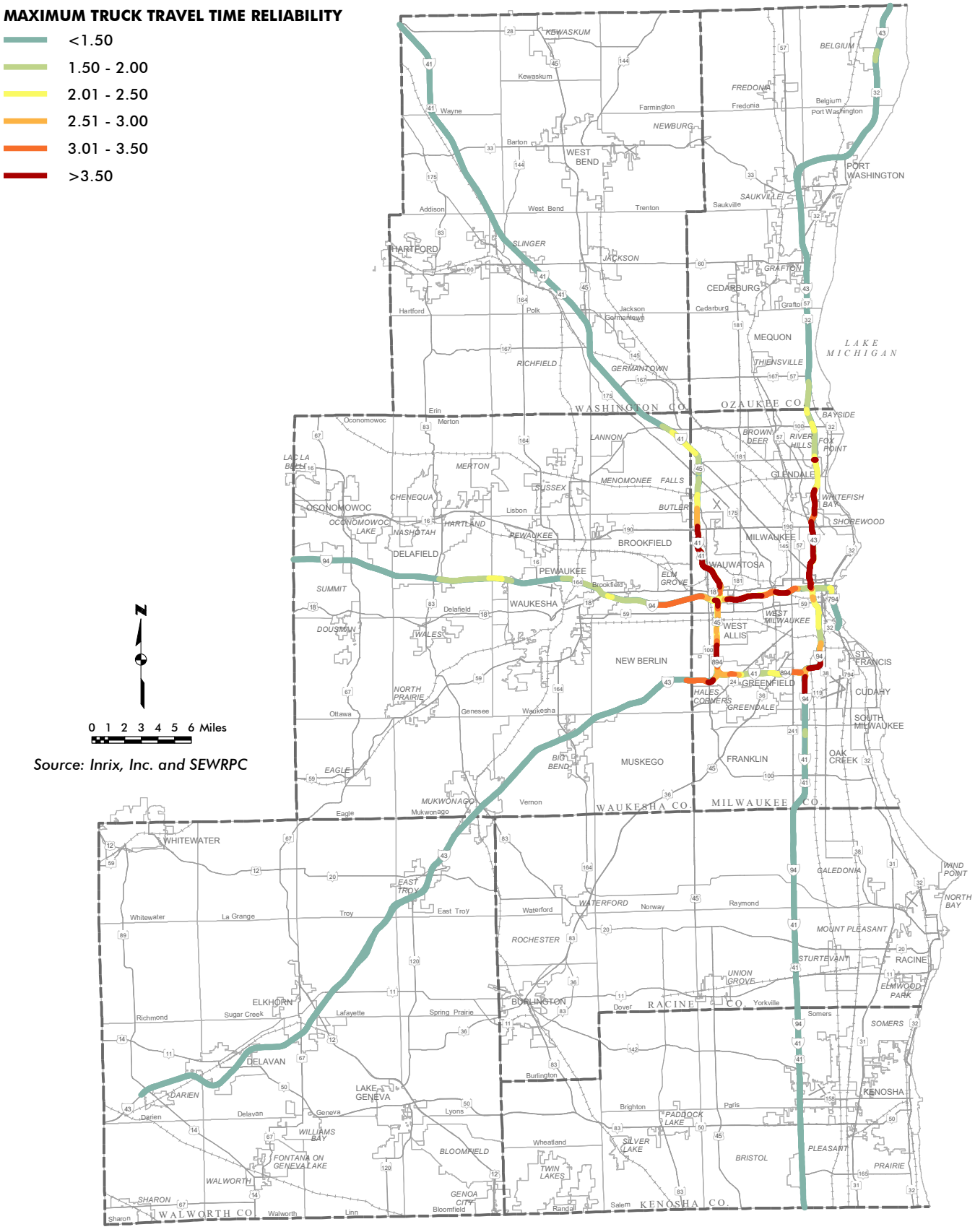
[89] *The Congestion Mitigation and Air Quality Improvement (CMAQ) Program was created by the Intermodal Surface Transportation Efficiency Act (ISTEA), enacted in 1991, with a primary goal of directing Federal funding towards transportation programs and projects that help improve air quality and reduce traffic congestion in areas designated by the U.S. Environmental Protection Agency (EPA) as nonattainment or in maintenance of the National Ambient Air Quality Standards (NAAQS). CMAQ projects generally fall into one of three categories: 1) projects that reduce the number of vehicle trips and/or vehicle-miles traveled (VMT), 2) projects that reduce emissions by improving traffic congestion, and 3) projects that reduce emissions through improved vehicle and fuel technologies. Currently, projects in counties that have historically been included in designated nonattainment or maintenance areas are eligible for funding. Thus, as all seven counties in Southeastern Wisconsin are currently, or have previously been, in nonattainment of either the ozone or $PM_{2.5}$ standards, projects located in any of these counties are eligible for funding.*

Map P.4
Interstate System and Non-Interstate National Highway System Reliability in the Region: 2017



Source: Inrix, Inc. and SEWRPC

Map P.5
Freight Reliability Index for the Interstate System in the Region: 2017



Source: Inrix, Inc. and SEWRPC

Table P.13
Year 2050 and Year 2021 Regional Targets for National Highway System (NHS) and Freight Reliability Performance Measures

Performance Measure	Year 2017 Baseline Data: Metropolitan Planning Area	Year 2017 Baseline Data: Seven-County Region	Year 2050 Targets[a]	Year 2021 Targets[a]
Travel Time Reliability				
Percent of Person-Miles Traveled on the Interstate NHS that are Reliable	83.9	84.5	≥ 85.5	≥ 81.9
Percent of Person-Miles Traveled on the Non-Interstate NHS that are Reliable	90.9	90.8	≥ 95.2	≥ 91.2
Freight Reliability				
Freight Reliability Index	1.54	1.49	≤ 1.64	≤ 1.72

[a] *Initially, the Regional and MPA targets will be the same.*

Source: Inrix, Inc., WisDOT, and SEWRPC

Per the regulations, WisDOT and the Commission are required to jointly establish identical targets for the two congestion-related performance measures. With respect to the emission reduction-related measure, WisDOT establishes a target for the State and the Commission establishes a target for the MPA.

The following sections describe the establishing of the targets for the three CMAQ-related performance measures. As the three targets are vastly different in their subject and data needs, they are addressed separately.

CMAQ – Peak Hourly Excessive Delay

Figure P.8 shows how the PHED measure is to be calculated for the Milwaukee urbanized area. WisDOT and the Commission, per the Federal regulations, must jointly calculate baseline data and establish two-year and four-year targets for the PHED measure for the Milwaukee urbanized area every four years. WisDOT, the Commission staff, and the Traffic Operations and Safety (TOPS) Laboratory based at the University of Wisconsin-Madison collaborated on developing the baseline data for the PHED measure.

The baseline data and the four-year target[90] for the PHED measure are shown in Table P.14. To develop the four-year target, Commission staff and WisDOT developed a methodology to estimate growth rates between the base year 2017 and future year 2021 (four-year target year) utilizing the Commission's fifth-generation travel demand model to estimate changes in total annual average delay per capita during the AM and PM peak hours as a proxy for PHED per capita. By utilizing the travel demand model, the impact of added roadway capacity and anticipated population growth on the PHED measure could be estimated. The modeled results indicated that projects completed between 2017 and 2021—principally the Zoo Interchange reconstruction project and the resurfacing and restriping of IH 94/IH 894 between the Hale and Zoo Interchanges—would positively impact travel in the Milwaukee urbanized area by reducing PHED by approximately 8 percent. Given the uncertainty in forecasting the future, Commission and WisDOT staffs agreed that half of the modeled reduction (4 percent) in PHED would be applied to the base year PHED per capita to estimate the four-year target PHED per capita. WisDOT formally approved the four-year target on May 18, 2018. The Commission approved the target on November 16, 2018.

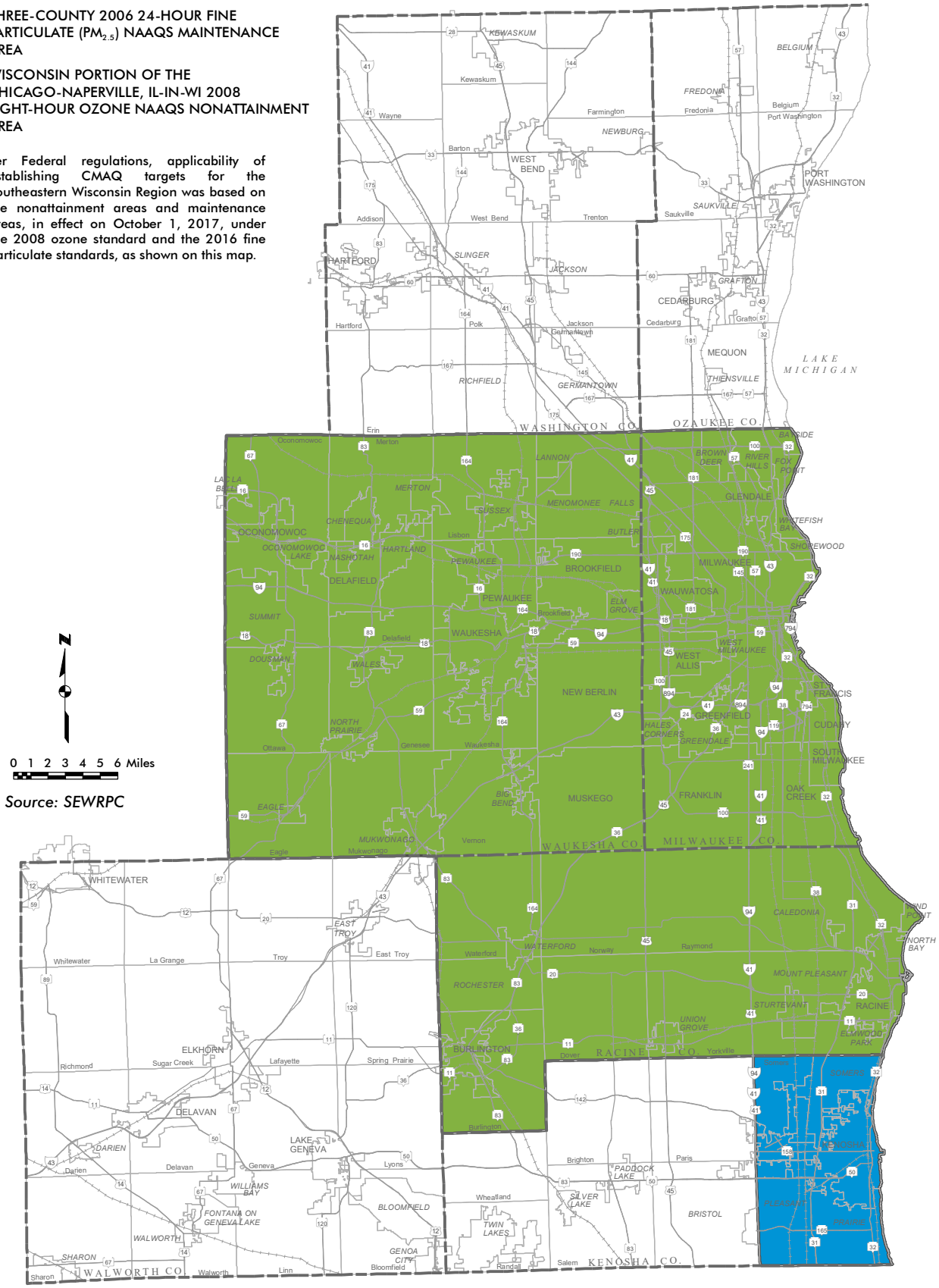
[90] *Per Federal regulations, WisDOT and Commission staffs were not required to establish a two-year target for the PHED measure in the initial round of target setting. However, the two agencies will be required to establish a two-year target during the second CMAQ Performance Plan cycle starting in 2022.*

Map P.6
NAAQS Nonattainment and Maintenance Areas in the Region

THREE-COUNTY 2006 24-HOUR FINE PARTICULATE ($PM_{2.5}$) NAAQS MAINTENANCE AREA

WISCONSIN PORTION OF THE CHICAGO-NAPERVILLE, IL-IN-WI 2008 EIGHT-HOUR OZONE NAAQS NONATTAINMENT AREA

Note: Per Federal regulations, applicability of establishing CMAQ targets for the Southeastern Wisconsin Region was based on the nonattainment areas and maintenance areas, in effect on October 1, 2017, under the 2008 ozone standard and the 2016 fine particulate standards, as shown on this map.



Source: SEWRPC

Figure P.8
Methodology for Calculating the Annual Hours of Peak Hour Excessive Delay (PHED) per Capita Performance Measure

The following is the methodology developed by FHWA for calculating the CMAQ performance measure related to annual hours of PHED per capita.

1. Determine the Excessive Delay Threshold Travel Time (EDTTT) for each reporting segment of the National Highway System (NHS) by the following formula:

$$EDTTT\ (in\ seconds) = 3{,}600 \times \frac{Segment\ Length}{\begin{matrix} Higher\ of\ 20\ mph\ or \\ 0.6 \times Speed\ Limit \end{matrix}}$$

2. Utilizing travel time data from the National Performance Management Research Data Set (NPMRDS), calculate for each NHS reporting segment the travel time segment delay (RSD) for every 15-minute time bin within the following time periods:

   a. 6 a.m. – 10 a.m. (Monday through Friday)
   b. 3 p.m. – 7 p.m. or 4 p.m. – 8 p.m. (Monday through Friday)

$$RSD\ (in\ seconds) = Average\ Travel\ Time\ - EDTTT$$

3. Calculate Excessive Delay (ED) for every 15-minute bin within both time periods with the following formula:

$$ED\ (in\ hours) = \begin{cases} \dfrac{RSD}{3{,}600}\ when\ RSD\ \geq 0 \\ or \\ 0\ when\ RSD < 0 \end{cases}$$

4. Calculate the Average Vehicle Occupancy (AVO) for each segment with the following formula:

$$AVO_{total} = (Percent\ Cars \times\ AVO_{cars}) + (Percent\ Buses \times AVO_{buses}) + (Percent\ Trucks +\ AVO_{trucks})$$

   Where the percentage for each vehicle can be provided by the State/MPO or by bus, truck, car traffic volume data provided for the HPMS, and the AVO for each vehicle type can be provided by the State and/or MPO.

5. Calculate the Total Excessive Delay (TED) for each NHS report segment to the nearest hundredth for the entire year by the following formula:

$$Segment\ TED\ (in\ person - hours) = \sum \left(AVO_{total} \times ED \times \frac{hourly\ volume}{4} \right)$$

   Where the hourly volume is estimated by the State and/or MPO for all days and for all reporting segments where ED is measured.

6. Calculate the performance measure by the following formula:

$$Annual\ Hours\ of\ PHED\ per\ Capita = \frac{\sum Segment\ TED}{Total\ Population}$$

   Where the Total Population is the total population in the urbanized area from the most recent annual population published by the U.S. Census.

Source: Federal Highway Administration and SEWRPC

Table P.14
Years 2021 and 2050 Peak Hourly Excessive Delay Targets for the Milwaukee Urbanized Area Within Southeastern Wisconsin

Performance Measure	Year 2017 Baseline Data	Year 2021 Target	Year 2050 Target
Annual Hours of Peak Hour Excessive Delay (PHED) Per Capita	8.96	≤ 8.60[a]	≤ 7.84

[a] *Per regulations, this target was established jointly by the Wisconsin Department of Transportation and the Commission.*

Source: Inrix, Inc., Wisconsin Transportation Operations and Safety (TOPS) Laboratory, WisDOT, and SEWRPC

In addition to the year 2021 PHED target established with WisDOT for the Milwaukee urbanized area, the Commission also established a year 2050 PHED target based on the methodology developed by the Commission staff, as shown in Table P.14. The year 2050 target, and the methodology for establishing the target, will guide Commission staff as they collaborate with WisDOT on future short-term targets for the urbanized area.

Early in 2020, WisDOT and Commission staffs began a joint review of actual PHED data that occurred following 2017—the base year—to determine whether adjustments should be made to the year 2021 targets.

CMAQ – Non-Single Occupancy Vehicle Travel

Figure P.9 shows how the non-SOV measure is to be calculated for the Milwaukee urbanized area. Federal regulations require the Commission and WisDOT to use the same travel time data set for calculating the non-SOV measure, and the two agencies are required to establish and report unified non-SOV baseline and two-year and four-year target values for the Milwaukee urbanized area. As shown in Figure P.9, there are three sources of data that are permitted to be utilized for this measure. Based on data being readily available, WisDOT and Commission staffs calculated the non-SOV measure using the five-year estimate for "Commuting to Work" totaled by mode from the U.S. Census Bureau's American Community Survey (ACS) data set for the Milwaukee urbanized area.

The base year data, the year 2019 (two-year) target, and the year 2021 (four-year) target for the non-SOV measure for the Milwaukee urbanized area are shown in Table P.15. To establish the targets for the non-SOV measure, WisDOT and Commission staffs considered three alternative methodologies to estimate years 2019 (two-year) and 2021 (four-year) targets: 1) based on the historical non-SOV travel trend, 2) based on the VISION 2050 modeled non-SOV travel, and 3) based on the fiscally constrained transportation system (FCTS) modeled non-SOV travel. The three methodologies and potential targets were presented and discussed at a meeting between WisDOT and Commission staffs on March 15, 2018. It was agreed that an averaging of the potential targets based on historical trends and the FCTS model would be used to set the two-year and four-year targets for non-SOV travel. WisDOT formally approved the four-year target on May 18, 2018. The Commission approved the targets on November 16, 2018.

In addition to the years 2019 and 2021 non-SOV targets established jointly by WisDOT and Commission staffs for the Milwaukee urbanized area, the Commission staff established year 2050 targets based on the methodology developed by the Commission staff, as shown in Table P.15. The year 2050 target, and the methodology used for establishing the target, will guide Commission staff as they collaborate with WisDOT on future short-term targets for the urbanized area.

Early in 2020, WisDOT and Commission staffs began a joint review of actual non-SOV data available for years following 2017—the base year—to determine whether adjustments should be made to the year 2021 targets.

CMAQ – Emission Reductions

The methodology for calculating the emission reduction measure is shown in Figure P.10. Unlike the two congestion-related CMAQ measures, this measure is to be calculated separately by the State for a statewide target and the Commission for the MPA. The data to be utilized for this measure are the emission reduction estimates for projects implemented using CMAQ

Figure P.9
Methodology for Calculating the Non-Single Occupancy Vehicle (Non-SOV) Performance Measure

FHWA provided three methodologies that can be utilized to calculate the CMAQ performance measure related to percent of non-SOV travel in an urbanized area. The following describe the three methodologies:

1. Utilize SOV travel data that are available from the U.S. Census American Community Survey to calculate the performance measures with the following formula:

   $$Percent\ of\ non\text{-}SOV\ Travel = 100\ percent - percent\ of\ SOV\ Travel$$

2. Utilize the percent of non-SOV travel, as calculated using data derived from a local survey that was conducted within the last two years.

3. Calculate the percent of non-SOV travel based on system monitoring data of the actual use of the transportation system. Sample or continuous measurements may be utilized to count the number of travelers using different modes of transportation. The results of the measurements would need to be factored to represent the travel on the entire transportation system and be representative of annual travel. Additionally, the percent of non-SOV travel would need to be updated at least every two years.

Source: Federal Highway Administration and SEWRPC

Table P.15
Years 2019, 2021, and 2050 Non-Single Occupancy Vehicle (Non-SOV) Performance Targets for the Milwaukee Urbanized Area Within Southeastern Wisconsin

Performance Measure	Year 2017 Baseline Data	Year 2019 Target	Year 2021 Target	Year 2050 Target
Percent of Non-SOV Travel	20.3[a]	≥ 20.2[b]	≥ 20.1[b]	≥ 21.2

[a] *Data are from 2016*

[b] *Per regulations, this target was established jointly by the Wisconsin Department of Transportation and the Commission.*

Source: U.S. Census American Community Survey, WisDOT, and SEWRPC

Figure P.10
Methodology for Calculating the Total Emission Reductions Performance Measures

The following describes the methodology that FHWA developed for calculating the CMAQ performance measures related to total emission reductions. The performance measures are calculated for each criteria pollutant that a portion of the State or metropolitan planning area is in non-attainment or maintenance for. In Southeastern Wisconsin, the three criteria pollutants that an emission reduction measure is to be calculated are for Fine Particulate Matter ($PM_{2.5}$), Volatile Organic Compound (VOC), and Nitrogen Oxide (NO_x).

1. Calculate the performance measures for each relevant criteria pollutant by totaling over a two- or four-year period the total estimated emission reduction estimated to have occurred from projects previously implemented with CMAQ funding (for baseline data and monitoring progress) or estimated to occur through implementation of CMAQ projects.

Source: Federal Highway Administration and SEWRPC

funding, as entered by WisDOT into the CMAQ Public Access System. Thus, this measure is the only performance measure established by FHWA that is linked entirely to the implementation of projects funded by a particular funding source. The baseline data for the emission reduction measure for the Region is shown in Table P.16. For this measure, the baseline data consist of the emission reductions estimated for all the projects implemented with CMAQ funding over the four-year time period of 2014 through 2017.

The two-year and four-year emission reduction targets for the State are shown in Table P.16. While not required by Federal regulations, WisDOT and the Commission jointly developed the targets for the State. In developing the targets, WisDOT and Commission staffs considered the estimated emission reductions attributable to CMAQ-funded projects that were previously

Table P.16
Emission Reduction Targets for the Seven-County Region

Performance Measure	2014-2017 Baseline Data	2018-2019 Target	2018-2022 Target
Reduction in VOC (kg/day)	41.268	≥ 10.860	≥ 27.032
Reduction in NOx (kg/day)	109.545	≥ 83.316	≥ 137.350
Reduction in $PM_{2.5}$ (kg/day)	3.291	≥ 7.797	≥ 12.096

Source: WisDOT and SEWRPC

implemented and CMAQ projects that would be implemented within the next two to four years. The Commission established two-year and four-year emissions reduction targets based on the share of CMAQ projects expected to be implemented within the MPA and the Region.

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As of June 17, 2020 when plan was adopted.