PLANNING REPORT NO. 55

VISION 2050 VOLUME I: GROUNDWORK FOR VISION AND PLAN DEVELOPMENT

A REGIONAL LAND USE AND TRANSPORTATION PLAN FOR SOUTHEASTERN WISCONSIN

SOUTHEASTERN WISCONSIN REGIONAL PLANNING COMMISSION

VISION 2050

One Region, Focusing on Our Future

SOUTHEASTERN WISCONSIN REGIONAL PLANNING COMMISSION*

Kenosha County
Michael J. Skalitzky
Adelene Greene, Secretary
Robert W. Pitts

Milwaukee County
Brian R. Dranzik
Theodore Lipscomb, Sr.
William R. Drew, Treasurer

Ozaukee County
Jennifer K. Rothstein
Gustav W. Wirth, Jr.
Thomas H. Buestrin

Racine County
Mike Dawson
Peggy L. Shumway
James Ladwig

Walworth County
Nancy Russell
Charles L. Colman, Vice-Chair
Linda J. Seemeyer

Washington County
Jeffrey D. Schleif
Daniel S. Schmidt
David L. Stroik, Chairman

Waukesha County
James T. Dwyer
Michael A. Crowley
José M. Delgado

Regional Land Use Planning Advisory Committee*

Julie A. Anderson Chair	Director of Public Works and Development Services, Racine County
Jennifer Andrews	Director of Community Development, City of Waukesha
Robert J. Bauman	Alderman, City of Milwaukee
John Budzinski	Secretary's Director, Southeast Region, Wisconsin Department of Natural Resources
Andy M. Buehler	Director, Division of Planning and Development, Kenosha County
Harlan Clinkenbeard	City Planner, City of Pewaukee
Michael P. Cotter	Director, Land Use and Resource Management Department, Walworth County
Brian R. Dranzik	Commissioner, Southeastern Wisconsin Regional Planning Commission; Director, Department of Transportation, Milwaukee County
Henry Elling	Administrator, Village of Summit
Charles Erickson	Community Development Manager, City of Greenfield
Daniel F. Ertl	Director of Community Development, City of Brookfield
Jason Fruth	Planning and Zoning Manager, Waukesha County
Debra Jensen	Planning Services Supervisor, Milwaukee Metropolitan Sewerage District
Vanessa Koster	Planning Manager, Department of City Development, City of Milwaukee
Jeffrey B. Labahn	Director, Community Development and Inspections, City of Kenosha
Patricia T. Najera	City Plan Commissioner, City of Milwaukee
Mark Piotrowicz	City Planner/Operations Manager, City of West Bend
Brandi Richter	District Conservationist, Kenosha-Racine-Milwaukee-Walworth-Waukesha Counties, U.S. Natural Resources Conservation Service
Matthew Sadowski	Assistant Director and Principal Planner, Department of City Development, City of Racine
Steven J. Schaer	Manager of Planning and Zoning, City of West Allis
Sheri Schmit	Deputy Director, Southeast Region, Wisconsin Department of Transportation
Douglas Seymour	Director of Community Development, City of Oak Creek
Debora Sielski	Deputy Planning and Parks Administrator, Manager of Planning Division, Washington County
Andrew T. Struck	Director, Planning and Parks Department, Ozaukee County
Todd Stuebe	Director of Community Development, City of Glendale
Randy L. Tetzlaff	Director of Planning and Development, City of Port Washington
Teig Whaley-Smith	Director, Department of Administrative Services, Milwaukee County

Regional Transportation Planning Advisory Committee*

Brian R. Dranzik Chair	Commissioner, Southeastern Wisconsin Regional Planning Commission; Director, Department of Transportation, Milwaukee County
Fred Abadi	Director of Public Works, City of Waukesha
Julie A. Anderson	Director of Public Works and Development Services, Racine County
Shelly Billingsley	Acting Director of Public Works/City Engineer, City of Kenosha
Daniel Boehm	Managing Director, Milwaukee County Transit System
Scott Brandmeier	Director of Public Works/Village Engineer, Village of Fox Point
Donna Brown-Martin	Director, Bureau of Planning and Economic Development, Division of Transportation Investment Management, Wisconsin Department of Transportation
John Budzinski	Secretary's Director, Southeast Region, Wisconsin Department of Natural Resources
Allison M. Bussler	Director of Public Works, Waukesha County
David Cox	Village Administrator, Village of Hartland
Jon Edgren	Director or Public Works/Highway Commissioner, Ozaukee County
Gary Evans	Highway Engineering Division Manager, Department of Public Works, Waukesha County
Jennifer Gonda	Legislative Liaison Director, City of Milwaukee
Gail Good	Director, Air Management Program, Wisconsin Department of Natural Resources
Thomas M. Grisa	Director, Department of Public Works, City of Brookfield
Robert A. Kaplan	Acting Regional Administrator, Region V, U.S. Environmental Protection Agency
Ghassan A. Korban	Commissioner of Public Works, City of Milwaukee
Nik Kovac	Alderman, City of Milwaukee
Michael G. Lewis	City Engineer/Director of Public Works, City of West Allis
Max Marechal	City Engineer, City of West Bend
Michael Mayo, Sr.	7th District Supervisor, Milwaukee County
Dwight E. McComb	Planning and Environmental Manager/Team Leader, Federal Highway Administration, U.S. Department of Transportation
R. Stewart McKenzie	Community Planner, Federal Transit Administration, Region V, U.S. Department of Transportation
Eric A. Nitschke, PE	Director of Central Services, Public Works Department, Walworth County
Jeffrey S. Polenske	City Engineer, City of Milwaukee
William Porter	Director of Public Works, City of Wauwatosa
William D. Sasse	Director of Engineering, Village of Mount Pleasant
Scott M. Schmidt	Highway Commissioner, Washington County
Sheri Schmit	Deputy Director, Southeast Region, Wisconsin Department of Transportation
Gary A. Sipsma	Director of Highways/Highway Commissioner, Kenosha County
Andrea Weddle-Henning	Transportation Engineering Manager, Department of Transportation, Milwaukee County
Dennis Yaccarino	Senior Budget and Policy Manager, Budget and Management Division, Department of Administration, City of Milwaukee
Mark H. Yehlen	Commissioner of Public Works, City of Racine
Willie Wade	Liaison to Environmental Justice Task Force, Vice President, Milwaukee Area Workforce Investment Board
Brian Udovich	Liaison to Jefferson County, Highway Operations Manager, Highway Department, Jefferson County

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

**As of July 28, 2016 when plan was adopted.*

PLANNING REPORT
NUMBER 55

A REGIONAL LAND USE AND TRANSPORTATION
PLAN FOR SOUTHEASTERN WISCONSIN

VOLUME I: GROUNDWORK FOR VISION AND PLAN DEVELOPMENT

Prepared by the
Southeastern Wisconsin Regional Planning Commission
W239 N1812 Rockwood Drive
P.O. Box 1607
Waukesha, Wisconsin 53187-1607
www.sewrpc.org

The preparation of this publication was financed in part through planning funds provided by the Federal Highway and Federal Transit Administrations of the U.S. Department of Transportation and the Wisconsin Departments of Transportation, Natural Resources, and Administration. The contents of this report do not necessarily reflect the official views or policy of these agencies.

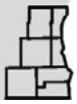
U.S. Department of Transportation
Federal Highway Administration
Federal Transit Administration

WISCONSIN DEPARTMENT OF ADMINISTRATION

July 2017

SOUTHEASTERN WISCONSIN REGIONAL PLANNING COMMISSION
W239 N1812 ROCKWOOD DRIVE • PO BOX 1607 • WAUKESHA, WI 53187-1607• TELEPHONE (262) 547-6721
FAX (262) 547-1103

Serving the Counties of: KENOSHA
MILWAUKEE
OZAUKEE
RACINE
WALWORTH
WASHINGTON
WAUKESHA



STATEMENT OF THE CHAIRMEN

As the current and former Chairmen of the Southeastern Wisconsin Regional Planning Commission, it is our pleasure to present VISION 2050, the Region's long-range land use and transportation plan. This plan was developed through extensive public involvement, and we would like to thank the Commissioners, staff, Advisory Committees, Task Forces, and the concerned citizens 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 that help leverage the strengths of the Region. It 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 and enhance the attractiveness and accessibility of the Region;
- Encouraging more compact development, ranging from high-density transit-oriented development to traditional neighborhoods with homes within walking distance of parks, schools, and businesses;
- Enhancing the Region's bicycle and pedestrian network to improve access to activity centers, neighborhoods, and other destinations; and
- Preserving the Region's most productive farmland and best remaining features of the natural landscape.

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 and the condensed plan summary are available in hard copy and at vision2050sewis.org.

Respectfully submitted,

David L. Stroik,
Chairman, 2009-2016

Charles L. Colman,
Chairman, 2017-Present

VOLUME I: GROUNDWORK FOR VISION AND PLAN DEVELOPMENT

Chapters

Chapter 1 Introduction
Chapter 2 Existing Conditions and Trends: Population, Employment, and Land Use
Chapter 3 Review of the Year 2035 Regional Land Use and Transportation System Plans
Chapter 4 Inventory of Transportation Facilities and Services
Chapter 5 Travel Habits and Patterns
Chapter 6 Future Population, Households, and Employment in the Region

Appendices

Appendix A A Comparison of the Milwaukee Metropolitan Area to Its Peers
Appendix B Adopted County and Local Comprehensive Plans in Southeastern Wisconsin
Appendix C Accuracy Checks of the Year 2011 Travel Surveys

VOLUME II: DEVELOPING THE VISION AND PLAN

Part I – Visioning and Scenarios

Chapters

Chapter 1 Visioning for the Region's Future
Chapter 2 Conceptual Land Use and Transportation Scenarios

Appendices

Appendix D Results of Initial Visioning Activities
Appendix E Public Feedback on Conceptual Scenarios

Part II – Alternative Plans

Chapter

Chapter 3 Alternative Land Use and Transportation Plans

Appendices

Appendix F Complete Alternative Plan Evaluation Results
Appendix G Public Feedback on Detailed Alternatives

Part III – Preliminary Recommended Plan

Chapter

Chapter 4 Preliminary Recommended Year 2050 Regional Land Use and Transportation Plan

Appendices

Appendix H Complete Results of the Preliminary Recommended Plan Evaluation
Appendix I Evaluation of Potential Benefits and Impacts of Reconstructing with Widening and Not Widening IH 43 between Howard Avenue and Silver Spring Drive
Appendix J Feedback on Preliminary Recommended Plan

VOLUME III: RECOMMENDED REGIONAL LAND USE AND TRANSPORTATION PLAN

Letter Certifying Adoption of VISION 2050 to the Region's Legislative Bodies
Southeastern Wisconsin Regional Planning Commission Resolution Adopting VISION 2050

Chapters

Chapter 1 Recommended Year 2050 Regional Land Use and Transportation Plan
Chapter 2 Fiscally Constrained Transportation Plan
Chapter 3 Plan Implementation

Appendices

Appendix K VISION 2050 Land Use Design Guidelines
Appendix L Equity Analysis of the VISION 2050 Land Use Component
Appendix M VISION 2050 Plan Recommendations for the Jefferson County Portion of the Milwaukee Urbanized Area
Appendix N Equitable Access Analysis of the Fiscally Constrained Transportation Plan
Appendix O Population in the Region by Sewer Service Area

LIST OF FIGURES

Chapter 1

Chapter 2

Chapter 3

Chapter 4

Chapter 5

Chapter 6

Appendix C

LIST OF MAPS

LIST OF TABLES

Chapter 4

Chapter 5

Chapter 6

INTRODUCTION 1

Credit: Milwaukee County Transit System

1.1 INTRODUCTION

This report documents "VISION 2050," the sixth-generation regional land use and transportation plan for the Southeastern Wisconsin Region, as well as the process used to prepare the plan. The plan has a design year of 2050 and reflects changes in the Region that have occurred since preparation of the previously adopted design year 2035 regional land use and transportation plans. The plan also provides projections of growth and change in the Region through the year 2050.

The report is presented in three volumes. This first volume, *Groundwork for Vision and Plan Development*, includes land use and transportation inventory data, analyses of those data, and forecasts of future needs for resources, land, and transportation based on the data. The second volume, *Developing the Vision and Plan*, describes the plan development process, including a visioning and scenario planning effort, development and evaluation of detailed alternative plans, and preparation of a preliminary recommended plan. The third volume, *Recommended Regional Land Use and Transportation Plan*, presents the final recommended plan and the actions, strategies, and funding necessary to implement the plan.

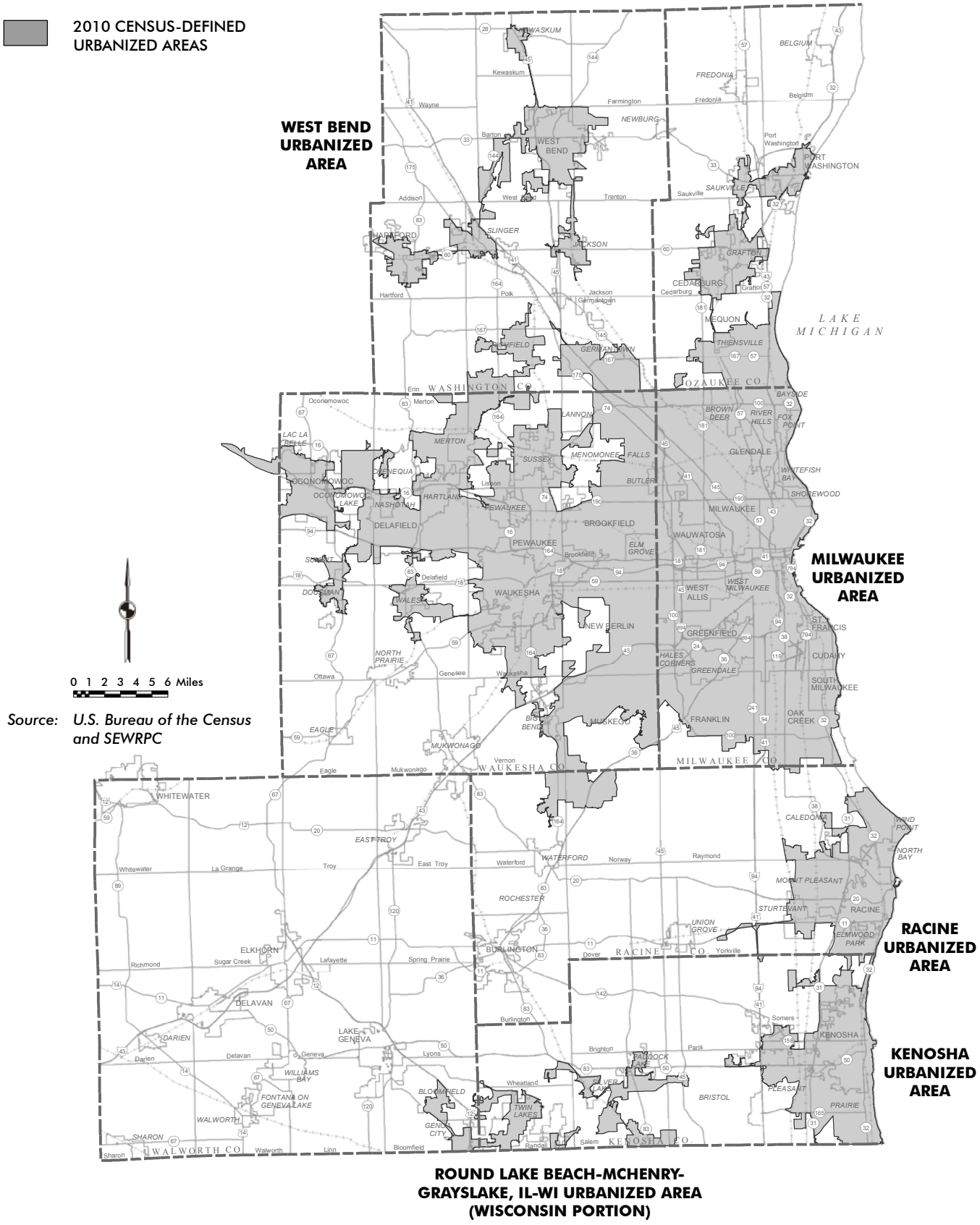
The VISION 2050 plan report is presented in three volumes:

- **Volume I: Groundwork for Vision and Plan Development**
- **Volume II: Developing the Vision and Plan**
- **Volume III: Recommended Regional Land Use and Transportation Plan**

1.2 THE REGION

The Southeastern Wisconsin Region consists of Kenosha, Milwaukee, Ozaukee, Racine, Walworth, Washington, and Waukesha Counties, as shown on Map 1.1. Exclusive of Lake Michigan, these seven counties have a total area of 2,689 square miles, or about 5 percent of the total area of Wisconsin. These counties, however, account for about 36 percent of the State's population, about 34 percent of all jobs in the State, and about 37 percent of the wealth in the State as measured by equalized value. The Region contains 154 local

Map 1.1
Southeastern Wisconsin Region



governments, not including school and other special-purpose districts, all of which participate in the work of the Commission.

Geographically, the Region is located in a relatively good position with regard to continued growth and development. The Region is bounded on the east by Lake Michigan, which is an integral part of a major international transportation network. It is bounded on the south by the expanding metropolitan region of northeastern Illinois, with the Midwest's only global city, Chicago, at its center, and on the west and north by the fertile agricultural and desirable recreation areas of the rest of the State of Wisconsin. Many of the most important industrial areas and heaviest population concentrations in the Midwest are within 250 miles of the Region.

Map 1.1 also shows the boundaries of the urbanized areas within the Region as defined by the U.S. Bureau of the Census. Urbanized areas consist of a central core and adjacent densely settled area that together contain at least 50,000 people and are delineated by the Census Bureau based predominately on resident population and population density. There are five urbanized areas in the Region, including the Kenosha, Milwaukee, Racine, and West Bend urbanized areas and a portion of the Round Lake Beach urbanized area. The Region's portion of the Round Lake Beach urbanized area is largely in western Kenosha County, with a small portion in Walworth County; however, a greater portion is located in Northern Illinois.

1.3 NEED FOR REGIONAL PLANNING

Regional planning is a vital supplement—not a substitute—to Federal, State, and local public planning and private planning. VISION 2050 is an advisory plan and provides essential guidance and coordination to these planning levels.

Regional, or areawide, planning has become increasingly popular in the large metropolitan areas of the United States. This increase in popularity is based, in part, on an awareness that problems of physical and economic development and of environmental deterioration transcend the geographic limits of local units of government. There is also a recognition that sound resolution of areawide problems requires the cooperation of all units and agencies of government and of private interests.

Public and private interests are vitally affected by the proposed solutions to these areawide problems. Regional planning is necessary to promote a consensus on proposed solutions and the necessary cooperation among urban and rural; local, State, and Federal; and public and private interests. In this light, regional planning is not a substitute for Federal, State, or local public planning or for private planning. Rather, regional planning is a vital supplement to such planning.

The Commission has a long history of land use and transportation planning for Southeastern Wisconsin, first adopting a regional land use plan and a supporting regional transportation plan in 1966. Both plans had a design year of 1990. The Commission has adopted a new generation of the regional land

use and transportation plan about every 10 years.[1] This 10-year cycle allows time for new inventory data to become available, strengthening future land use and transportation forecasts used to prepare the plan. VISION 2050, the sixth-generation regional land use and transportation plan, updates and revises the previous year 2035 regional land use and transportation plans, including the data collected and forecasts prepared under those plans.

The Southeastern Wisconsin Regional Planning Commission (SEWRPC) prepares these regional plans as the official areawide regional planning agency under State law. The Commission is charged by law with "the function and duty of making and adopting a master plan for the physical development of the [R]egion." It prepares individual plan elements that together comprise the Region's required master plan, also referred to as the Region's comprehensive plan, which are coordinated through the land use component of the regional land use and transportation plan. All other plan elements, including the transportation component, are based on the land use component, which comprises the most basic plan element.

---

[1] *The first-generation regional land use and transportation plans are documented in SEWRPC Planning Report No. 7,* Land Use-Transportation Study, *Volume One,* Inventory Findings: 1963, *May 1965; Volume Two,* Forecasts and Alternative Plans: 1990, *June 1966; and Volume Three,* Recommended Regional Land Use and Transportation Plans: 1990, *November 1966*.

The second-generation regional land use and transportation plans are documented in SEWRPC Planning Report No. 25, A Regional Land Use Plan and a Regional Transportation Plan for Southeastern Wisconsin: 2000, *Volume One,* Inventory Findings, *April 1975, and Volume Two,* Alternative and Recommended Plans, *May 1978*.

The third-generation regional land use and transportation plans are documented in SEWRPC Planning Report No. 40, A Regional Land Use Plan for Southeastern Wisconsin: 2010, *January 1992, and in SEWRPC Planning Report No. 41,* A Regional Transportation System Plan for Southeastern Wisconsin: 2010, *December 1994*.

The fourth-generation regional land use and transportation plans are documented in SEWRPC Planning Report No. 45, A Regional Land Use Plan for Southeastern Wisconsin: 2020, *December 1997, and SEWRPC Planning Report No. 46,* A Regional Transportation System Plan for Southeastern Wisconsin: 2020, *December 1997. The review and affirmation of the fourth-generation plans and extension of design year to 2025 are documented in SEWRPC Memorandum Report No. 157,* Review and Reaffirmation of Year 2020 Regional Land Use and Transportation Plans and Extension of Plan Design Year to 2025, *April 2003*.

The fifth-generation regional land use and transportation plans are documented in SEWRPC Planning Report No. 48, A Regional Land Use Plan for Southeastern Wisconsin: 2035, *June 2006 and SEWRPC Planning Report No. 49,* A Regional Transportation System Plan for Southeastern Wisconsin: 2035, *June 2006. The review and reaffirmation of the fifth-generation regional transportation plan is documented in SEWRPC Memorandum Report No. 197,* Review, Update, and Reaffirmation of Year 2035 Regional Transportation Plan, *June 2010, and SEWRPC Memorandum Report No. 215,* Review and Update of the Year 2035 Regional Transportation Plan*, June 2014*.

VISION 2050, the Commission's regional land use and transportation plan, is an advisory plan under State law, and provides essential guidance and coordination to the 154 local units of government within Southeastern Wisconsin,[2] the State government, the Federal government, and private interests with respect to:

- Future land use development
- The role of highway, public transit, bicycle, pedestrian, and systems management improvement actions in addressing existing and future transportation problems
- The necessary extension and coordination of street and highway improvements across jurisdictional boundaries
- The necessary extension and coordination of transit routes and improvements across jurisdictional boundaries

1.4 MEETING FEDERAL REQUIREMENTS

The Federal government, like the State of Wisconsin, recognizes the need for regional planning, particularly for regional land use and transportation planning, and mandates through Federal law and regulations the preparation and maintenance of a regional transportation plan for the Southeastern Wisconsin Region. The Commission is the official metropolitan planning organization (MPO) for regional transportation planning in the seven-county Southeastern Wisconsin Region, as designated by the Governor of the State of Wisconsin under Federal law. It is, therefore, responsible for preparing and maintaining the required transportation plan for the Region.

The transportation component of VISION 2050 largely satisfies the Federal metropolitan area transportation planning requirements under the Fixing America's Surface Transportation Act (FAST Act), thus qualifying the State and constituent local units of government for Federal aids in partial support of the development of highway and transit facilities. Some requirements added by the FAST Act during the preparation of VISION 2050 will be met through work to be done following the completion of VISION 2050.[3] In addition, the transportation component satisfies the transportation planning requirements associated with air quality planning related to the National Ambient Air Quality Standards (NAAQS). This planning is conducted by the Wisconsin Department of Natural Resources (DNR) as required by the Federal Clean Air Act Amendments of 1990.

[2] In April 2015, the Village of Somers incorporated, effectively increasing the number of local units of government to 155—seven counties and 148 municipalities. The text and data presented herein reflect the local units of government as of January 1, 2015.

[3] Following VISION 2050, the Commission staff will work to fully address performance management requirements in the FAST Act, and to prepare an updated congestion management process in accordance with FAST Act requirements.

1.5 NEED FOR PLAN REVIEW, RE-EVALUATION, AND EXTENSION

The periodic review of major elements of the Region's land use and transportation plan is essential within the Commission's planning framework. There is a need for a thorough review and evaluation of the plan in light of changes that have occurred in:

- The levels and distribution of population and employment
- Land use patterns
- Public facility and utility systems
- Any resulting need to change regional development objectives or their relative priority

Moreover, there is a need to extend the plan to a new design year on the basis of the above changes; the findings and recommendations of other local, county, or regional plans since completed; and new projections of population and economic activity.

Finally, there is a need to ensure that the regional land use and transportation plan, in conjunction with other Commission-prepared plans, fulfills the requirements of the State comprehensive planning law, as appropriate at the regional level of planning. It should be noted that six of the seven counties and almost all of the cities, villages, and towns in the Region have adopted comprehensive plans per State legislation since the adoption of the fifth-generation regional land use plan in June 2006.[4] These plans, as discussed in Volume I, Chapter 2, *Existing Conditions and Trends: Population, Employment, and Land Use*, will have a significant impact on future development activity in the Region.

1.6 SCOPE OF THE REGIONAL LAND USE AND TRANSPORTATION PLAN

VISION 2050 addresses land use and transportation from an areawide planning perspective. The Commission's regional plan, coordinated and integrated with other Commission, State, and local plans, provides the vision for land use and transportation serving Southeastern Wisconsin.

From the land use perspective, the focus of the plan is on land uses that form the overall generalized pattern of urban and rural development on a regional scale. These include open space uses such as agriculture; areas encompassing concentrations of wetlands, woodlands, and other natural resource features; and major parks and open space reserves. The plan also addresses urban uses such as the general location and intensity of residential development and the location of larger concentrations of commercial, industrial, and institutional uses as well as certain transportation terminals. These urban uses place demands on public works facilities of areawide concern, including highways and transit facilities, sanitary trunk sewers and wastewater treatment plants, and major stormwater management facilities. Smaller urban uses, such as neighborhood commercial, institutional, and recreational areas, are considered in the regional planning process in

[4] *Milwaukee County has not prepared a comprehensive plan since it does not administer a zoning, subdivision, or official map ordinance.*

regard to the aggregate area they require and their approximate densities and distribution. Such neighborhood uses are incorporated into the land use component of the plan as integral components of urban neighborhood units and identified in adopted community comprehensive plans.

From a transportation perspective, the plan primarily addresses intraregional travel, and the transportation system within Southeastern Wisconsin that serves intraregional travel. Intraregional travel is travel by people and freight where both ends of the trip or travel are within the seven-county Region. Commission studies over the past 50 years have consistently established that over 95 percent of total personal travel on an average weekday within Southeastern Wisconsin is intraregional travel made by Southeastern Wisconsin residents and is carried on streets and highways, public transit, and bicycle and pedestrian facilities. In addition, over 90 percent of the commercial truck traffic on streets and highways within Southeastern Wisconsin on an average weekday is intraregional travel made by trucks registered within the Region. The plan also addresses personal and freight interregional travel, and particularly such travel over streets and highways, which represents an estimated 90 percent of total personal and freight interregional travel within Southeastern Wisconsin on an average weekday. Interregional travel is travel where one or both ends of the travel or trip are located outside of the Region.

The transportation component of the plan is closely coordinated with statewide transportation planning conducted by the Wisconsin Department of Transportation (WisDOT). The State of Wisconsin's transportation planning addresses interregional travel within and through Southeastern Wisconsin, and within and through the other regions of the State. WisDOT's statewide transportation planning specifically addresses travel through the State, between the State of Wisconsin and other states, and between the regions of the State. WisDOT's statewide transportation planning, therefore, focuses on commercial and general aviation, intercity bus and passenger rail service, freight railways, ports, and also streets and highways that carry interstate and interregional traffic (specifically, the highest level of highways including freeways and other state trunk highways). Coordination between statewide transportation planning and regional transportation planning permits Commission traffic forecasts of interregional travel by personal vehicles and commercial trucks on state trunk highways to be consistent with statewide transportation plans and forecasts.

Planning for VISION 2050 is closely coordinated with statewide transportation planning conducted by the Wisconsin Department of Transportation (WisDOT), as well as planning by neighboring counties, planning agencies, and departments of transportation.

The Commission's regional transportation planning, particularly as it addresses arterial highway facilities and public transit facilities and services at and across the Region's boundaries, is closely coordinated with the Wisconsin and Illinois Departments of Transportation, the Chicago Metropolitan Agency for Planning, the Bay Lakes and East Central Wisconsin Regional Planning Commissions, and the Wisconsin and Illinois counties along the Region's boundaries.

1.7 THE BASIC PRINCIPLES OF LAND USE AND TRANSPORTATION PLANNING

Eight basic principles provide the basis for VISION 2050 and the Commission's regional land use and transportation planning efforts.

The Commission's regional land use and transportation planning efforts are based on eight basic principles:

- **Land use and transportation planning must be regional in scope.** Many problems and opportunities associated with changing land use and travel patterns in an urbanizing region transcend

corporate limits. In particular, travel patterns develop over an entire urban region without regard to corporate limits. Thus, land use and transportation planning cannot be accomplished successfully within the confines of a single municipality or even a single county if that municipality or county is a part of a larger urban complex. Land use and transportation planning at a regional level assists in identifying common interests and objectives among counties and communities in the Region and then translates them into recommendations. In turn, these recommendations provide an overall framework under which county and community land use and transportation planning efforts can best be prepared and coordinated with one another. Also, the regional surface transportation system—which is composed of arterial streets and highways, transit facilities and services, bicycle and pedestrian facilities, and related terminal facilities, as well as transportation systems management measures—should form a single integrated system over the entire Region, a system that can adequately serve changing regional land use and travel patterns.

- **Land use and transportation planning must be conducted concurrently, and cannot be separated.** The land use pattern determines the amount and spatial distribution of travel to be accommodated by the transportation system and the ability of various modes of transportation to serve travel demand cost-effectively. The land use pattern also determines public utility needs. In turn, the transportation and public utility systems can have an impact on shaping the future land use pattern. Although detailed land use patterns are primarily of local concern and properly subject to local planning and control, the aggregate effects of the spatial distribution of land use activities are regional in scope and interact strongly with the need for regional transportation facilities.

- **Land use and transportation planning must recognize the existence of a limited natural resource base to which urban and rural development must be properly adjusted to ensure the overall environmental quality of the Region.** Land, water, and air resources are limited, and are sensitive to potential misuse through improper land use and transportation system development.

- **The regional land use and transportation planning process is cyclical in nature, alternating between areawide systems planning and local land use and project planning.** Overall regional land use and transportation plans are initially advanced at the areawide systems level of planning, and then an attempt is made to implement the plan recommendations through county and local land use planning, or project planning and preliminary engineering. If, for whatever reasons, a particular feature of the regional plan cannot be implemented at the local level, that determination is taken into account in the next cycle of areawide systems planning.

- **Highway facilities, transit facilities, bicycle and pedestrian facilities, and travel demand and transportation systems management measures should be planned together.** Transit facilities, bicycle and pedestrian facilities, and travel demand and transportation systems management measures have the potential to affect and reduce future highway traffic and improvement needs. Their potential to address highway traffic volume and congestion should be quantitatively tested and determined, and highway improvements

should then be considered to address highway traffic and congestion that may not be expected to be alleviated by transit facilities, bicycle and pedestrian facilities, or travel demand and transportation systems management measures.

- **Transportation facilities should be planned as an integrated system.** The capacities of each link in each system should be carefully fitted to travel or traffic loads, and the effects of each proposed facility on the remainder of the system should be quantitatively tested.

- **Transportation systems planning must recognize the role of transportation in the achievement of personal and community goals.** Access to high-quality transportation supports and promotes the maintenance and expansion of the Region's economy. Access to high-quality transportation, including a choice of modes, contributes to the Region's quality of life, reducing the amount of time that must be expended on transportation in daily life and facilitating the freedom to choose between a variety of places to live, work, shop, and recreate. Transportation plays a key role in making accessible environmentally sound economic, cultural, and educational opportunities; promoting sound economic development; and providing an attractive quality of life. The provision of a safe transportation system also contributes to the quality of life by minimizing fatalities, injuries, and property damage, and the costs of transportation.

- **Transportation systems planning must recognize the importance of properly relating the regional transportation system to the State and national systems.** The planning for the interregional movement of people and goods, particularly by railway, pipeline, and waterway, is primarily the responsibility of the State and Federal levels of government. Also, decisions made at the State and Federal levels of government affect the scale and timing of regional transportation system development and the availability of capital funds to implement regional transportation system improvements. Therefore, coordination in the planning process with the State and Federal levels of government becomes essential to the attainment of a balanced, integrated, and workable regional transportation system.

1.8 DEVELOPING A FOUNDATION FOR THE PLAN

The initial steps in the process for preparing the year 2050 regional land use and transportation plan include collecting an inventory of relevant land use and transportation data, analyzing those data, and preparing forecasts of future needs for resources, land, and transportation based on the data. These steps provide the information necessary to adequately plan for the Region's future land use and transportation. This information provides the foundation for VISION 2050, and is presented in this first volume, entitled *Groundwork for Vision and Plan Development*.

Reliable planning and engineering data that are collected on a uniform, areawide basis are essential to preparing workable development plans. Inventorying these data was a first step in the VISION 2050 process.

Inventory

Reliable planning and engineering data that are collected on a uniform, areawide basis are essential to the preparation of workable development plans. Consequently, inventory work becomes the first operational step in the planning process. Factual information on the current state of the Region is crucial to prepare accurate forecasts and select alternative courses of action during the planning process. Major land use-related inventory work conducted in support of VISION 2050 included areawide inventories

of the population and economy, land use, natural resource base, public utility service areas, and local comprehensive plans within the Region. Major transportation inventory work included travel surveys on an average weekday of the Region's resident population, resident commercial trucks, public transit ridership, and personal vehicle and commercial truck traffic traveling within, into, and out of, the Region; and inventories of highway and transit facilities, including physical and operational characteristics and use. In addition, inventories were conducted of the implementation to date of the existing year 2035 regional land use and transportation plans.

Related to the inventory data was a statistical comparison of the Milwaukee metropolitan area to other metro areas in the midwest and throughout the nation. This comparison examined how well the metro area compares with other areas in a number of key measures, including population growth and characteristics, the economy, and transportation. It also examined how the City of Milwaukee compares to the principal city in each peer metro area, and the differences that exist within each metro area—specifically differences between the principal city and the remainder of the metro area. The results of the comparison provided valuable information for use in developing and evaluating alternative plans, and preparing a preliminary recommended plan and final recommended plan.

Analyses and forecasts provide estimates of future needs for resources, land, and transportation.

Analyses and Forecasts

Inventories provide factual information about the present situation, but analyses and forecasts are necessary to provide estimates of future needs for resources, land, and transportation. Analyses of the information provided by the inventories are required for an understanding of the existing situation, trends of change, and the factors influencing those trends. The analytical relationships that link population and economic activity to the demand for land and transportation are particularly important.

Future needs must be estimated from forecasts founded in the planning analyses. Population, household, and economic activity forecasts set the general scale of future growth. This scale of future growth is then translated into future demands for land use, and ultimately for travel.

The Commission prepared new projections of population, households, and employment for the Region in 2013, extending those projections to the year 2050. The Commission has used a range of projections in prior studies. The range has included a high, intermediate, and low projection of future population, household, and employment levels, and this range was used again for the 2050 projections. The intermediate projection is considered the most likely to occur for the Region as a whole, and is intended to provide a basis for preparing the regional land use and transportation plan and other elements of the comprehensive plan for the Region. The high and low projections are intended to provide an indication of the range of population, household, and employment levels that could conceivably occur under significantly higher or lower, but nevertheless plausible, growth scenarios for the Region.

1.9 OVERVIEW OF VISION 2050: A VISIONING AND SCENARIO PLANNING APPROACH

The process for developing VISION 2050 involved the use of visioning and scenario planning. This process will be discussed in more detail in Volume II, *Developing the Vision and Plan*. Visioning and scenario planning are being used more frequently by regional planning commissions and MPOs across

the nation as a way to enhance their regional planning efforts. The purpose of the visioning and scenario planning effort for VISION 2050 was to develop a shared long-range vision of future land use and transportation in Southeastern Wisconsin—a vision understood and embraced by the Region's residents. The land use and transportation vision describes how the Region's residents want their communities and the Region to develop, and how they want to be connected to the different places in their communities and the Region that are important to them. The VISION 2050 effort was designed to obtain greater public input into the specific design and evaluation of conceptual scenarios, detailed alternative plans, and ultimately the final recommended land use and transportation plan. The effort is also an attempt to expand public knowledge about the implications of existing and future land use and transportation development in Southeastern Wisconsin.

The purpose of the visioning and scenario planning effort for VISION 2050 was to develop a shared long-range vision of future land use and transportation in Southeastern Wisconsin that is understood and embraced by the Region's residents. With this purpose in mind, Commission staff made extensive public outreach a focal point of VISION 2050.

Public Outreach and Involvement

As Volume II describes further, extensive public outreach was a focal point of the VISION 2050 process, conducted as part of each step in the process. From the beginning of the process, this outreach included newsletters; brochures; media contacts and news releases; and extensive public outreach to minority and low-income groups and organizations, business groups, service groups, community and neighborhood groups, environmental groups, and others, with outreach also occurring through participation at fairs, festivals, and other events. The public outreach approach was intended to inform, and obtain input, at each step of the visioning and planning process, ultimately helping to shape the initial vision, conceptual scenarios, detailed alternative plans, preliminary recommended plan, and final recommended plan. As in past efforts, this involved making every effort to respond to the comments and suggestions obtained throughout the process so that the resulting vision and plan reflect the values and goals expressed by the Region's residents. To expand outreach, the Commission also partnered with eight community organizations to conduct targeted outreach to their constituents. This partnership was designed to reach and engage certain groups that have traditionally been underrepresented—in particular, minority populations, people with disabilities, and low-income individuals—and encourage them to participate and provide input.

Commission staff also created a website dedicated specifically to the plan—www.vision2050sewis.org—to provide regular updates on plan development progress, announcements of public workshops, and a continuous avenue for members of the public to submit comments on the plan. The website links to the Commission's website—www.sewrpc.org—to provide access to the plan report chapter-by-chapter and Advisory Committee meeting agendas, materials, and minutes.

Volume II also presents the results of extensive face-to-face public engagement for VISION 2050. In addition to briefings upon request to groups and individuals—in particular to minority population groups, low-income population groups, and elected officials—this public engagement included five series of public workshops during the visioning and planning process to provide information on, and obtain input to, the development of the plan. These workshops were initiated at the very beginning of the visioning process, and occurred at key stages throughout the plan development process, with staff offering and conducting full or partial visioning workshops upon request for groups, elected officials, or local or county staffs that were unable to attend the public workshops. Criteria for selecting the locations for all public workshops include meeting Americans with Disabilities Act of 1990

(ADA) standards, being accessible by public transit, and being convenient for minority populations and low-income populations.

Also from the beginning of the process, Commission staff provided numerous briefings upon request to groups and individuals, and offered briefings through outreach, in particular to minority population groups, low-income population groups, and elected officials.

Initial outreach activities engaged residents in visioning for the future, producing an initial land use and transportation vision comprised of a set of VISION 2050 Guiding Statements.

Visioning and the Formulation of Guiding Statements
Along with the steps related to inventory, analyses, and forecasts, visioning activities for the VISION 2050 effort were an initial step of the year 2050 plan development process. These activities, including activities during the first two rounds of workshops, involved public outreach techniques designed to engage members of the public and obtain their involvement at the very beginning of the process to develop a consensus vision for the plan. This step was about engaging the Region's residents in visioning for the future, encouraging them to better understand land use and transportation system development and consequences, and promoting discussion and understanding of the diverse transportation needs across the Region. The intent was for more of the Region's residents to become aware of, understand, and support the final recommended plan, so that the potential to implement the resulting recommendations will be improved. The product of these visioning activities 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 conceptual scenarios step represented the first opportunity for residents to consider the consequences of different future land use patterns and transportation systems.

Scenario Planning and Evaluation
The feedback obtained from initial visioning activities led into a scenario planning effort. Scenario planning is a process used to develop a long-term shared vision by considering and evaluating a range of potential future scenarios of regional land use development and transportation system development. Scenario planning allows the public and local governments to consider the consequences of future land use patterns and transportation systems, and makes it easier for them to provide input into the plan development process, by comparing possible scenarios, or futures.

This step involved comparison of a series of "conceptual" land use and transportation scenarios, developed from the Guiding Statements produced during the initial visioning activities. The scenarios included 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 Region's identified vision.

Each scenario was then evaluated with a "sketch" evaluation tool to assess, as best as could be done with a conceptual scenario, how each scenario would perform relative to the other scenarios. A series of criteria were selected and estimated with the sketch evaluation tool. These criteria measure the extent to which each scenario was consistent with the initial vision. Residents explored and provided input on the scenarios and their evaluation at the third round of workshops.

Alternative Plan Design and Evaluation
This stage involved development of more detailed alternative land use and transportation plans, based on the results of the evaluation of the scenarios and the public input on the scenarios. Each alternative plan included a specific land use development pattern and transportation system, representing alternative visions for the Region. Each alternative plan was also designed

to accommodate population, household, and employment levels envisioned for the Region under the Commission intermediate growth projections for the year 2050.

Alternative plans—more detailed than the conceptual scenarios—were developed and evaluated against a set of plan objectives.

Included in the alternative plan stage was development of land use and transportation plan objectives, based on the established Guiding Statements. Objectives are statements that focus on how the Region should desirably look and function in the future. These statements are clear and concise in order to provide meaningful guidance. They form the basis for developing alternative plan evaluation criteria, which quantify the extent to which each alternative plan meets each objective. Criteria are discrete measures used to evaluate and compare the alternative plans with respect to how well they attain each objective.

This stage also involved in-depth evaluation and comparison of the detailed alternative plans in terms of each one's viability and performance under future conditions. The alternative plans were assessed based on their impacts, influences, and effects on selected criteria. Evaluation tools, including the Commission's travel demand models, were used to estimate values for each criterion.

The fourth round of workshops included asking members of the public to indicate their preferred alternative plan elements using a variety of methods. Information about the alternative plans and evaluation results was made readily available to assist in making decisions. This public input then helped staff identify a preferred vision and Preliminary Recommended Plan.

Preliminary Recommended Plan

Alternative plan feedback results were considered in preparing a preliminary recommended plan that represented a preferred comprehensive vision for the Region.

The goal of the process was to achieve regional consensus on the future of the Region's land use and transportation system. The end result was a preliminary recommended land use and transportation plan, representing a preferred comprehensive vision for the Region. The land use component included land use recommendations for the Region, while the transportation component served the recommended land use component and included transportation recommendations for the Region.

Federal regulations require that fiscal constraint be demonstrated as part of the development of the transportation component of the Preliminary Recommended Plan. A financial analysis of the transportation system comparing existing and reasonably expected costs and revenues was conducted, identifying a funding gap. This gap resulted in the need to identify the funded portion of the transportation component. It was also necessary to evaluate the impact of the preliminary land use and transportation recommendations on minority populations and low-income populations in the Region. The evaluation assessed whether minority populations and low-income populations would receive a proportionate share of any plan benefits, or a disproportionate share of plan costs.

The preliminary recommended plan, including the funded portion of the transportation component, was the focus of the fifth and final round of workshops.

Final Recommended Plan

The last step in the process was the preparation and adoption of a final year 2050 land use and transportation plan for Southeastern Wisconsin, which is described in Volume III of this report. In this step, the Preliminary Recommended Plan was refined based on consideration of input from

Volume III presents the final recommended plan for VISION 2050, providing a consensus vision to guide decisions and investments at local, county, and State levels for years to come. The final plan includes the actions and strategies needed to achieve plan recommendations.

the public, the Commission's Advisory Committees on Regional Land Use Planning and Regional Transportation Planning, the Environmental Justice Task Force (EJTF), Jurisdictional Highway Planning Committees for each county, and the VISION 2050 task forces on key areas of interest The Final Recommended Plan provides a consensus vision for the Region to guide decisions and investments at local, county, and State levels for years to come.

As in the Preliminary Recommended Plan, the costs of the recommended transportation component were compared to existing and reasonably expected revenues. This financial analysis necessitates identifying the funded portion of the transportation system, titled the Fiscally Constrained Transportation Plan (FCTP). While VISION 2050 identifies the desired transportation system that the Region wants to achieve by the year 2050, the FCTP identifies those elements of VISION 2050 that may be expected to be funded under existing and reasonably expected revenues. The funding necessary to achieve the remaining elements of VISION 2050 was identified, along with potential initiatives to provide the needed funding and implement the complete vision.

VISION 2050 includes an implementation framework, which identifies the actions and strategies to achieve plan recommendations and guide local, county, and State decision-making. In particular, it specifies those actions needed to go beyond the FCTP and achieve the recommended transportation system. It also specifies an ongoing program to monitor and document progress toward achieving plan recommendations, including regularly calculated and reported performance measures.

Upon recommendation by the Advisory Committees, the Regional Planning Commission adopted VISION 2050 on July 28, 2016. Upon adoption by the Commission, VISION 2050 was certified to concerned units and agencies of government for their endorsement and implementation.

1.10 ORGANIZATIONAL STRUCTURE

The Commission's Advisory Committees on Regional Land Use Planning and Regional Transportation Planning were convened to provide guidance to Commission staff during preparation of VISION 2050. The Committee members were appointed by the Regional Planning Commission and consist primarily of planning and public works officials from counties and communities throughout the Region and representatives of concerned State agencies, including the DNR and WisDOT. In addition, the EJTF monitored work on the plan to ensure that Federal environmental justice and related requirements were met. To this end, the EJTF was given an opportunity to review all materials produced during preparation of the plan. All comments, suggestions, and recommendations made by the EJTF were reported to the Advisory Committees for their consideration. The members of the Advisory Committees are identified on the inside front cover of this report; the members of the EJTF are identified in Figure 1.1.

Also, at appropriate times during the process, information was provided to, and input obtained from, each county's Jurisdictional Highway Planning Committee—which includes representation from the county and all municipalities within that county. These advisory committees reviewed and provided input on the transportation components of the preliminary and final recommended plans, in particular considering and approving the functional improvement recommendations for the arterial street and highway system.

Figure 1.1
SEWRPC Environmental Justice Task Force (as of July 2016)

Adelene Greene, Chair ..... Commissioner, Southeastern Wisconsin Regional Planning Commission; Director of Workforce Development, Kenosha County
Tyrone P. Dumas, Vice Chair ..... Educational Consultant, SOS Center Garden of Hope After School Program, Milwaukee
Yolanda Adams ..... President and CEO, Urban League of Racine and Kenosha
Huda Alkaff ..... Founder & Director, Wisconsin Green Muslims
Ella Dunbar ..... Program Services Manager, Social Development Commission, Milwaukee
N. Lynnette McNeely ..... Legal Redress Chair, Waukesha County NAACP
Guadalupe "Wally" Rendon ..... President, Hispanic Business and Professionals Association of Racine
Jackie Schellinger ..... Indian Community Representative, Retired Judge
Theresa Schuerman ..... Walworth County Bilingual Migrant Worker Outreach
May yer Thao ..... Director, Hmong Chamber of Commerce
Willie Wade ..... Vice President, Milwaukee Area Workforce Investment Board
Wallace White ..... Principal/CEO, W2EXCEL, LLC

Special acknowledgment is due the following individuals who served as previous members of the Task Force during the course of the VISION 2050 planning process: Ness Flores, Attorney, Flores & Reyes Law Offices; Nancy Holmlund, Past President, Racine Interfaith Coalition; and Jedd Lapid, Regional Chief Development Officer, American Red Cross of Eastern Wisconsin.

In addition, from the beginning of the VISION 2050 process, Commission staff worked with a number of interested parties through individual and group briefings and meetings, providing information about, and obtaining input on, the plan and planning process. Staff also developed and convened "task forces" to meet during the plan development process and examine specific issues related to land use and transportation. Those issues include transportation needs of business, industry, workforce development, and higher education; environment, including natural resources; environmental justice, including minority populations, low-income populations, and people with disabilities; freight movement; human services transportation needs; land use, including farming, builder, realtor, and environmental interests; non-motorized transportation, including bicycle and pedestrian facilities; public transit; transportation systems management; and women's land use and transportation issues.

1.11 SCHEME OF PRESENTATION

The findings and recommendations of the VISION 2050 planning process are documented in this report. The report is divided into three separate volumes: *Groundwork for Vision and Plan Development* (Volume I), *Developing the Vision and Plan* (Volume II), and *Recommended Regional Land Use and Transportation Plan* (Volume III). The following is an outline of the chapters and appendices found in this first volume:

Volume I: Groundwork for Vision and Plan Development

- Chapter 1—Introduction
- Chapter 2—Existing Conditions and Trends: Population, Employment, and Land Use

- Chapter 3—Review of the Year 2035 Regional Land Use and Transportation System Plans
- Chapter 4—Inventory of Transportation Facilities and Services
- Chapter 5—Travel Habits and Patterns
- Chapter 6—Future Population, Households, and Employment in the Region
- Appendix A—A Comparison of the Milwaukee Metropolitan Area to Its Peers
- Appendix B—Adopted County and Local Comprehensive Plans in Southeastern Wisconsin
- Appendix C—Accuracy Checks of the Year 2011 Travel Surveys

EXISTING CONDITIONS AND TRENDS: POPULATION, EMPLOYMENT, AND LAND USE

2

Credit: SEWRPC Staff

2.1 INTRODUCTION

Information regarding existing conditions and historic trends with respect to the demographic and economic base, natural environment, and built environment is essential to land use and transportation planning. The Commission has developed an extensive database pertaining to these and other aspects of the Region that is updated periodically. A major inventory update effort was conducted in the early 2010s in support of preparing the new regional land use and transportation plan and other elements of the comprehensive plan for the Region. This chapter presents a summary of the results of that inventory update pertaining to the population, economy, land use, sanitary sewer and water supply services, natural resource base, agricultural resource base, and existing planning framework within the Region. Transportation-related inventory data are presented in Chapters 4 and 5 of this volume.

2.2 DEMOGRAPHIC AND ECONOMIC BASE

Population

The Commission conducted a detailed inventory and analysis of the regional population following the release of the 2010 Federal Census. A summary of population trends is presented in this section. Detailed findings are presented in SEWRPC Technical Report No. 11 (5th Edition), *The Population of Southeastern Wisconsin*, dated April 2013.

Historic Trends and Distribution Among Counties

Table 2.1 shows population trends in the Region relative to the State and Nation. The population of the Region in 2010 was 2,020,000 people, which is an increase of 4.6 percent (88,800 people) over the 2000 population of 1,931,200 people. This was less than the 6.7 percent increase in regional population that occurred during the 1990s, but greater than the increases that occurred during the 1970s and 1980s.

The population of the Region was 2,020,000 people in 2010. That's an increase of 88,800 people from the year 2000.

Table 2.1
Population in the Region, Wisconsin, and the United States: 1950-2010

Year	Region Population			Wisconsin Population			Region Population as a Percent of Wisconsin
		Change from Preceding Census			Change from Preceding Census		
	Number	Absolute	Percent	Number	Absolute	Percent	
1950	1,240,618	--	--	3,434,575	--	--	36.1
1960	1,573,614	332,996	26.8	3,951,777	517,202	15.1	39.8
1970	1,756,083	182,469	11.6	4,417,821	466,044	11.8	39.7
1980	1,764,796	8,713	0.5	4,705,642	287,821	6.5	37.5
1990	1,810,364	45,568	2.6	4,891,769	186,127	4.0	37.0
2000	1,931,165	120,801	6.7	5,363,675	471,906	9.6	36.0
2010	2,019,970	88,805	4.6	5,686,986	323,311	6.0	35.5

Year	Region Population			United States Population			Region Population as a Percent of the United States
		Change from Preceding Census			Change from Preceding Census		
	Number	Absolute	Percent	Number	Absolute	Percent	
1950	1,240,618	--	--	151,325,798	--	--	0.82
1960	1,573,614	332,996	26.8	179,323,175	27,997,377	18.5	0.88
1970	1,756,083	182,469	11.6	203,302,031	23,978,856	13.4	0.86
1980	1,764,796	8,713	0.5	226,504,825	23,202,794	11.4	0.78
1990	1,810,364	45,568	2.6	249,632,692	23,127,867	10.2	0.73
2000	1,931,165	120,801	6.7	281,421,906	31,789,214	12.7	0.69
2010	2,019,970	88,805	4.6	308,745,538	27,323,632	9.7	0.65

Source: U.S. Bureau of the Census and SEWRPC

In relative terms, the Region's population grew at a somewhat slower rate than the State (6.0 percent) and Nation (9.7 percent) between 2000 and 2010. As a result, the Region's share of Wisconsin's population declined slightly from 36.0 percent to 35.5 percent, with the Region's share of the national population also declining. Table 2.1 shows the Region's share of the State and national population has been gradually declining since 1960.

All seven counties in the Region experienced population growth in the 2000s, including Milwaukee County, which had previously experienced three decades of decline.

Table 2.2 and Figure 2.1 show 2010 population and population trends between 1950 and 2010 by county in the Region. All seven counties in the Region experienced population growth in the 2000s, including Milwaukee County after three decades of decline. Population growth between 2000 and 2010 by county includes:

- Kenosha County: 16,800 people, or 11.3 percent
- Milwaukee County: 7,600 people, or 0.8 percent
- Ozaukee County: 4,100 people, or 5.0 percent
- Racine County: 6,600 people, or 3.5 percent
- Walworth County: 10,200 people, or 11.1 percent
- Washington County: 14,400 people, or 12.2 percent
- Waukesha County: 29,100 people, or 8.1 percent

Although Milwaukee County gained population during the 2000s, its share of the regional population decreased by about 2 percent. The share of each

Table 2.2
Population in the Region by County: 1950-2010

Year	Kenosha County Population				Milwaukee County Population			
	Number	Change from Preceding Census		Percent of Region Total	Number	Change from Preceding Census		Percent of Region Total
		Absolute	Percent			Absolute	Percent	
1950	75,238	--	--	6.1	871,047	--	--	70.2
1960	100,615	25,377	33.7	6.4	1,036,041	164,994	18.9	65.8
1970	117,917	17,302	17.2	6.7	1,054,249	18,208	1.8	60.0
1980	123,137	5,220	4.4	7.0	964,988	-89,261	-8.5	54.7
1990	128,181	5,044	4.1	7.1	959,275	-5,713	-0.6	53.0
2000	149,577	21,396	16.7	7.7	940,164	-19,111	-2.0	48.7
2010	166,426	16,849	11.3	8.2	947,735	7,571	0.8	46.9

Year	Ozaukee County Population				Racine County Population			
	Number	Change from Preceding Census		Percent of Region Total	Number	Change from Preceding Census		Percent of Region Total
		Absolute	Percent			Absolute	Percent	
1950	23,361	--	--	1.9	109,585	--	--	8.8
1960	38,441	15,080	64.6	2.5	141,781	32,196	29.4	9.0
1970	54,461	16,020	41.7	3.1	170,838	29,057	20.5	9.7
1980	66,981	12,520	23.0	3.8	173,132	2,294	1.3	9.8
1990	72,831	5,850	8.7	4.0	175,034	1,902	1.1	9.7
2000	82,317	9,486	13.0	4.2	188,831	13,797	7.9	9.8
2010	86,395	4,078	5.0	4.3	195,408	6,577	3.5	9.7

Year	Walworth County Population				Washington County Population			
	Number	Change from Preceding Census		Percent of Region Total	Number	Change from Preceding Census		Percent of Region Total
		Absolute	Percent			Absolute	Percent	
1950	41,584	--	--	3.4	33,902	--	--	2.7
1960	52,368	10,784	25.9	3.3	46,119	12,217	36.0	2.9
1970	63,444	11,076	21.2	3.6	63,839	17,720	38.4	3.7
1980	71,507	8,063	12.7	4.0	84,848	21,009	32.9	4.8
1990	75,000	3,493	4.9	4.1	95,328	10,480	12.4	5.3
2000	92,013	17,013	22.7	4.8	117,496	22,168	23.3	6.1
2010	102,228	10,215	11.1	5.1	131,887	14,391	12.2	6.5

Year	Waukesha County Population				Region Population			
	Number	Change from Preceding Census		Percent of Region Total	Number	Change from Preceding Census		Percent of Region Total
		Absolute	Percent			Absolute	Percent	
1950	85,901	--	--	6.9	1,240,618	--	--	100.0
1960	158,249	72,348	84.2	10.1	1,573,614	332,996	26.8	100.0
1970	231,335	73,086	46.2	13.2	1,756,083	182,469	11.6	100.0
1980	280,203	48,868	21.1	15.9	1,764,796	8,713	0.5	100.0
1990	304,715	24,512	8.7	16.8	1,810,364	45,568	2.6	100.0
2000	360,767	56,052	18.4	18.7	1,931,165	120,801	6.7	100.0
2010	389,891	29,124	8.1	19.3	2,019,970	88,805	4.6	100.0

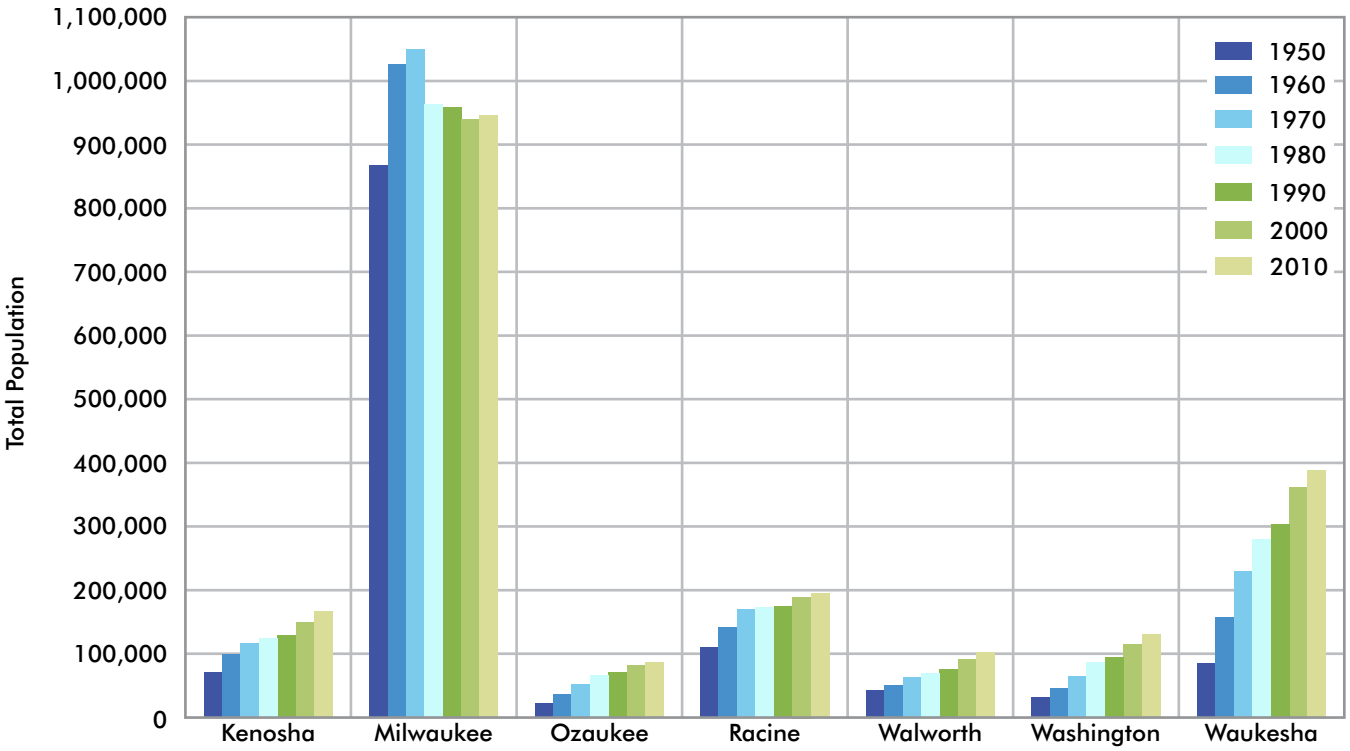
Source: U.S. Bureau of the Census and SEWRPC

of the other six counties in the Region remained about the same or increased slightly. Figure 2.2 shows that the most notable change in the distribution over the last 60 years has been the increase in Waukesha County's share of the regional population from 7 percent to 19 percent, and the decrease in Milwaukee County's share from 70 percent to 47 percent.

Waukesha County's share of the regional population has increased from 7% to 19% over the last 60 years.

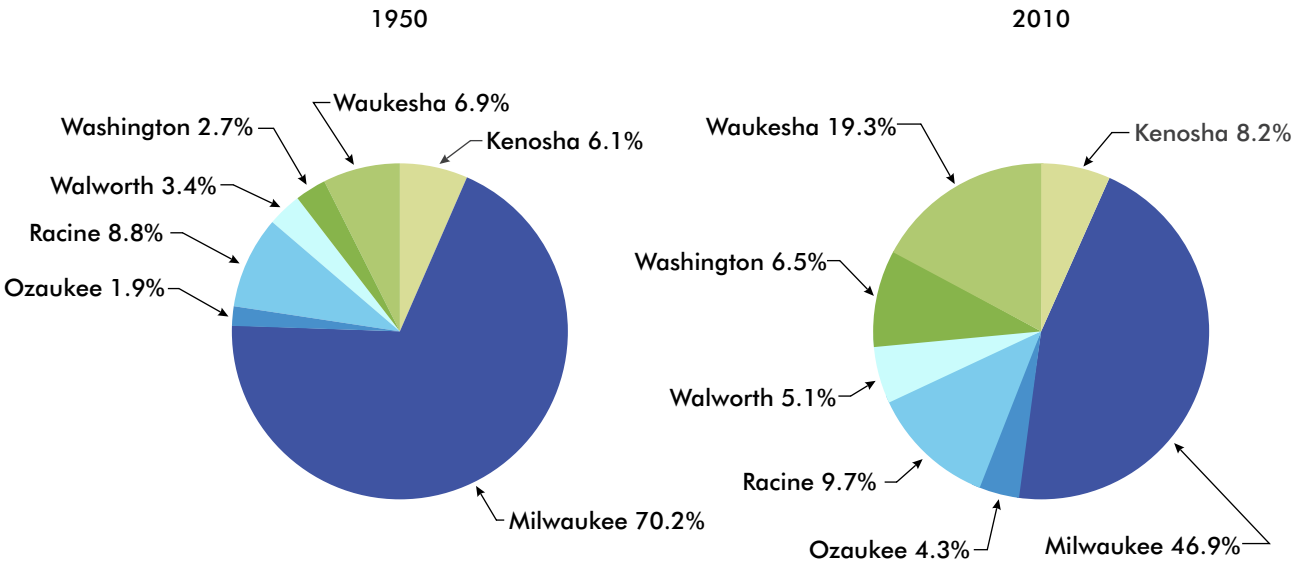
Current and historic population levels for cities, villages, and towns in the Region are set forth in Appendix A of SEWRPC Technical Report No. 11. Year 2010 data for the four largest cities in the Region and the remainder of their respective counties are presented in Table 2.3. These include the Cities of Milwaukee, Kenosha, Racine, and Waukesha. The table shows the City of Milwaukee's share of the regional population has decreased substantially

Figure 2.1
Population in the Region by County: 1950-2010



Source: U.S. Bureau of the Census and SEWRPC

Figure 2.2
Share of Regional Population by County: 1950 and 2010



Source: U.S. Bureau of the Census and SEWRPC

Table 2.3
Population in the Region by Area: 1950-2010

Year	City of Milwaukee Population				Remainder of Milwaukee County Population			
	Number	Change from Preceding Census		Percent of Region Total	Number	Change from Preceding Census		Percent of Region Total
		Absolute	Percent			Absolute	Percent	
1950	637,392	--	--	51.4	233,655	--	--	18.8
1960	741,324	103,932	16.3	47.1	294,717	61,062	26.1	18.7
1970	717,372	-23,952	-3.2	40.9	336,877	42,160	14.3	19.2
1980	636,295	-81,077	-11.3	36.1	328,693	-8,184	-2.4	18.6
1990	628,088	-8,207	-1.3	34.7	331,187	2,494	0.8	18.3
2000	596,974	-31,114	-5.0	30.9	343,190	12,003	3.6	17.8
2010	594,833	-2,141	-0.4	29.4	352,902	9,712	2.8	17.5
	City of Kenosha Population				**Remainder of Kenosha County Population**			
Year	Number	Change from Preceding Census		Percent of Region Total	Number	Change from Preceding Census		Percent of Region Total
		Absolute	Percent			Absolute	Percent	
1950	54,368	--	--	4.4	20,870	--	--	1.7
1960	67,899	13,531	24.9	4.3	32,716	11,846	56.8	2.1
1970	78,805	10,906	16.1	4.5	39,112	6,396	19.6	2.2
1980	77,685	-1,120	-1.4	4.4	45,452	6,340	16.2	2.6
1990	80,426	2,741	3.5	4.4	47,755	2,303	5.1	2.6
2000	90,352	9,926	12.3	4.7	59,225	11,470	24.0	3.1
2010	99,218	8,866	9.8	4.9	67,208	7,983	13.5	3.3
	City of Racine Population				**Remainder of Racine County Population**			
Year	Number	Change from Preceding Census		Percent of Region Total	Number	Change from Preceding Census		Percent of Region Total
		Absolute	Percent			Absolute	Percent	
1950	71,193	--	--	5.7	38,392	--	--	3.1
1960	89,144	17,951	25.2	5.7	52,637	14,245	37.1	3.3
1970	95,162	6,018	6.8	5.4	75,676	23,039	43.8	4.3
1980	85,725	-9,437	-9.9	4.9	87,407	11,731	15.5	5.0
1990	84,298	-1,427	-1.7	4.7	90,736	3,329	3.8	5.0
2000	81,855	-2,443	-2.9	4.2	106,976	16,240	17.9	5.5
2010	78,860	-2,995	-3.7	3.9	116,548	9,572	8.9	5.8
	City of Waukesha Population				**Remainder of Waukesha County Population**			
Year	Number	Change from Preceding Census		Percent of Region Total	Number	Change from Preceding Census		Percent of Region Total
		Absolute	Percent			Absolute	Percent	
1950	21,233	--	--	1.7	64,668	--	--	5.2
1960	30,004	8,771	41.3	1.9	128,245	63,577	98.3	8.1
1970	40,271	10,267	34.2	2.3	191,064	62,819	49.0	10.9
1980	50,365	10,094	25.1	2.9	229,838	38,774	20.3	13.0
1990	56,894	6,529	13.0	3.1	247,821	17,983	7.8	13.7
2000	64,825	7,931	13.9	3.4	295,942	48,121	19.4	15.3
2010	70,718	5,893	9.1	3.5	319,173	23,231	7.8	15.8

Source: U.S. Bureau of the Census and SEWRPC

between 1950 and 2010, from about 51 percent to about 29 percent of the Region's population. The remainder of Milwaukee County's share of the regional population also decreased during this period, but only by about 1 percent. The portion of Waukesha County outside of the City of Waukesha increased its share of the regional population from about 5 percent in 1950 to almost 16 percent in 2010.

Components of Population Change

Population change can be attributed to natural increase and net migration. Natural increase is the balance between births and deaths in an area over a given period of time, which can be measured directly from historical records on the number of births and deaths for an area. Net migration is the balance

Table 2.4
Levels of Population Change, Natural Increase, and Net Migration for the Region by County: 1950-2010

County	1950-1960 Population Change	1950-1960 Natural Increase	1950-1960 Net Migration	1960-1970 Population Change	1960-1970 Natural Increase	1960-1970 Net Migration
Kenosha	25,377	13,931	11,446	17,302	15,125	2,177
Milwaukee	164,994	150,141	14,853	18,208	122,192	-103,984
Ozaukee	15,080	5,926	9,154	16,020	6,090	9,930
Racine	32,196	21,473	10,723	29,057	20,441	8,616
Walworth	10,784	5,733	5,051	11,076	4,685	6,391
Washington	12,217	7,501	4,716	17,720	8,122	9,598
Waukesha	72,348	19,746	52,602	73,086	25,699	47,387
Region	332,996	224,451	108,545	182,469	202,354	-19,885

County	1970-1980 Population Change	1970-1980 Natural Increase	1970-1980 Net Migration	1980-1990 Population Change	1980-1990 Natural Increase	1980-1990 Net Migration
Kenosha	5,220	7,746	-2,526	5,044	8,177	-3,133
Milwaukee	-89,261	60,105	-149,366	-5,713	69,529	-75,242
Ozaukee	12,520	4,798	7,722	5,850	5,141	709
Racine	2,294	12,842	-10,548	1,902	13,720	-11,818
Walworth	8,063	2,451	5,612	3,493	2,939	554
Washington	21,009	7,163	13,846	10,480	7,756	2,724
Waukesha	48,868	18,011	30,857	24,512	20,068	4,444
Region	8,713	113,116	-104,403	45,568	127,330	-81,762

County	1990-2000 Population Change	1990-2000 Natural Increase	1990-2000 Net Migration	2000-2010 Population Change	2000-2010 Natural Increase	2000-2010 Net Migration
Kenosha	21,396	9,365	12,031	16,849	9,028	7,821
Milwaukee	-19,111	64,145	-83,256	7,571	64,589	-57,018
Ozaukee	9,486	3,916	5,570	4,078	2,156	1,922
Racine	13,797	11,127	2,670	6,577	10,463	-3,886
Walworth	17,013	2,592	14,421	10,215	3,508	6,707
Washington	22,168	7,159	15,009	14,391	6,195	8,196
Waukesha	56,052	18,582	37,470	29,124	13,302	15,822
Region	120,801	116,886	3,915	88,805	109,241	-20,436

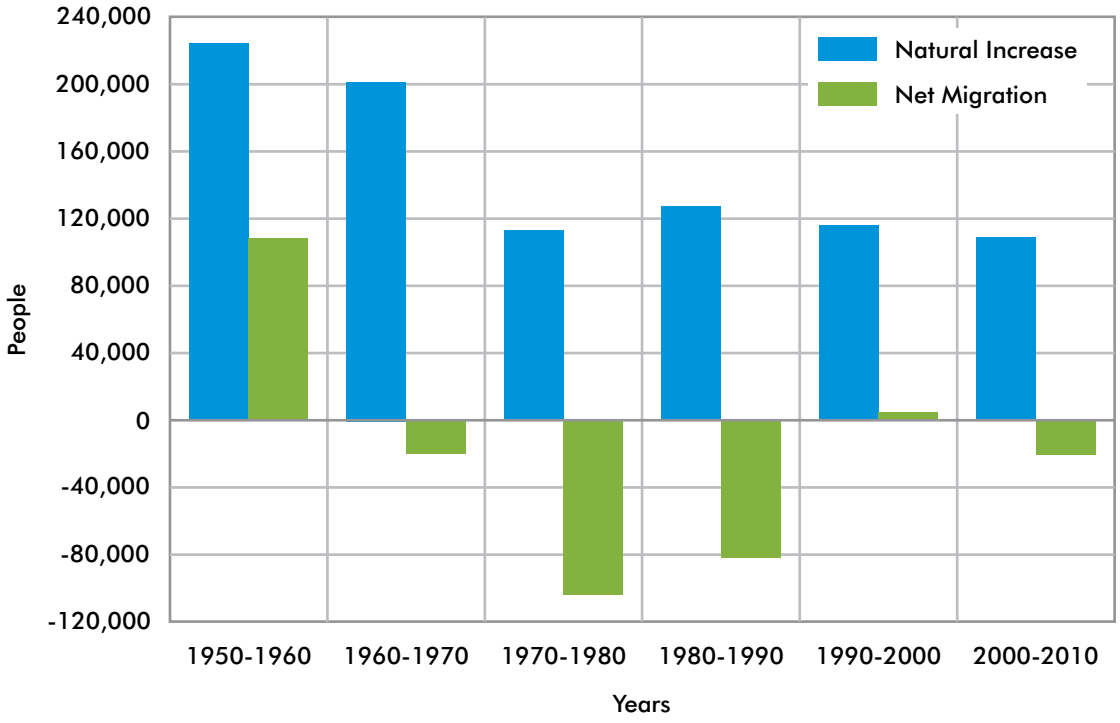
Source: U.S. Bureau of the Census, Wisconsin Department of Health Services, and SEWRPC

between migration to and from an area over a given period of time, which can be determined by subtracting natural increase from total population change for the time period concerned.

Table 2.4 and Figure 2.3 show that the population increase in the Region between 2000 and 2010 can be attributed to natural increase. There was a natural increase of about 109,200 people in the Region; however, there was a net out-migration of about 20,400 people. This resulted in a population increase of about 88,800 people in the Region during the 2000s. The level of natural increase has been relatively steady since the 1970s, averaging about 116,600 people per decade. This is significantly lower than the levels experienced during the 1950s and 1960s, which include much of the post-World War II Baby Boom era.

There has typically been a net out-migration of people from the Region during the decades from 1960 to 2010. The only decade to experience a net in-migration of people during this time period was the 1990s, which experienced a modest in-migration of about 3,900 people. The net out-migration experienced during the 2000s is similar to that experienced during the 1960s, and significantly less than the 1970s and 1980s.

Figure 2.3
Components of Population Change in the Region: 1950-2010



Source: U.S. Bureau of the Census, Wisconsin Department of Health Services, and SEWRPC

The in-migration of people to the Region from abroad is an important aspect of net migration. There was a significant movement of foreign-born people into the Region during the 2000s. The U.S. Census Bureau's 2006-2010 American Community Survey (ACS) indicated that there were 43,400 foreign-born people residing in the Region who had entered the U.S. in or after 2000. This is about the same as reported in the 2000 decennial Census for the period from 1990 to 2000 and significantly more than reported in the 1970, 1980, and 1990 decennial Censuses. The in-migration of foreign-born population, including a significant Hispanic component, is a key aspect of the population migration pattern for the Region during 2000s.

There was a significant movement of foreign-born people into the Region during the 2000s.

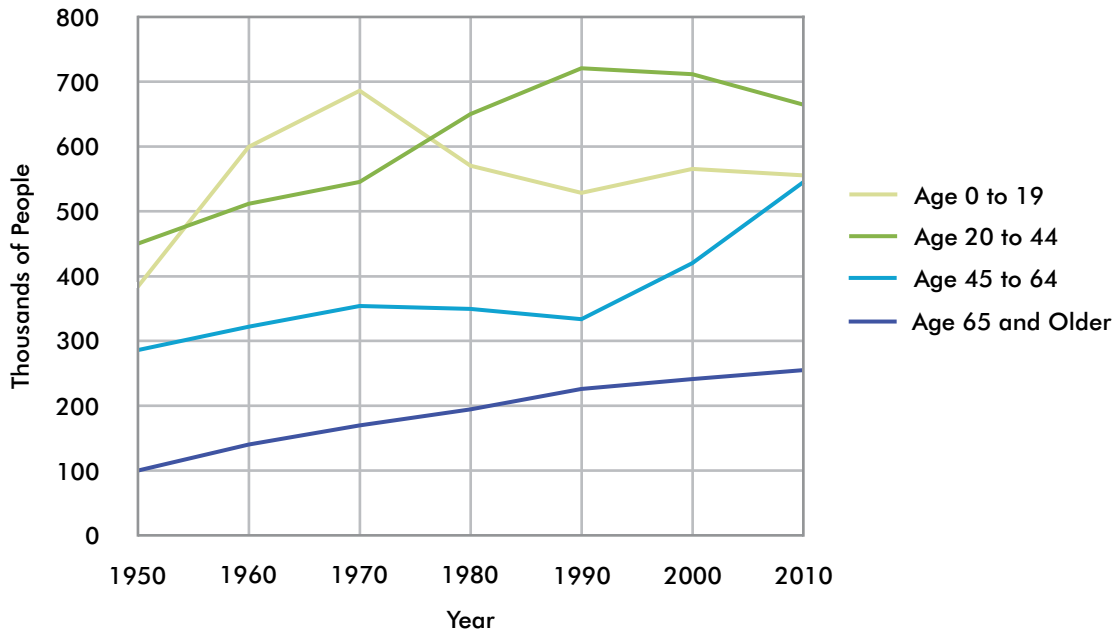
Population Characteristics

Change in the size and distribution of the Region's population has been accompanied by change in the characteristics of the population, including age composition and racial/ethnic makeup. Figure 2.4 shows population in the Region by general age group from 1950 to 2010. The figure shows significant growth in the 45- to 64-year age group between 2000 and 2010. This largely reflects the aging of the "Baby-Boomers" (those born from 1946 through 1964). There was also a decrease in the 20- to 44-year age group between 2000 and 2010. This is a reflection of Baby-Boomers moving out of the upper bounds of this age group coupled with a smaller number of people born in the late 1960s and early 1970s moving into this age group.

There was significant growth in the 45- to 64-year age group between 2000 and 2010, reflecting the aging of the "Baby-Boomers."

Table 2.5 shows the size of the minority population in the Region, identified on the basis of Hispanic origin and race, as reported in the past four Censuses. The minority population includes people reported in the Census as being of Hispanic origin and/or reporting their race as Black or African American, American Indian/Alaska Native, Asian, Native Hawaiian/Pacific

Figure 2.4
Population in the Region by General Age Group: 1950-2010



Source: U.S. Bureau of the Census and SEWRPC

Table 2.5
Population by Race and Hispanic Origin in the Region: 1980-2010

Race/Ethnicity[a]	1980 Population Number	1980 Population Percent of Total	1990 Population Number	1990 Population Percent of Total	2000 Population Number	2000 Population Percent of Total	2010 Population Number	2010 Population Percent of Total
Non-Hispanic White Population	1,531,800	86.8	1,494,797	82.6	1,479,103	76.5	1,437,105	71.1
Minority Population:[b]								
Non-Hispanic Black/African American	166,532	9.5	217,573	12.0	259,881	13.5	288,550	14.3
Non-Hispanic Other Race	20,135	1.1	30,057	1.7	67,530	3.5	94,096	4.7
Hispanic—Any Race	46,452	2.6	67,937	3.7	126,394	6.5	200,219	9.9
Minority Subtotal	233,119	13.2	315,567	17.4	453,805	23.5	582,865	28.9
Total	1,764,919	100.0	1,810,364	100.0	1,932,908	100.0	2,019,970	100.0

Race/Ethnicity[a]	Change 1980-1990 Number	Change 1980-1990 Percent	Change 1990-2000 Number	Change 1990-2000 Percent	Change 2000-2010 Number	Change 2000-2010 Percent	Change 1980-2010 Number	Change 1980-2010 Percent
Non-Hispanic White Population	-37,003	-2.4	-15,694	-1.0	-41,998	-2.8	-94,695	-6.2
Minority Population:[b]								
Non-Hispanic Black/African American	51,041	30.6	42,308	19.4	28,669	11.0	122,018	73.3
Non-Hispanic Other Race	9,922	49.3	37,473	124.7	26,566	39.3	73,961	367.3
Hispanic—Any Race	21,485	46.3	58,457	86.0	73,825	58.4	153,767	331.0
Minority Subtotal	82,448	35.4	138,238	43.8	129,060	28.4	349,746	150.0
Total	45,445	2.6	122,544	6.8	87,062	4.5	255,051	14.5

Note: Population counts by race may exclude population adjustments made subsequent to the conduct of the decennial Censuses that were not allocated to the race categories.

[a] *In the 2000 and 2010 censuses, respondents were given the opportunity to specify more than one race when responding to questions on racial identity. On this table, all Non-Hispanic people reporting more than one race in 2000 and/or 2010 are included in the "Non-Hispanic Other Race" category.*

[b] *The minority population includes people reported in the Census as being of Hispanic origin and/or reporting their race as Black or African American, American Indian and Alaska Native, Asian, Native Hawaiian and Pacific Islander, some other race, or more than one race.*

Source: U.S. Bureau of the Census and SEWRPC

Islander, some other race, or more than one race. The minority population of the Region increased from 453,800 people in 2000 to 582,900 in 2010, which is an increase of about 28 percent. The minority share of the total regional population increased from about 24 percent to about 29 percent over the same time period. The non-Hispanic White population of the Region decreased from 1,479,100 people in 2000 to 1,437,100 in 2010, which is a decrease of about 3 percent. The non-Hispanic White share of the total regional population decreased from about 77 percent to about 71 percent over the same time period.

Table 2.6 shows that the minority share of the total population has increased throughout the Region between 1980 and 2010; however, minority populations remain concentrated in the Region's largest cities. Concentrations of racial and ethnic groups in the Region are shown on Maps 2.1 through 2.8.

The minority share of the total population increased throughout the Region between 1980 and 2010; however, minority populations remain concentrated in the Region's largest cities.

Households

In addition to population, the number of households (or occupied housing units) is important in land use and transportation planning. Households directly influence the demand for urban land as well as the demand for transportation and other public facilities and services. A household includes all people who occupy a housing unit, which is defined by the Census Bureau as a house, apartment, mobile home, group of rooms, or single-room that is occupied, or intended for occupancy, as separate living quarters. A summary of household trends is presented in this section. Detailed findings are presented in SEWRPC Technical Report No. 11 (5th Edition). Detailed data and findings regarding the Region's housing stock and housing costs are set forth in SEWRPC Planning Report No. 54, *A Regional Housing Plan for Southeastern Wisconsin: 2035*, dated March 2013.

Historic Trends and Distribution Among Counties

There were about 800,100 households in the Region in 2010. This is an increase of about 51,000 households, or 6.8 percent, over the 2000 level of 749,000 households. This follows increases of 72,900 households during the 1990s, 48,200 households during the 1980s, 91,500 households during the 1970s, 70,600 households during the 1960s, and 111,400 households during the 1950s.

All counties in the Region experienced increases in the number of households during the 2000s, led by Waukesha County. Waukesha County gained 17,400 households over the decade, which was a 13 percent increase. Table 2.7 shows changes in distribution of households in the Region over the last 60 years. These changes are similar to the distributional changes in population. Table 2.8 presents current and historic household data for the four largest cities in the Region as of 2010 and the remainder of their respective counties. The trends are similar to the population trends for these areas presented in the previous section.

Household Size

The rate of growth in number of households in the Region during the 2000s exceeded the rate of population growth (6.8 percent to 4.6 percent). Similar patterns were observed over each of the previous five decades. The number of households in the Region increased by 126 percent over the last 60 years, while the population increased by 63 percent. These differential growth rates in households and population have been accompanied by declining average household size.

Table 2.6
Population by Race and Hispanic Origin in the Region by Area: 1980-2010

	Race/Ethnicity[a]	1980 Population		1990 Population		2000 Population		2010 Population	
		Number	Percent of Total	Number	Percent of Total	Number	Percent of Total	Number	Percent of Total
City of Kenosha	Non-Hispanic White Population	71,083	91.5	69,798	86.8	71,686	79.3	68,967	69.5
	Minority Population:[b]								
	Non-Hispanic Black/African American	2,777	3.6	5,037	6.3	6,810	7.5	9,540	9.6
	Non-Hispanic Other Race	715	0.9	785	1.0	2,853	3.2	4,581	4.6
	Hispanic—Any Race	3,110	4.0	4,732	5.9	9,003	10.0	16,130	16.3
	Minority Subtotal	6,602	8.5	10,554	13.2	18,666	20.7	30,251	30.5
	Total	77,685	100.0	80,352	100.0	90,352	100.0	99,218	100.0
Remainder of Kenosha County	Non-Hispanic White Population	44,608	98.1	46,425	97.1	55,601	93.9	60,925	90.6
	Minority Population:[b]								
	Non-Hispanic Black/African American	73	0.2	153	0.3	636	1.1	1,115	1.7
	Non-Hispanic Other Race	303	0.7	403	0.8	1,234	2.1	1,706	2.5
	Hispanic—Any Race	468	1.0	848	1.8	1,754	2.9	3,462	5.2
	Minority Subtotal	844	1.9	1,404	2.9	3,624	6.1	6,283	9.4
	Total	45,452	100.0	47,829	100.0	59,225	100.0	67,208	100.0
Kenosha County	Non-Hispanic White Population	115,691	94.0	116,223	90.7	127,287	85.1	129,892	78.0
	Minority Population:[b]								
	Non-Hispanic Black/African American	2,850	2.3	5,190	4.0	7,446	5.0	10,655	6.4
	Non-Hispanic Other Race	1,018	0.8	1,188	0.9	4,087	2.7	6,287	3.8
	Hispanic—Any Race	3,578	2.9	5,580	4.4	10,757	7.2	19,592	11.8
	Minority Subtotal	7,446	6.0	11,958	9.3	22,290	14.9	36,534	22.0
	Total	123,137	100.0	128,181	100.0	149,577	100.0	166,426	100.0
City of Milwaukee	Non-Hispanic White Population	453,576	71.3	381,714	60.8	270,989	45.4	220,219	37.0
	Minority Population:[b]								
	Non-Hispanic Black/African American	145,832	22.9	189,408	30.1	220,432	36.9	233,325	39.2
	Non-Hispanic Other Race	10,693	1.7	17,557	2.8	33,907	5.7	38,282	6.5
	Hispanic—Any Race	26,111	4.1	39,409	6.3	71,646	12.0	103,007	17.3
	Minority Subtotal	182,636	28.7	246,374	39.2	325,985	54.6	374,614	63.0
	Total	636,212	100.0	628,088	100.0	596,974	100.0	594,833	100.0
Remainder of Milwaukee County	Non-Hispanic White Population	319,703	97.2	317,150	95.7	312,492	91.1	294,739	83.5
	Minority Population:[b]								
	Non-Hispanic Black/African American	2,475	0.8	4,175	1.3	8,039	2.3	15,469	4.4
	Non-Hispanic Other Race	3,366	1.0	4,600	1.4	11,899	3.5	19,662	5.6
	Hispanic—Any Race	3,232	1.0	5,262	1.6	10,760	3.1	23,032	6.5
	Minority Subtotal	9,073	2.8	14,037	4.3	30,698	8.9	58,163	16.5
	Total	328,776	100.0	331,187	100.0	343,190	100.0	352,902	100.0
Milwaukee County	Non-Hispanic White Population	773,279	80.1	698,864	72.8	583,481	62.0	514,958	54.3
	Minority Population:[b]								
	Non-Hispanic Black/African American	148,307	15.4	193,583	20.2	228,471	24.3	248,794	26.3
	Non-Hispanic Other Race	14,059	1.5	22,157	2.3	45,806	4.9	57,944	6.1
	Hispanic—Any Race	29,343	3.0	44,671	4.7	82,406	8.8	126,039	13.3
	Minority Subtotal	191,709	19.9	260,411	27.2	356,683	38.0	432,777	45.7
	Total	964,988	100.0	959,275	100.0	940,164	100.0	947,735	100.0

Table continued on next page.

Table 2.6 (Continued)

	Race/Ethnicity[a]	1980 Population Number	1980 Population Percent of Total	1990 Population Number	1990 Population Percent of Total	2000 Population Number	2000 Population Percent of Total	2010 Population Number	2010 Population Percent of Total
Ozaukee County	Non-Hispanic White Population	65,627	98.0	71,274	97.8	78,894	95.9	80,689	93.4
	Minority Population:[b]								
	Non-Hispanic Black/African American	438	0.6	485	0.7	759	0.9	1,144	1.3
	Non-Hispanic Other Race	386	0.6	555	0.8	1,591	1.9	2,606	3.0
	Hispanic—Any Race	530	0.8	517	0.7	1,073	1.3	1,956	2.3
	Minority Subtotal	1,354	2.0	1,557	2.2	3,423	4.1	5,706	6.6
	Total	66,981	100.0	72,831	100.0	82,317	100.0	86,395	100.0
City of Racine	Non-Hispanic White Population	67,056	78.2	61,408	72.9	51,962	63.5	42,189	53.5
	Minority Population:[b]								
	Non-Hispanic Black/African American	12,480	14.6	15,270	18.1	16,349	20.0	17,341	22.0
	Non-Hispanic Other Race	688	0.8	767	0.9	2,122	2.6	3,021	3.8
	Hispanic—Any Race	5,501	6.4	6,853	8.1	11,422	13.9	16,309	20.7
	Minority Subtotal	18,669	21.8	22,890	27.1	29,893	36.5	36,671	46.5
	Total	85,725	100.0	84,298	100.0	81,855	100.0	78,860	100.0
Remainder of Racine County	Non-Hispanic White Population	83,880	96.0	86,337	95.1	98,276	91.9	103,225	88.6
	Minority Population:[b]								
	Non-Hispanic Black/African American	1,251	1.4	1,423	1.6	3,092	2.9	3,871	3.3
	Non-Hispanic Other Race	576	0.7	795	0.9	2,040	1.9	3,215	2.8
	Hispanic—Any Race	1,700	1.9	2,181	2.4	3,568	3.3	6,237	5.3
	Minority Subtotal	3,527	4.0	4,399	4.9	8,700	8.1	13,323	11.4
	Total	87,407	100.0	90,736	100.0	106,976	100.0	116,548	100.0
Racine County	Non-Hispanic White Population	150,936	87.2	147,745	84.4	150,238	79.6	145,414	74.4
	Minority Population:[b]								
	Non-Hispanic Black/African American	13,731	7.9	16,693	9.5	19,441	10.3	21,212	10.9
	Non-Hispanic Other Race	1,264	0.7	1,562	0.9	4,162	2.2	6,236	3.2
	Hispanic—Any Race	7,201	4.2	9,034	5.2	14,990	7.9	22,546	11.5
	Minority Subtotal	22,196	12.8	27,289	15.6	38,593	20.4	49,994	25.6
	Total	173,132	100.0	175,034	100.0	188,831	100.0	195,408	100.0
Walworth County	Non-Hispanic White Population	69,090	96.6	71,834	95.8	85,428	91.1	88,690	86.8
	Minority Population:[b]								
	Non-Hispanic Black/African American	416	0.6	443	0.6	747	0.8	904	0.9
	Non-Hispanic Other Race	671	0.9	706	0.9	1,448	1.5	2,056	2.0
	Hispanic—Any Race	1,330	1.9	2,017	2.7	6,136	6.6	10,578	10.3
	Minority Subtotal	2,417	3.4	3,166	4.2	8,331	8.9	13,538	13.2
	Total	71,507	100.0	75,000	100.0	93,759	100.0	102,228	100.0
Washington County	Non-Hispanic White Population	83,929	98.9	94,002	98.6	113,870	96.9	124,348	94.3
	Minority Population:[b]								
	Non-Hispanic Black/African American	65	0.1	121	0.1	447	0.4	1,115	0.8
	Non-Hispanic Other Race	382	0.4	535	0.6	1,647	1.4	3,039	2.3
	Hispanic—Any Race	472	0.6	670	0.7	1,529	1.3	3,385	2.6
	Minority Subtotal	919	1.1	1,326	1.4	3,623	3.1	7,539	5.7
	Total	84,848	100.0	95,328	100.0	117,493	100.0	131,887	100.0

Table continued on next page.

Table 2.6 (Continued)

	Race/Ethnicity[a]	1980 Population Number	1980 Population Percent of Total	1990 Population Number	1990 Population Percent of Total	2000 Population Number	2000 Population Percent of Total	2010 Population Number	2010 Population Percent of Total
City of Waukesha	Non-Hispanic White Population	46,977	93.4	52,417	92.0	56,191	86.7	56,868	80.4
	Minority Population:[b]								
	Non-Hispanic Black/African American	189	0.4	301	0.5	797	1.2	1,570	2.2
	Non-Hispanic Other Race	570	1.1	874	1.6	2,274	3.5	3,751	5.3
	Hispanic—Any Race	2,583	5.1	3,366	5.9	5,563	8.6	8,529	12.1
	Minority Subtotal	3,342	6.6	4,541	8.0	8,634	13.3	13,850	19.6
	Total	50,319	100.0	56,958	100.0	64,825	100.0	70,718	100.0
Remainder of Waukesha County	Non-Hispanic White Population	226,271	98.4	242,438	97.9	283,714	95.9	296,246	92.8
	Minority Population:[b]								
	Non-Hispanic Black/African American	536	0.2	757	0.3	1,773	0.6	3,156	1.0
	Non-Hispanic Other Race	1,785	0.8	2,480	1.0	6,515	2.2	12,177	3.8
	Hispanic—Any Race	1,415	0.6	2,082	0.8	3,940	1.3	7,594	2.4
	Minority Subtotal	3,736	1.6	5,319	2.1	12,228	4.1	22,927	7.2
	Total	230,007	100.0	247,757	100.0	295,942	100.0	319,173	100.0
Waukesha County	Non-Hispanic White Population	273,248	97.5	294,855	96.8	339,905	94.2	353,114	90.6
	Minority Population:[b]								
	Non-Hispanic Black/African American	725	0.3	1,058	0.3	2,570	0.7	4,726	1.2
	Non-Hispanic Other Race	2,355	0.8	3,354	1.1	8,739	2.5	15,928	4.1
	Hispanic—Any Race	3,998	1.4	5,448	1.8	9,503	2.6	16,123	4.1
	Minority Subtotal	7,078	2.5	9,860	3.2	20,862	5.8	36,777	9.4
	Total	280,326	100.0	304,715	100.0	360,767	100.0	389,891	100.0

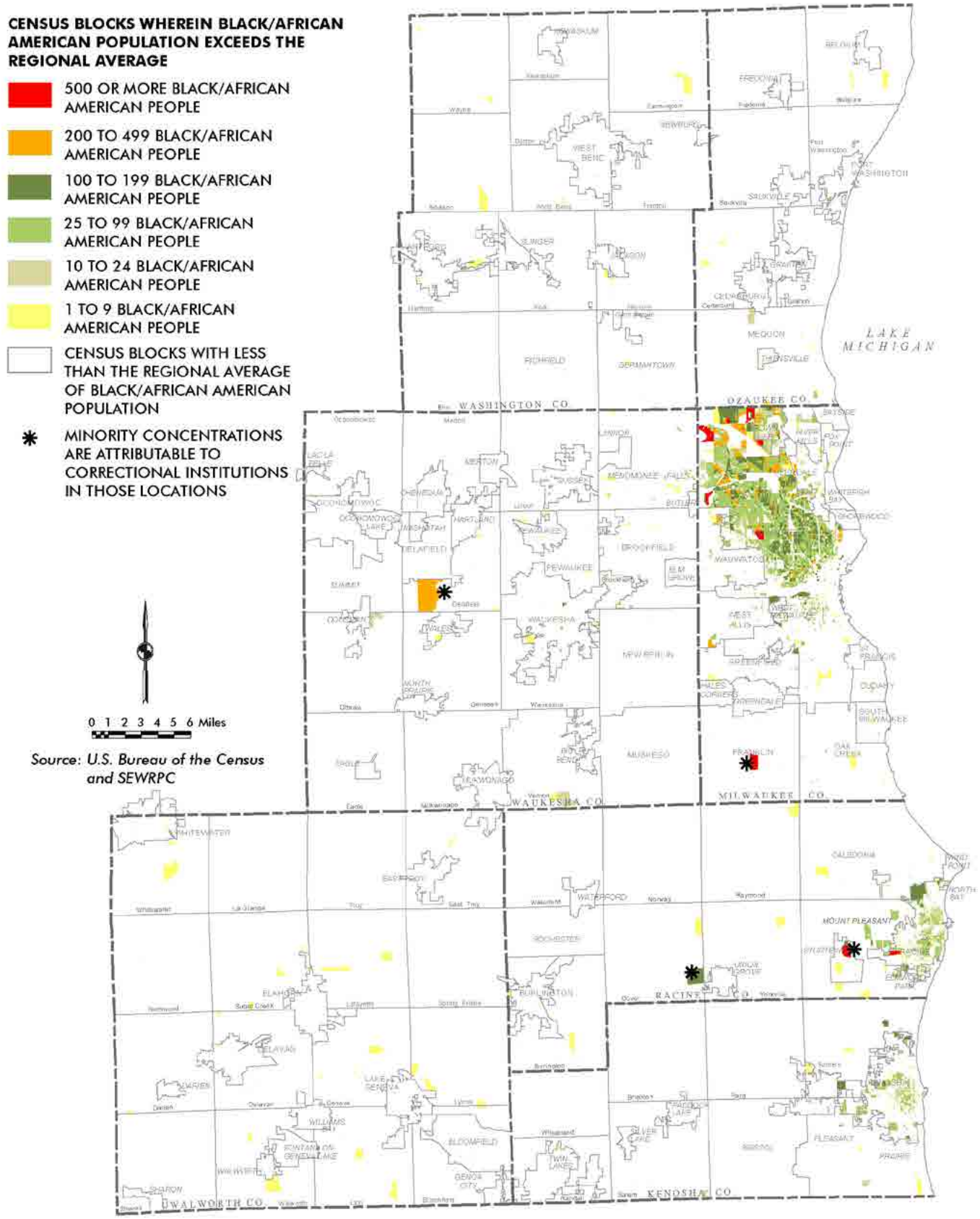
Note: Population counts by race may exclude population adjustments made subsequent to the conduct of the decennial Censuses that were not allocated to the race categories.

[a] *In the 2000 and 2010 Censuses, respondents were given the opportunity to specify more than one race when responding to questions about racial identity. On this table, all Non-Hispanic people reporting more than one race in 2000 and/or 2010 are included in the "Non-Hispanic Other Race" category.*

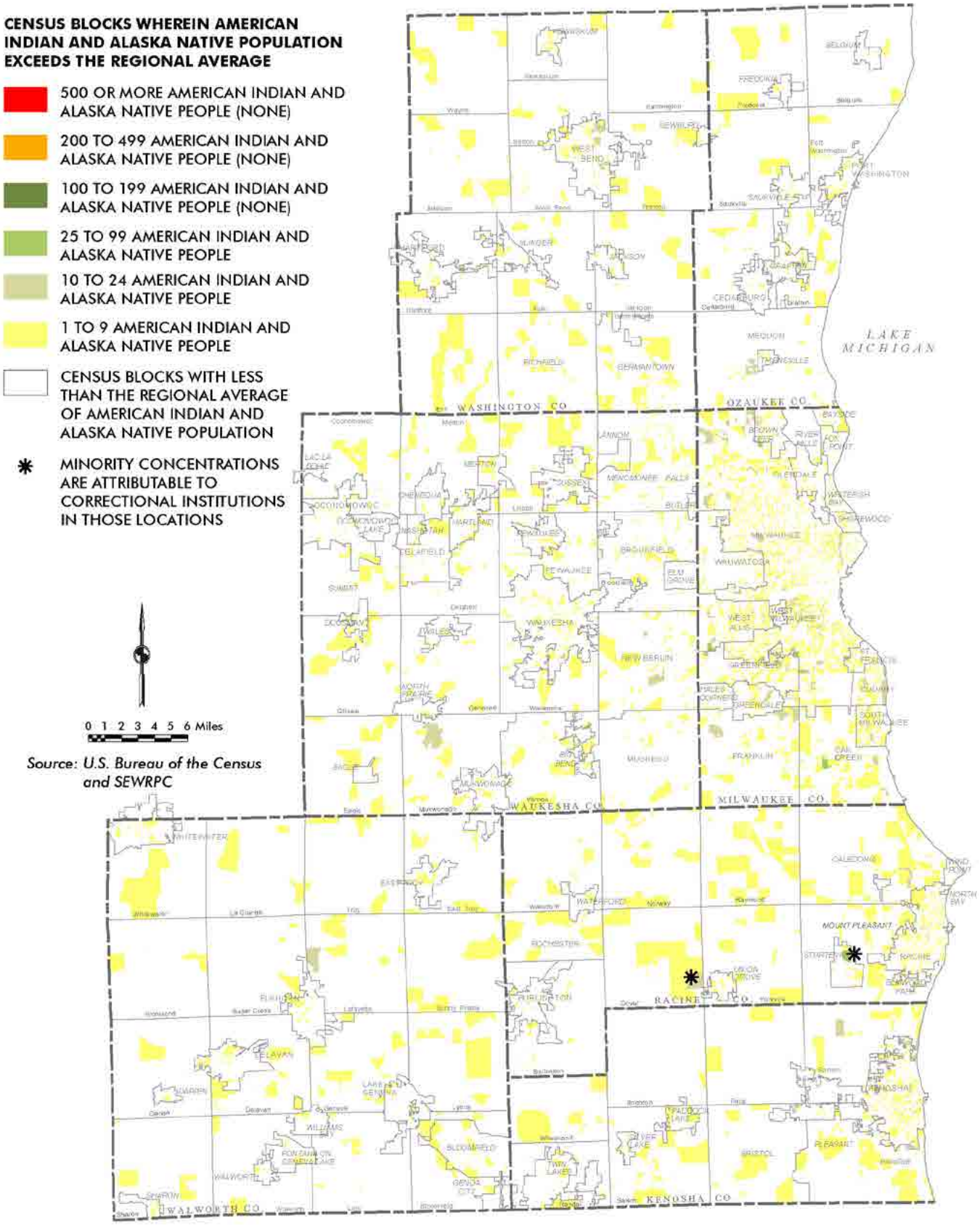
[b] *The minority population includes people reported in the Census as being of Hispanic origin and/or reporting their race as Black or African American, American Indian and Alaska Native, Asian, Native Hawaiian and Pacific Islander, some other race, or more than one race.*

Source: U.S. Bureau of the Census and SEWRPC

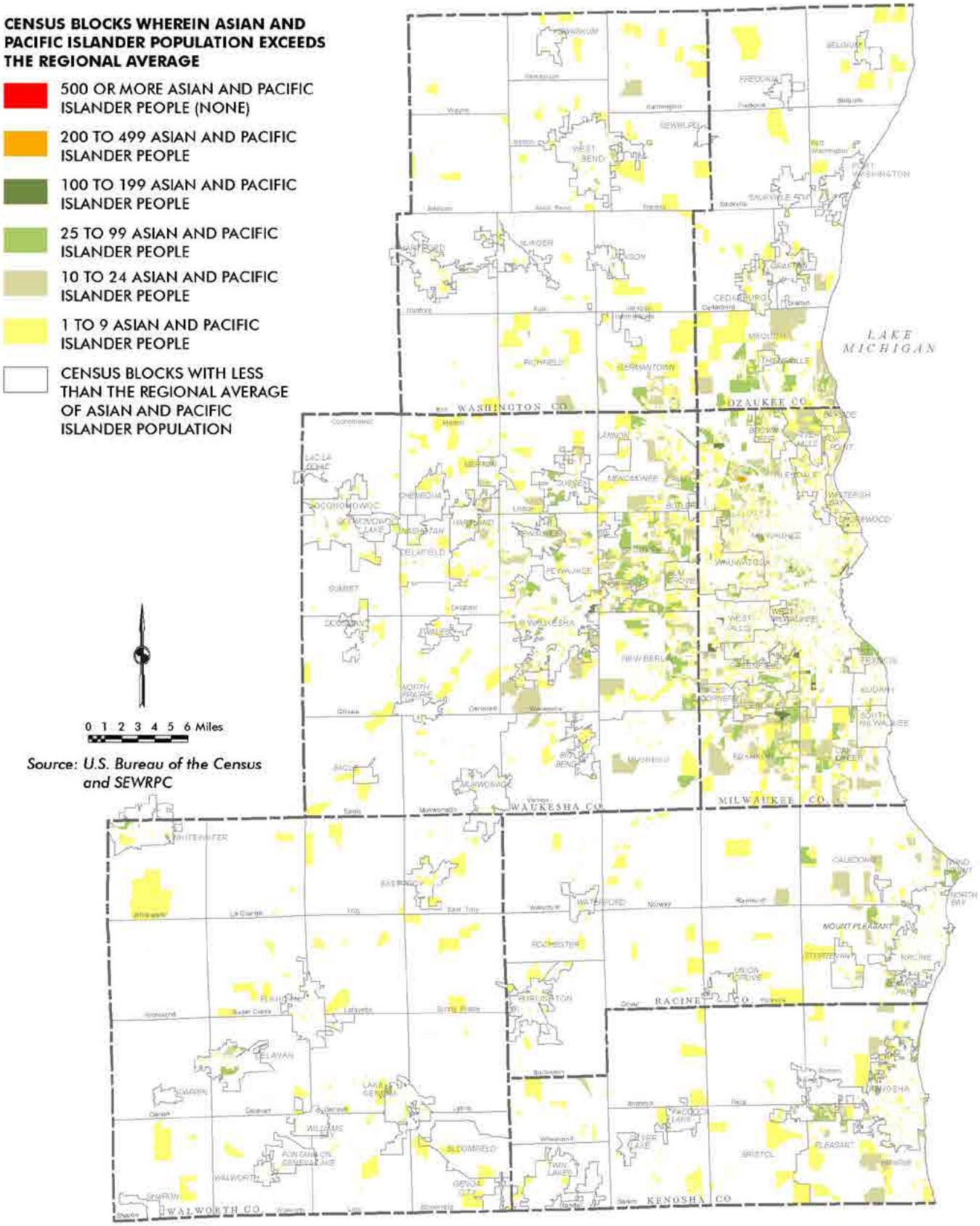
Map 2.1
Concentrations of Black/African American People in the Region: 2010



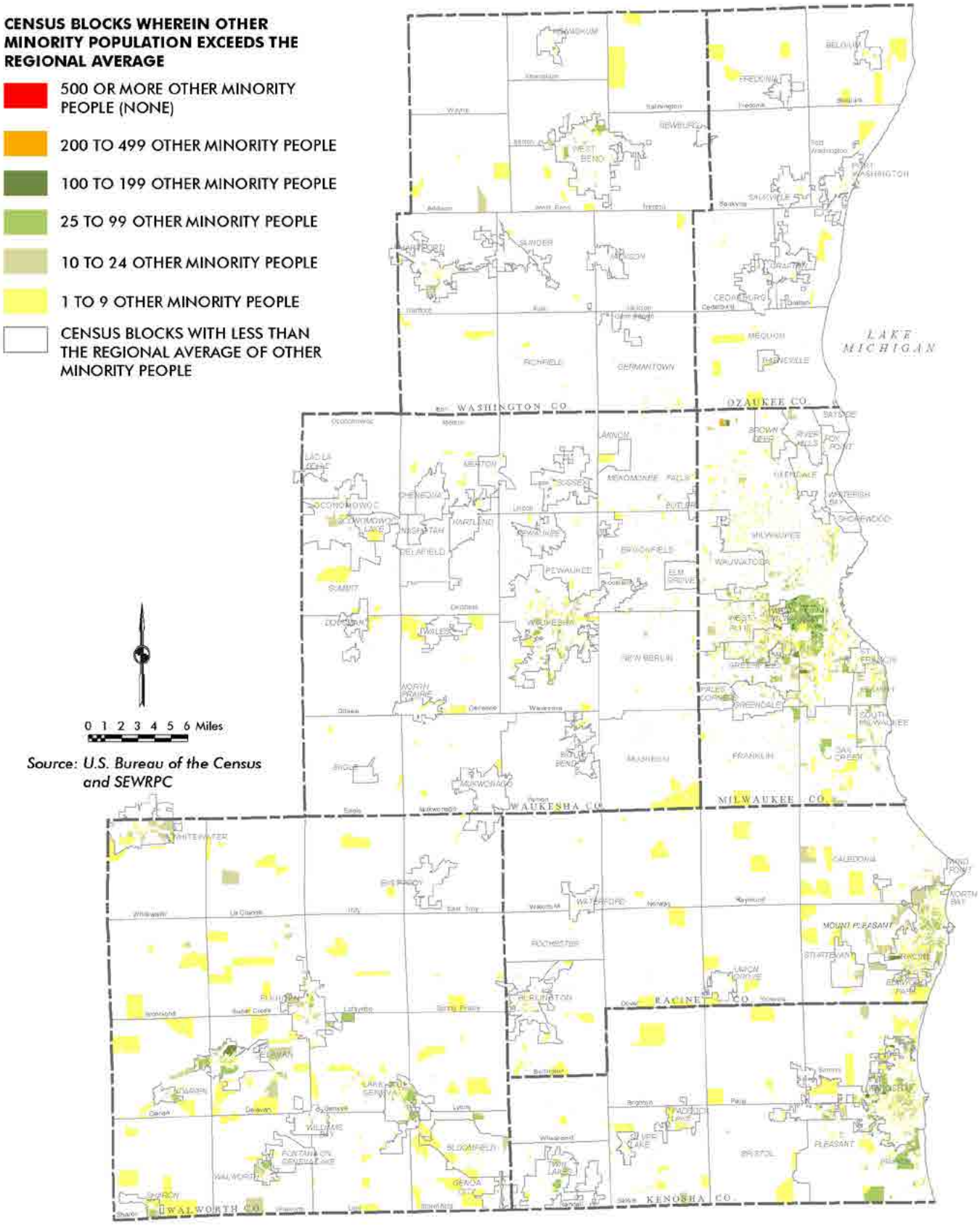
Map 2.2
Concentrations of American Indian and Alaska Native People in the Region: 2010



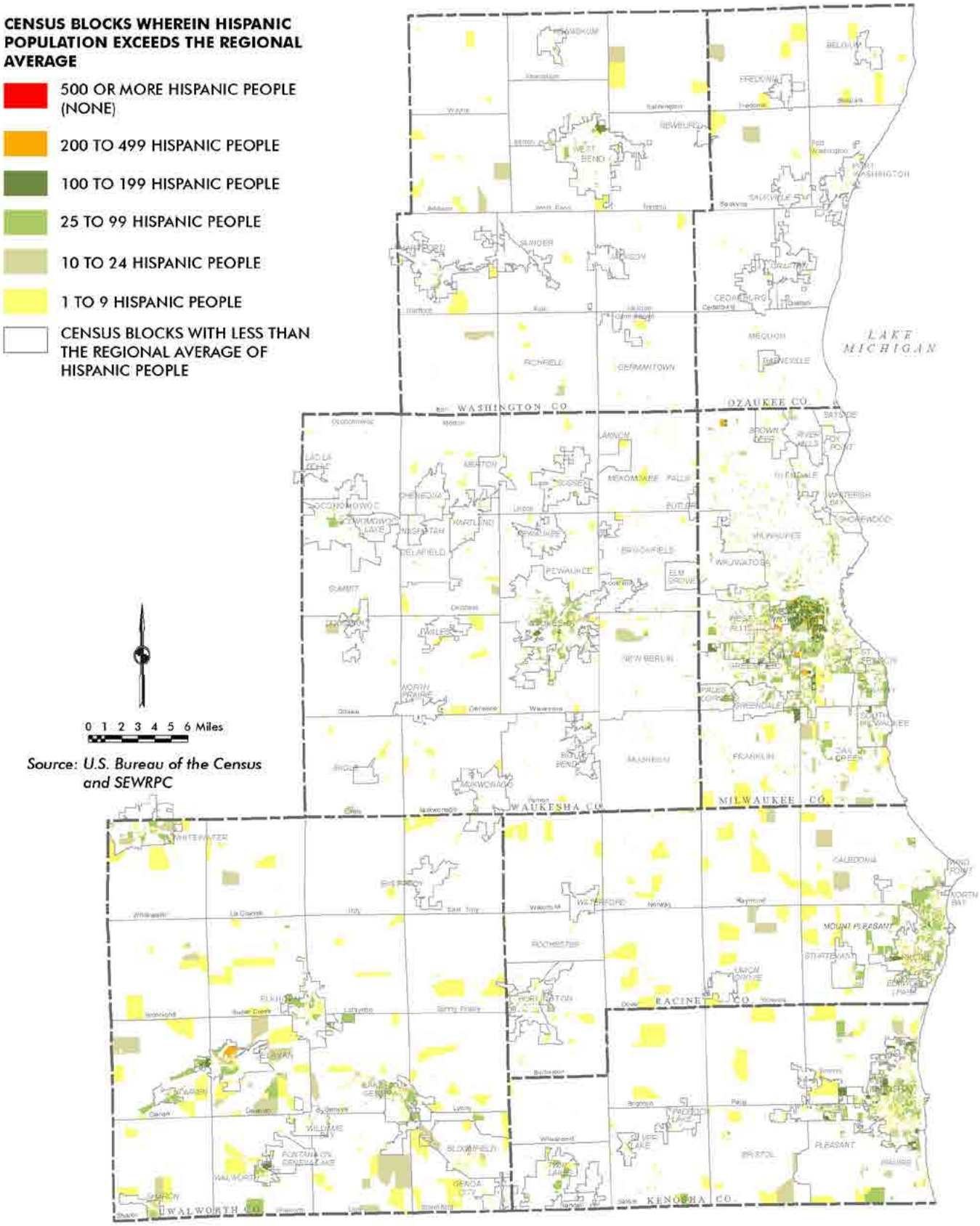
Map 2.3
Concentrations of Asian and Pacific Islander People in the Region: 2010



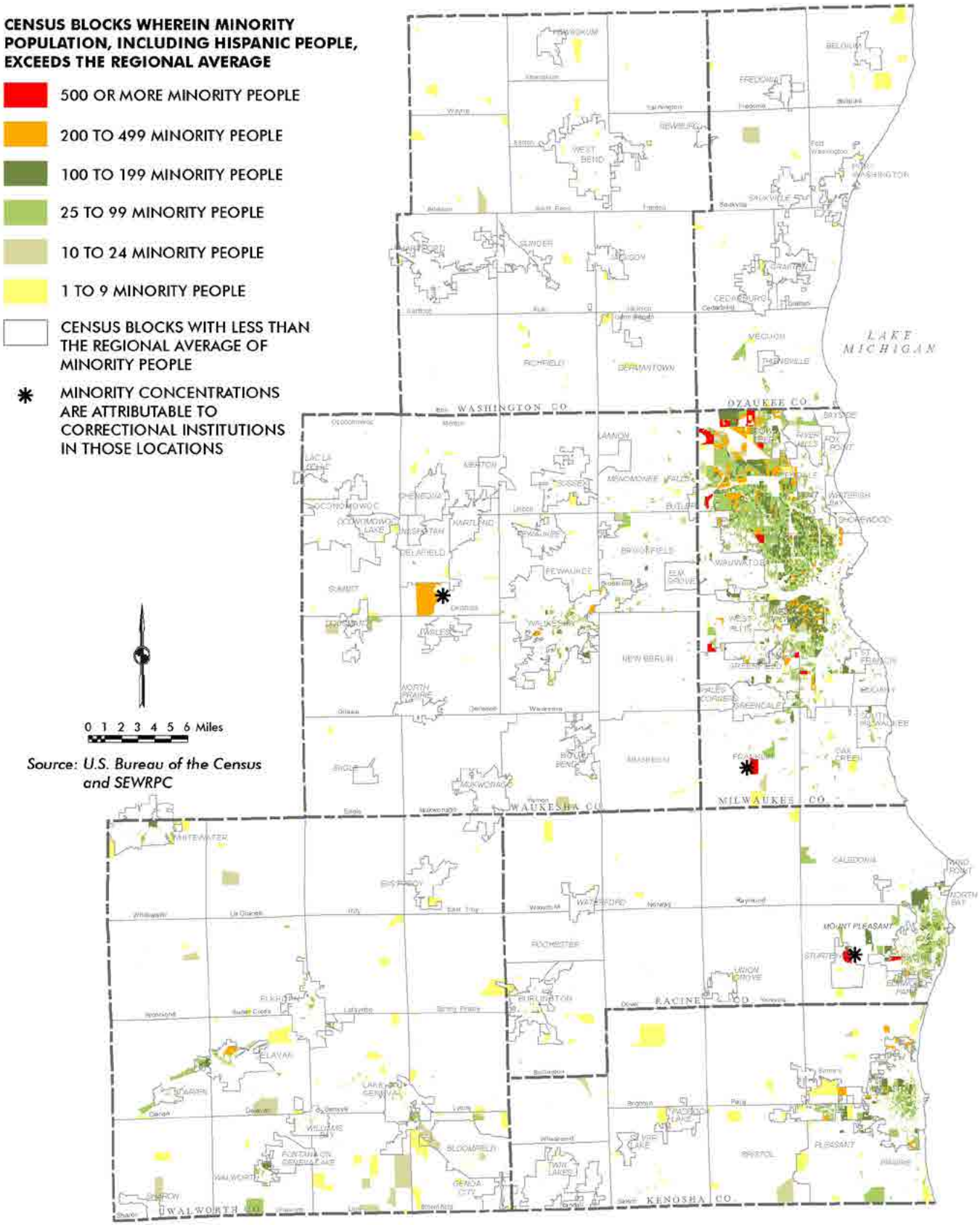
Map 2.4
Concentrations of Other Minority People in the Region: 2010



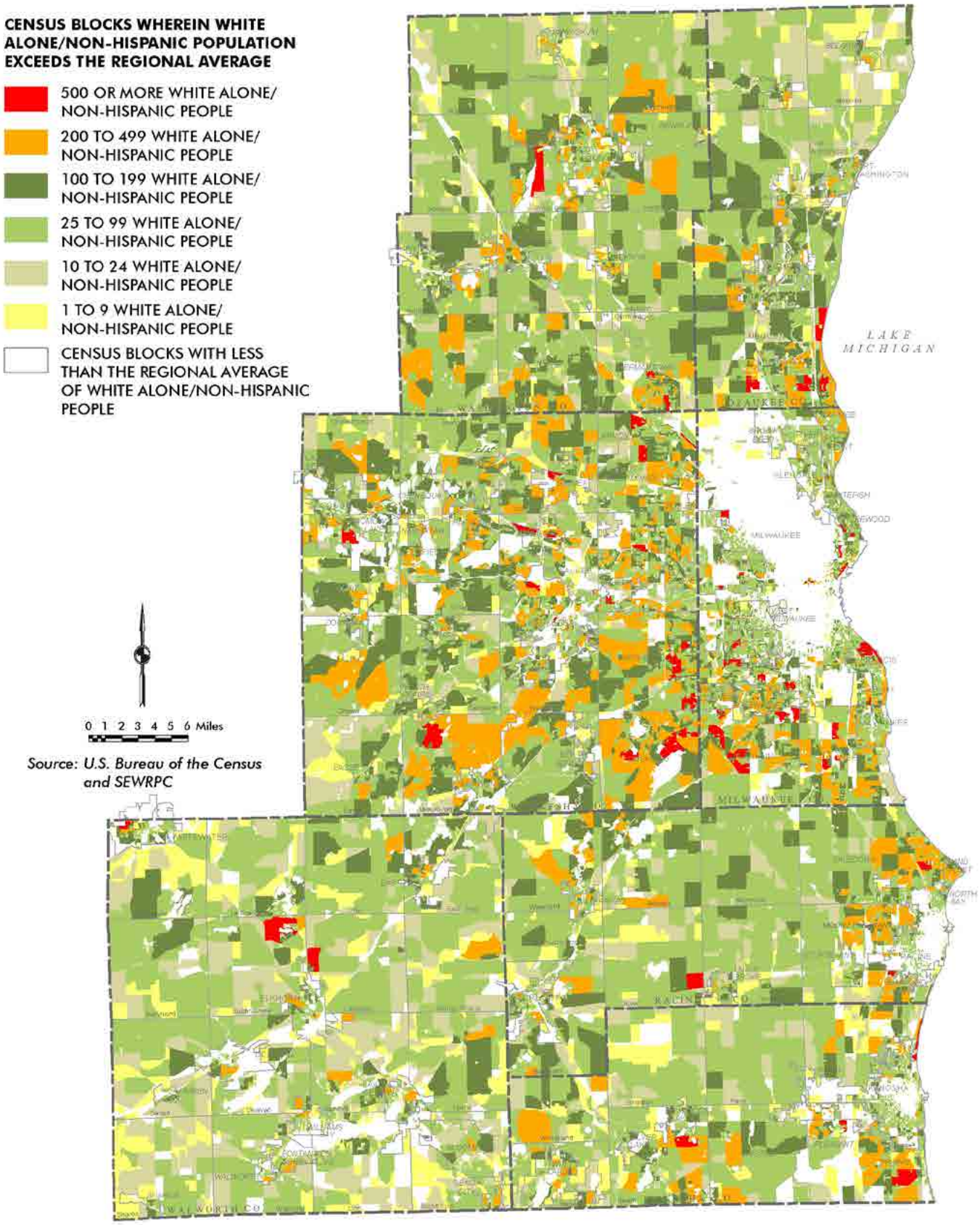
Map 2.5
Concentrations of Hispanic People in the Region: 2010



Map 2.6
Concentrations of Total Minority Population in the Region: 2010



Map 2.7
Concentrations of White Alone/Non-Hispanic People in the Region: 2010



Map 2.8
Population by Race and Ethnicity in the Region: 2010

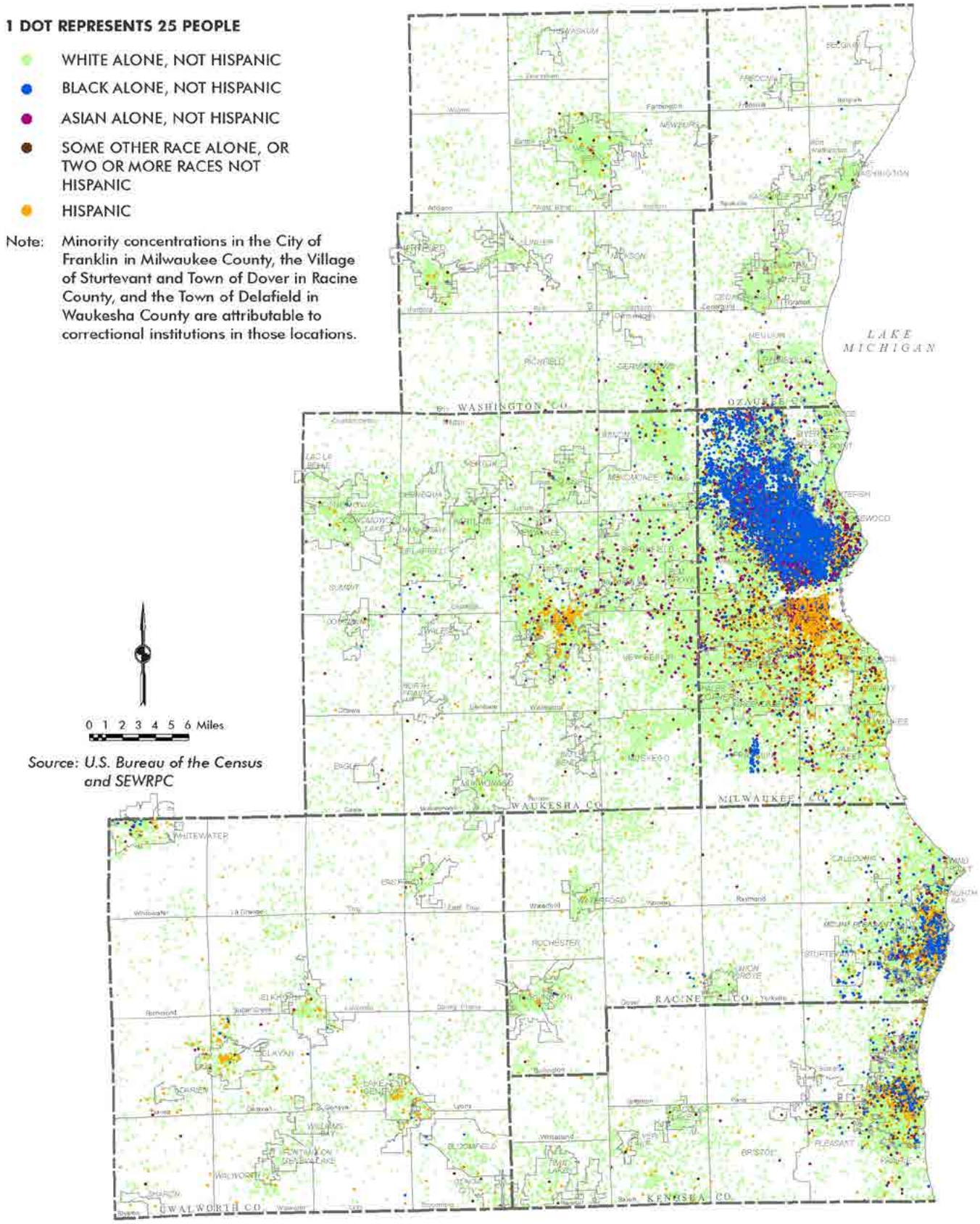


Table 2.7
Households in the Region by County: 1950-2010

Year	Kenosha County Households				Milwaukee County Households			
	Number	Change from Preceding Census		Percent of Region Total	Number	Change from Preceding Census		Percent of Region Total
		Absolute	Percent			Absolute	Percent	
1950	21,958	--	--	6.2	249,232	--	--	70.3
1960	29,545	7,587	34.6	6.3	314,875	65,643	26.3	67.6
1970	35,468	5,923	20.0	6.6	338,605	23,730	7.5	63.1
1980	43,064	7,596	21.4	6.9	363,653	25,048	7.4	57.9
1990	47,029	3,965	9.2	6.9	373,048	9,395	2.6	55.2
2000	56,057	9,028	19.2	7.5	377,729	4,681	1.3	50.4
2010	62,650	6,593	11.8	7.8	383,591	5,862	1.6	47.9

Year	Ozaukee County Households				Racine County Households			
	Number	Change from Preceding Census		Percent of Region Total	Number	Change from Preceding Census		Percent of Region Total
		Absolute	Percent			Absolute	Percent	
1950	6,591	--	--	1.9	31,399	--	--	8.8
1960	10,417	3,826	58.0	2.3	40,736	9,337	29.7	8.7
1970	14,753	4,336	41.6	2.7	49,796	9,060	22.2	9.3
1980	21,763	7,010	47.5	3.5	59,418	9,622	19.3	9.5
1990	25,707	3,944	18.1	3.8	63,736	4,318	7.3	9.4
2000	30,857	5,150	20.0	4.0	70,819	7,083	11.1	9.5
2010	34,228	3,371	10.9	4.3	75,651	4,832	6.8	9.5

Year	Walworth County Households				Washington County Households			
	Number	Change from Preceding Census		Percent of Region Total	Number	Change from Preceding Census		Percent of Region Total
		Absolute	Percent			Absolute	Percent	
1950	12,369	--	--	3.5	9,396	--	--	2.6
1960	15,414	3,045	24.6	3.3	12,532	3,136	33.4	2.7
1970	18,544	3,130	20.3	3.5	17,385	4,853	38.7	3.3
1980	24,789	6,245	33.7	3.8	26,716	9,331	53.7	4.3
1990	27,620	2,831	11.4	4.1	32,977	6,261	23.4	4.9
2000	34,505	6,885	24.9	4.6	43,843	10,866	33.0	5.9
2010	39,699	5,194	15.1	5.0	51,605	7,762	17.7	6.4

Year	Waukesha County Households				Region Households			
	Number	Change from Preceding Census		Percent of Region Total	Number	Change from Preceding Census		Percent of Region Total
		Absolute	Percent			Absolute	Percent	
1950	23,599	--	--	6.7	354,544	--	--	100.0
1960	42,394	18,795	79.6	9.1	465,913	111,369	31.4	100.0
1970	61,935	19,541	46.1	11.5	536,486	70,573	15.1	100.0
1980	88,552	26,617	43.0	14.1	627,955	91,469	17.0	100.0
1990	105,990	17,438	19.7	15.7	676,107	48,152	7.7	100.0
2000	135,229	29,239	27.6	18.1	749,039	72,932	10.8	100.0
2010	152,663	17,434	12.9	19.1	800,087	51,048	6.8	100.0

Source: U.S. Bureau of the Census and SEWRPC

Table 2.8
Households in the Region by Area: 1950-2010

Year	Households in the City of Milwaukee				Households in the Remainder of Milwaukee County			
	Number	Change from Preceding Census		Percent of Region Total	Number	Change from Preceding Census		Percent of Region Total
		Absolute	Percent			Absolute	Percent	
1950	185,734	--	--	52.4	63,498	--	--	17.9
1960	230,987	45,253	24.4	49.6	83,888	20,390	32.1	18.0
1970	236,981	5,994	2.6	44.2	101,624	17,736	21.1	18.9
1980	241,818	4,837	2.0	38.5	121,835	20,211	19.9	19.4
1990	240,540	-1,278	-0.5	35.6	132,508	10,673	8.8	19.6
2000	232,188	-8,352	-3.5	31.0	145,541	13,033	9.8	19.4
2010	230,221	-1,967	-0.8	28.8	153,370	7,829	5.4	19.2

Year	Households in the City of Kenosha				Households in the Remainder of Kenosha County			
	Number	Change from Preceding Census		Percent of Region Total	Number	Change from Preceding Census		Percent of Region Total
		Absolute	Percent			Absolute	Percent	
1950	16,102	--	--	4.5	5,856	--	--	1.7
1960	20,593	4,491	27.9	4.4	8,952	3,096	52.9	1.9
1970	24,245	3,652	17.7	4.5	11,223	2,271	25.4	2.1
1980	27,964	3,719	15.3	4.5	15,100	3,877	34.5	2.4
1990	29,919	1,955	7.0	4.4	17,110	2,010	13.3	2.5
2000	34,411	4,492	15.0	4.6	21,646	4,536	26.5	2.9
2010	37,376	2,965	8.6	4.7	25,274	3,628	16.8	3.2

Year	Households in the City of Racine				Households in the Remainder of Racine County			
	Number	Change from Preceding Census		Percent of Region Total	Number	Change from Preceding Census		Percent of Region Total
		Absolute	Percent			Absolute	Percent	
1950	21,165	--	--	6.0	10,234	--	--	2.9
1960	27,064	5,899	27.9	5.8	13,672	3,438	33.6	2.9
1970	29,851	2,787	10.3	5.6	19,945	6,273	45.9	3.7
1980	31,744	1,893	6.3	5.1	27,674	7,729	38.8	4.4
1990	31,767	23	0.1	4.7	31,969	4,295	15.5	4.7
2000	31,449	-318	-1.0	4.2	39,370	7,401	23.2	5.3
2010	30,530	-919	-2.9	3.8	45,121	5,751	14.6	5.6

Year	Households in the City of Waukesha				Households in the Remainder of Waukesha County			
	Number	Change from Preceding Census		Percent of Region Total	Number	Change from Preceding Census		Percent of Region Total
		Absolute	Percent			Absolute	Percent	
1950	5,782	--	--	1.6	17,817	--	--	5.0
1960	8,572	2,790	48.3	1.8	33,822	16,005	89.8	7.3
1970	11,748	3,176	37.1	2.2	50,187	16,365	48.4	9.4
1980	17,644	5,896	50.2	2.8	70,908	20,721	41.3	11.3
1990	21,235	3,591	20.4	3.1	84,755	13,847	19.5	12.5
2000	25,663	4,428	20.9	3.4	109,566	24,811	29.3	14.6
2010	28,295	2,632	10.3	3.5	124,368	14,802	13.5	15.5

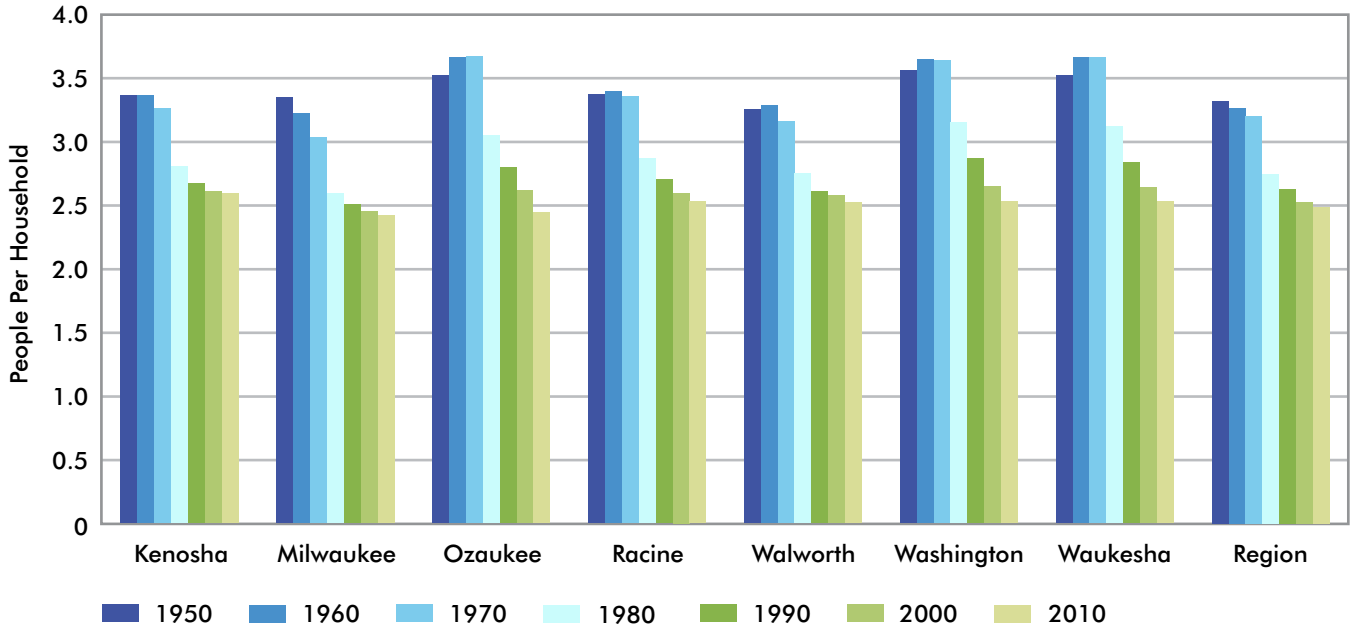
Source: U.S. Bureau of the Census and SEWRPC

Table 2.9
Average Household Size in the Region by County: 1950-2010

County	Average People per Household						
	1950	1960	1970	1980	1990	2000	2010
Kenosha	3.36	3.36	3.26	2.80	2.67	2.60	2.58
Milwaukee	3.34	3.21	3.04	2.59	2.50	2.43	2.41
Ozaukee	3.51	3.65	3.66	3.04	2.79	2.61	2.47
Racine	3.37	3.39	3.35	2.86	2.70	2.59	2.52
Walworth	3.25	3.28	3.16	2.74	2.60	2.57	2.51
Washington	3.55	3.64	3.63	3.14	2.86	2.65	2.53
Waukesha	3.51	3.66	3.66	3.11	2.83	2.63	2.52
Region	3.36	3.30	3.20	2.75	2.62	2.52	2.47

Source: U.S. Bureau of the Census and SEWRPC

Figure 2.5
Average Household Size in the Region by County: 1950-2010



Source: U.S. Bureau of the Census and SEWRPC

The average household size[5] for the Region decreased from 2.52 people in 2000 to 2.47 people in 2010. This decrease is a continuation of a long-term trend in declining average household size for the Region over the past 60 years. A particularly large decrease in average household size occurred between 1970 and 1980. Table 2.9 and Figure 2.5 show that each of the seven counties in the Region have experienced a similar long-term trend of declining household size. The decline in household size is related in part to changing household types. Single-person households and other nonfamily households have increased at a much faster rate than family households in the Region over the past four decades.

[5] *Average household size is calculated by dividing the household population by the number of households.*

Table 2.10
Employment in the Region, Wisconsin, and the United States: 1950-2010

Year	Region			Wisconsin			Region Employment as a Percent of Wisconsin
	Jobs	Change from Preceding Census		Jobs	Change from Preceding Census		
		Number	Percent		Number	Percent	
1950	573,500	--	--	1,413,400	--	--	40.6
1960	673,000	99,500	17.3	1,659,400	246,000	17.4	40.6
1970	784,900	111,900	16.6	1,929,100	269,700	16.3	40.7
1980	945,900	161,000	20.5	2,423,800	494,700	25.6	39.0
1990	1,054,000	108,100	11.4	2,789,200	365,400	15.1	37.8
2000	1,209,800	155,800	14.8	3,385,800	596,600	21.4	35.7
2010	1,176,600	-33,200	-2.7	3,422,300	36,500	1.1	34.4

Year	Region			United States			Region Employment as a Percent of the United States
	Jobs	Change from Preceding Census		Jobs	Change from Preceding Census		
		Number	Percent		Number	Percent	
1950	573,500	--	--	61,701,200	--	--	0.93
1960	673,000	99,500	17.3	72,057,000	10,355,800	16.8	0.93
1970	784,900	111,900	16.6	88,045,600	15,988,600	22.2	0.89
1980	945,900	161,000	20.5	111,482,200	23,436,600	26.6	0.85
1990	1,054,000	108,100	11.4	135,612,900	24,130,700	21.6	0.78
2000	1,209,800	155,800	14.8	163,303,800	27,690,900	20.4	0.74
2010	1,176,600	-33,200	-2.7	171,525,700	8,221,900	5.0	0.69

Note: Excludes military employment, which amounted to 6,100 jobs in the Region, 16,700 jobs in Wisconsin, and 2,101,000 jobs in the United States in 2010.

Source: U.S. Bureau of Economic Analysis and SEWRPC

Employment

Information regarding the number and type of employment opportunities, or jobs, in an area is an important measure of the size and structure of the area's economy. A summary of employment and personal income data is presented in this section. The data pertain to both wage and salary employment and the self-employed, and include full- and part-time jobs. Detailed findings are presented in SEWRPC Technical Report No. 10 (5th Edition), *The Economy of Southeastern Wisconsin,* dated April 2013. Technical Report No. 10 also includes current and historic data regarding the Region's labor force.

There were 1,176,600 jobs in the Region in 2010, which is 2.7% fewer jobs than in 2000.

Historic Trends and Distribution Among Counties

The number of jobs in the Region, as reported by the U.S. Bureau of Economic Analysis, fluctuated somewhat between 2000 and 2010. The number of jobs decreased during the early 2000s, increased during the mid-2000s, and decreased again after 2008. The number of jobs in the Region stood at 1,176,600 in 2010, about 33,200 jobs, or 2.7 percent, less than in 2000. The Region's share of Statewide jobs decreased from 36 percent in 2000 to 34 percent in 2010. The Region's share of national employment also decreased during the 2000s.

Wisconsin and the Nation gained jobs during the 2000s, but at a much slower rate than previous decades.

Table 2.10 shows that Wisconsin and the Nation gained jobs during the 2000s, but at a much slower rate than previous decades. The State gained 36,500 jobs in the 2000s (1.1 percent increase), compared to 596,600 during the 1990s (21.4 percent increase). The Nation gained 8,221,900 jobs in the 2000s (5.0 percent increase), compared to 27,690,900 during the 1990s (20.4 percent increase). Job gains in the Region were more modest than the State and Nation during the 1990s. The Region gained 155,800 jobs, which was a 14.8 percent increase.

Table 2.11
Employment in the Region by County: 1950-2010

Year	Kenosha County				Milwaukee County			
	Jobs	Change from Preceding Census		Percent of Region Total	Jobs	Change from Preceding Census		Percent of Region Total
		Number	Percent			Number	Percent	
1950	29,100	--	--	5.1	453,500	--	--	79.1
1960	42,200	13,100	45.0	6.3	503,300	49,800	11.0	74.8
1970	42,100	-100	-0.2	5.4	525,200	21,900	4.4	66.9
1980	54,000	11,900	28.3	5.7	581,700	56,500	10.8	61.5
1990	51,800	-2,200	-4.1	4.9	604,700	23,000	4.0	57.4
2000	67,900	16,100	31.1	5.6	618,300	13,600	2.2	51.1
2010	74,900	7,000	10.3	6.4	575,400	-42,900	-6.9	48.9

Year	Ozaukee County				Racine County			
	Jobs	Change from Preceding Census		Percent of Region Total	Jobs	Change from Preceding Census		Percent of Region Total
		Number	Percent			Number	Percent	
1950	6,600	--	--	1.1	44,500	--	--	7.7
1960	10,200	3,600	54.5	1.5	49,900	5,400	12.1	7.4
1970	21,300	11,100	108.8	2.7	64,600	14,700	29.5	8.2
1980	28,200	6,900	32.4	3.0	81,000	16,400	25.4	8.6
1990	35,100	6,900	24.5	3.3	88,900	7,900	9.8	8.4
2000	50,400	15,300	43.6	4.2	93,800	4,900	5.5	7.8
2010	52,500	2,100	4.2	4.5	88,300	-5,500	-5.9	7.5

Year	Walworth County				Washington County			
	Jobs	Change from Preceding Census		Percent of Region Total	Jobs	Change from Preceding Census		Percent of Region Total
		Number	Percent			Number	Percent	
1950	13,200	--	--	2.3	10,200	--	--	1.8
1960	19,600	6,400	48.5	2.9	15,200	5,000	49.0	2.3
1970	26,400	6,800	34.7	3.4	24,300	9,100	59.9	3.1
1980	33,400	7,000	26.5	3.5	35,100	10,800	44.4	3.7
1990	39,600	6,200	18.6	3.8	45,800	10,700	30.5	4.3
2000	51,200	11,600	29.3	4.2	60,300	14,500	31.7	5.0
2010	52,700	1,500	2.9	4.5	63,900	3,600	6.0	5.4

Year	Waukesha County				Region			
	Jobs	Change from Preceding Census		Percent of Region Total	Jobs	Change from Preceding Census		Percent of Region Total
		Number	Percent			Number	Percent	
1950	16,400	--	--	2.9	573,500	--	--	100.0
1960	32,600	16,200	98.8	4.8	673,000	99,500	17.3	100.0
1970	81,000	48,400	148.5	10.3	784,900	111,900	16.6	100.0
1980	132,500	51,500	63.6	14.0	945,900	161,000	20.5	100.0
1990	188,100	55,600	42.0	17.9	1,054,000	108,100	11.4	100.0
2000	267,900	79,800	42.4	22.1	1,209,800	155,800	14.8	100.0
2010	268,900	1,000	0.4	22.8	1,176,600	-33,200	-2.7	100.0

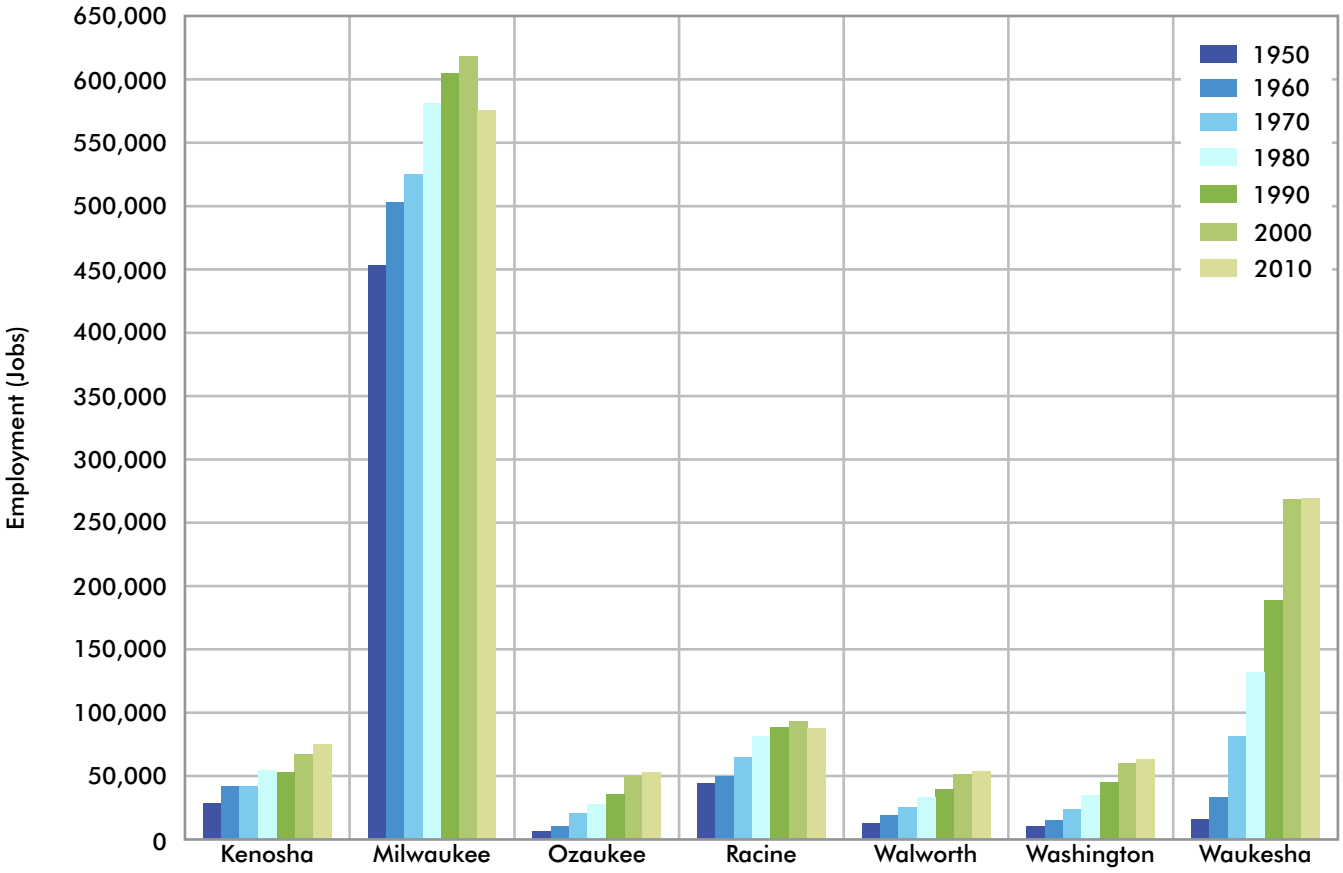
Source: U.S. Bureau of Economic Analysis and SEWRPC

Historically, both national and regional employment levels tend to fluctuate in the short-term, rising and falling in accordance with business cycles. The long period of uninterrupted job growth between 1983 and 2000 is unusual in this respect. Total employment increased each year nationally and in the Region, with the exception of a slight decrease in 1991.

Table 2.11 and Figure 2.6 show current and historic employment levels in the Region by county. Five of the seven counties in the Region gained jobs between 2000 and 2010. Kenosha County gained 7,000 jobs during the 2000s, which was the most of any county in the Region. There were also job increases in Washington County (3,600 jobs), Ozaukee County (2,100 jobs), Walworth County (1,500 jobs), and Waukesha County (1,000 jobs).

Kenosha, Ozaukee, Walworth, Washington, and Waukesha Counties gained jobs during the 2000s.

Figure 2.6
Employment in the Region by County: 1950-2010



Source: U.S. Bureau of Economic Analysis and SEWRPC

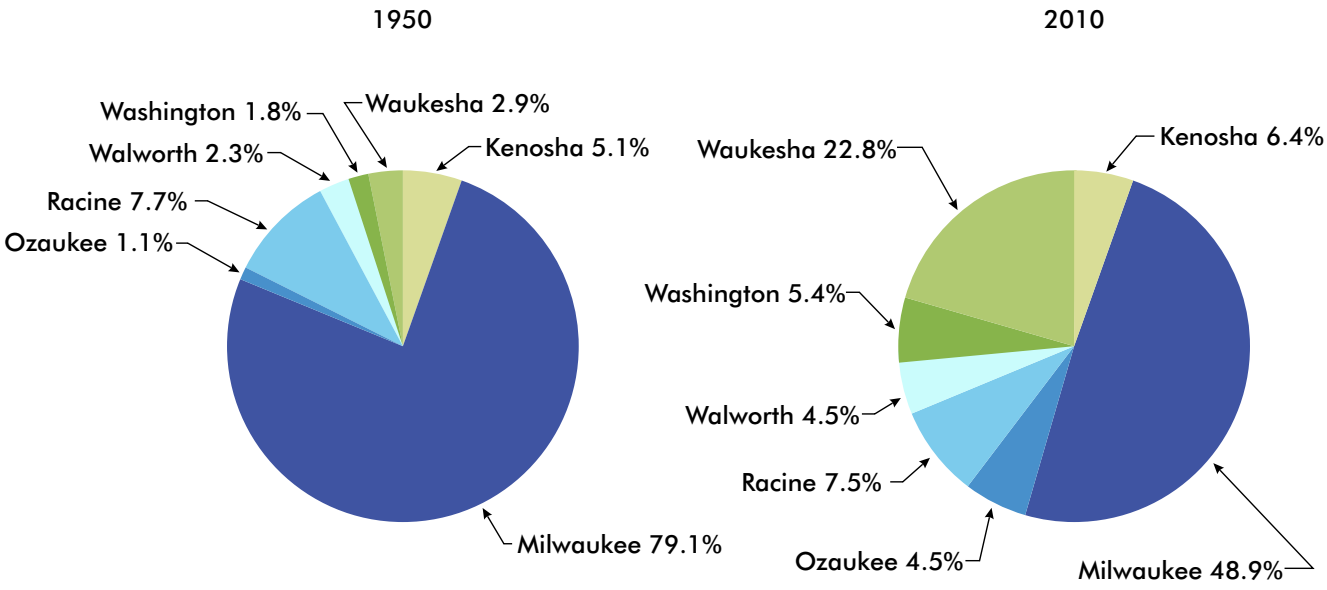
The number of jobs decreased in both Milwaukee and Racine Counties, with much of the decrease occurring during the recession in the late 2000s.

Milwaukee and Racine Counties both experienced a decrease in their share of total regional employment during the 2000s, while the share in each of the other five counties increased. Figure 2.7 shows that Milwaukee County has experienced a substantial decrease in its share of regional employment over the last six decades, and Waukesha County has experienced a substantial increase. Ozaukee, Walworth, and Washington Counties have experienced gradual increases. The regional share in Kenosha County has increased between 1950 and 2010 with some fluctuations. Racine County has also experienced fluctuations over this time period, with its share of total regional employment about the same in 2010 as it was in 1950.

Providing affordable housing for workers is important in areas of the Region experiencing job growth.

Providing affordable housing for workers is important in areas of the Region experiencing employment growth, and workforce housing was one of the primary concerns raised by business groups, employers, and communities when the Commission was developing the regional housing plan (adopted in March 2013). A job/housing analysis was conducted as part of the housing plan to help determine the balance between job wages and housing costs in the Region. The analysis was conducted at a necessarily general, regionwide scope, which was appropriate for use in developing housing recommendations at a regional level. The analysis compares the percentage of lower-cost

Figure 2.7
Share of Regional Employment by County: 1950 and 2010



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

housing (generally defined as multifamily and two-family housing) and moderate-cost housing (generally defined as smaller single-family homes on smaller lots) to the percentage of lower- and moderate-wage jobs in 39 subareas of the Region. Map 2.9 shows that both lower- and moderate-cost job/housing imbalances can be found in the outlying portions of the Region where recent employment growth has occurred.[6]

Employment by Industry

Information regarding employment by industry group provides insight into the structure of the regional economy and changes in that structure over time. Table 2.12 shows that the service sector made up the largest portion of regional employment in 2010, accounting for half of total employment. Retail trade and manufacturing were the next largest industry sectors, accounting for 16 percent and 13 percent of the total regional employment, respectively. These three industry sectors collectively accounted for almost 80 percent of the jobs in the Region.

The service, retail trade, and manufacturing sectors account for almost 80% of the Region's jobs.

Service sector employment in the Region is further broken down in Table 2.13. Health care and social assistance jobs accounted for 26 percent of all service jobs in 2010, followed by administrative and waste management services (13 percent); finance and insurance (12 percent); and professional, scientific, and technical services (11 percent).

[6] *The job/housing balance analysis is fully documented in the regional housing plan (SEWRPC Planning Report No. 54,* A Regional Housing Plan for Southeastern Wisconsin: 2035*). The job/housing balance analysis includes an analysis of potential existing imbalances based on 2010 wage and housing data, shown on Map 2.9, and projected imbalances for the year 2035 based on local government comprehensive plans. Projected job/housing imbalances are shown on Map 100 of the regional housing plan.*

Map 2.9
Potential Job/Housing Imbalances by Housing Analysis Area in the Region: 2010

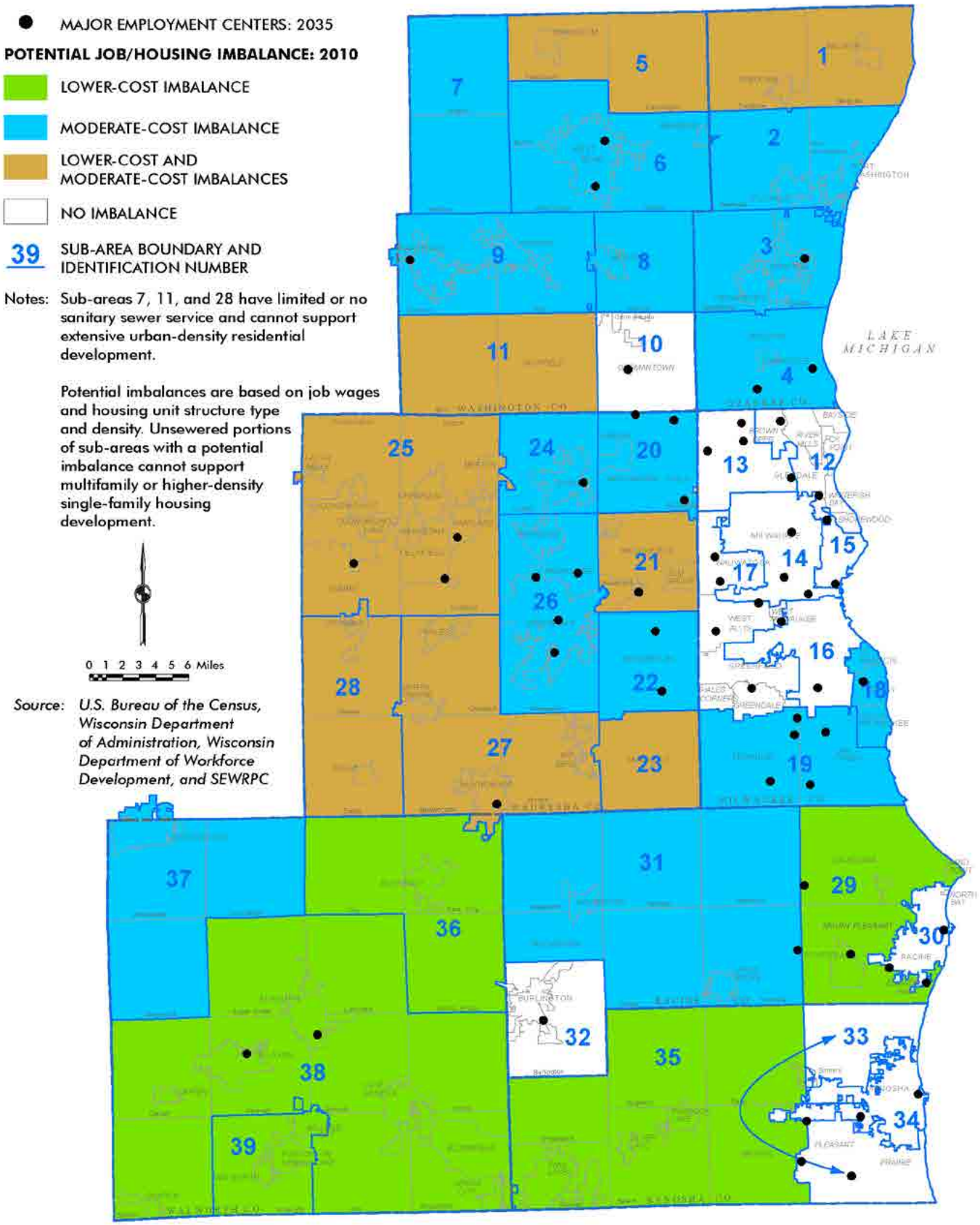


Table 2.12
Employment by General Industry Group in the Region, Wisconsin, and the United States: 2010

General Industry Group	Region		Wisconsin		United States	
	Jobs	Percent of Total	Jobs	Percent of Total	Jobs	Percent of Total
Agriculture	5,200	0.4	92,900	2.7	2,657,000	1.5
Construction	45,900	3.9	156,700	4.6	8,863,700	5.2
Manufacturing	148,100	12.6	445,200	13.0	12,107,900	7.1
Wholesale Trade	48,800	4.1	123,200	3.6	6,045,000	3.5
Retail Trade[a]	185,800	15.8	570,500	16.7	27,850,200	16.2
Services	584,400	49.7	1,470,700	43.0	83,207,100	48.5
Government[b]	117,700	10.0	420,600	12.3	22,578,000	13.2
Other	40,700	3.5	142,500	4.1	8,216,800	4.8
Total	1,176,600	100.0	3,422,300	100.0	171,525,700	100.0

[a] *Retail trade employment includes the standard NAICS retail employment categories (NAICS codes 44 and 45), plus food services/drinking places (NAICS code 722).*

[b] *Government employment includes all employees who work for government agencies and enterprises, regardless of the NAICS code of such entities. Government employment includes, among others, Federal, State, county, and local government staff; police; firefighters; public utility workers; and public school teachers.*

Source: U.S. Bureau of Economic Analysis and SEWRPC

Table 2.13
Services Employment by Service Sector in the Region: 2010

Service Sector	Jobs	Percent of Service Jobs	Percent of Total Jobs
Information	19,700	3.4	1.7
Finance and insurance	67,700	11.6	5.8
Real estate and rental and leasing	44,100	7.5	3.7
Professional, scientific, and technical services	63,300	10.8	5.4
Management of companies and enterprises	24,000	4.1	2.0
Administrative and waste management services	74,100	12.7	6.3
Educational services	37,900	6.5	3.2
Health care and social assistance	154,500	26.4	13.1
Arts, entertainment, and recreation	25,500	4.4	2.2
Accommodation[a]	8,900	1.5	0.8
Other services	64,700	11.1	5.5
Total	584,400	100.0	49.7

[a] *Excludes food service and drinking places (NAICS code 722).*

Source: U.S. Bureau of Economic Analysis and SEWRPC

Table 2.14 and Figure 2.8 show regional trends in employment by industry from 1970 to 2010.[7] The continuing shift in the regional economy from manufacturing to a service orientation was the most significant economic trend during this time period. Manufacturing employment decreased by 31 percent between 2000 and 2010, and by 38 percent over the last four decades. Conversely, service-related employment increased by 10 percent during the 2000s, and by 183 percent over the last four decades.

Service jobs have increased by 183% and manufacturing jobs have decreased by 38% since 1970.

[7] *The North American Industry Classification System (NAICS) has replaced the prior Standard Industrial Classification System (SIC) for classifying employment. Employment by industry data for the years 2001-2010 are largely based on the NAICS. Data for the years 1970-2000 are based on SIC, with adjustments made to certain industry groups to achieve as much consistency with NAICS data as possible. Additional explanation is presented in Table 11 of SEWRPC Technical Report No. 10.*

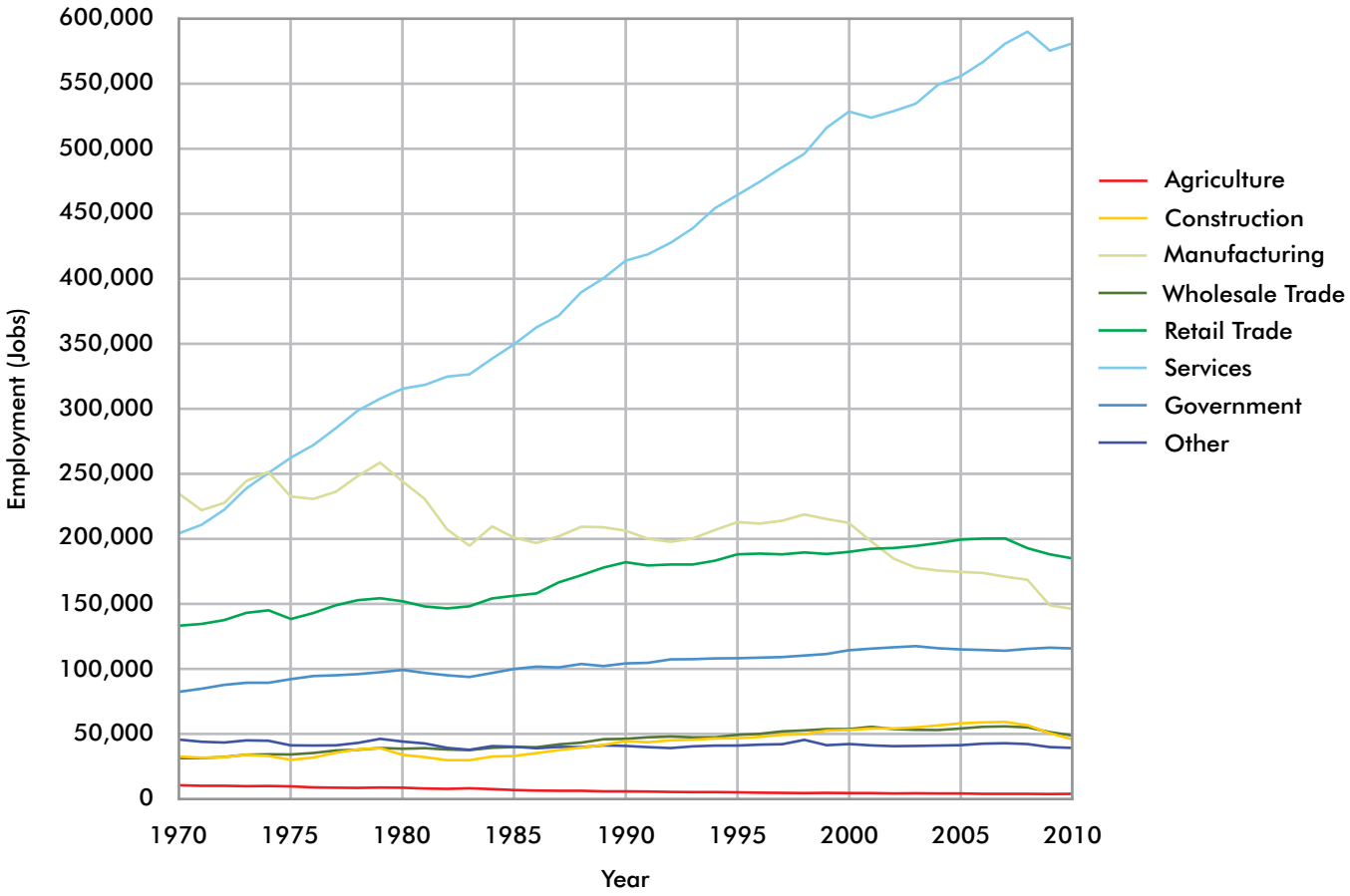
Table 2.14
Employment by General Industry Group in the Region: 1970-2010

General Industry Group	1970		1980		1990		2000		2010	
	Number	Percent of Total	Number	Percent of Total	Number	Percent of Total	Number	Percent of Total	Number	Percent of Total
Agriculture	12,000	1.5	10,000	1.0	7,200	0.7	5,900	0.5	5,200	0.4
Construction	32,400	4.1	33,700	3.6	44,300	4.2	53,000	4.4	45,900	3.9
Manufacturing	237,500	30.2	246,500	26.1	208,400	19.8	214,500	17.7	148,100	12.6
Wholesale Trade	31,200	4.0	38,500	4.1	46,100	4.4	53,700	4.4	48,800	4.1
Retail Trade	133,900	17.1	152,600	16.1	182,900	17.3	190,800	15.8	185,800	15.8
Services	206,400	26.3	317,900	33.6	416,800	39.5	531,900	44.0	584,400	49.7
Government	84,400	10.8	101,100	10.7	106,100	10.1	116,400	9.6	117,700	10.0
Other	47,100	6.0	45,600	4.8	42,200	4.0	43,600	3.6	40,700	3.5
Total	784,900	100.0	945,900	100.0	1,054,000	100.0	1,209,800	100.0	1,176,600	100.0

General Industry Group	Change 1970-1980		Change 1980-1990		Change 1990-2000		Change 2000-2010		Change 1970-2010	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Agriculture	-2,000	-16.7	-2,800	-28.0	-1,300	-18.1	-700	-11.9	-6,800	-56.7
Construction	1,300	4.0	10,600	31.5	8,700	19.6	-7,100	-13.4	13,500	41.7
Manufacturing	9,000	3.8	-38,100	-15.5	6,100	2.9	-66,400	-31.0	-89,400	-37.6
Wholesale Trade	7,300	23.4	7,600	19.7	7,600	16.5	-4,900	-9.1	17,600	56.4
Retail Trade	18,700	14.0	30,300	19.9	7,900	4.3	-5,000	-2.6	51,900	38.8
Services	111,500	54.0	98,900	31.1	115,100	27.6	52,500	9.9	378,000	183.1
Government	16,700	19.8	5,000	4.9	10,300	9.7	1,300	1.1	33,300	39.5
Other	-1,500	-3.2	-3,400	-7.5	1,400	3.3	-2,900	-6.7	-6,400	-13.6
Total	161,000	20.5	108,100	11.4	155,800	14.8	-33,200	-2.7	391,700	49.9

Source: U.S. Bureau of Economic Analysis and SEWRPC

Figure 2.8
Employment by General Industry Group in the Region: 1970-2010



Source: U.S. Bureau of Economic Analysis and SEWRPC

The proportion of manufacturing jobs relative to total jobs in the Region has decreased from 30 percent in 1970 to 13 percent in the 2010 and the proportion of service-related jobs has increased from 26 percent in 1970 to 50 percent in 2010 due to these differential growth rates. Other major industry groups have maintained a relatively stable proportion of the total employment in the Region. The State and the Nation have experienced a similar shift from manufacturing to service-related employment; however, both the Region and the State have a larger share of manufacturing relative to total employment than the Nation.

The Region and State have a larger share of manufacturing jobs relative to total jobs than the Nation.

Personal Income

Personal income is another indicator of the general trend of the economy of an area. Table 2.15 shows the Region's per capita income was $25,900 in 2010, which is about the same as per capita income for the State and Nation. Per capita income in the Region decreased by 11.3 percent during the 2000s (measured in constant dollars). Constant dollar per capita income for Wisconsin and the Nation also decreased. The Region's median family income was $65,400 in 2010, which exceeded that of the State and Nation. Median family income (constant dollar) in the Region decreased by 11.0 percent during the 2000s, and also decreased for the State and the Nation.

Table 2.15
Personal Income Levels in the United States, Wisconsin, and the Region: 1999 and 2010

Geographic Area	Personal Income	1999	2010	Percent Change
United States	Per Capita Income			
	Reported Dollars	$21,600	$26,100	20.8
	Constant 2010 Dollars	27,700	26,100	-5.8
	Median Family Income			
	Reported Dollars	$50,000	$60,600	21.2
	Constant 2010 Dollars	64,100	60,600	-5.5
Wisconsin	Per Capita Income			
	Reported Dollars	$21,300	$25,500	19.7
	Constant 2010 Dollars	27,300	25,500	-6.6
	Median Family Income			
	Reported Dollars	$52,900	$62,100	17.4
	Constant 2010 Dollars	67,800	62,100	-8.4
Region	Per Capita Income			
	Reported Dollars	$22,800	$25,900	13.6
	Constant 2010 Dollars	29,200	25,900	-11.3
	Median Family Income			
	Reported Dollars	$57,400	$65,400	13.9
	Constant 2010 Dollars	73,500	65,400	-11.0

Source: U.S. Bureau of the Census, U.S. Bureau of Labor Statistics, and SEWRPC

Table 2.16 shows there are considerable differences in personal income levels among the seven counties in the Region and between the Region's largest cities and their surrounding areas. Ozaukee County ($39,000) and Waukesha County ($34,900) had the highest per capita income levels among the Region's counties in 2010. Milwaukee County ($22,400) had the lowest per capita income level, and the City of Milwaukee ($17,900) had a significantly lower per capita income level than the remainder of Milwaukee County ($29,500). Each of the Region's seven counties and four largest cities experienced a decrease in constant dollar per capita income during the 2000s. Median family income levels follow similar patterns.

The Cities of Milwaukee, Racine, Kenosha, and Waukesha each have significantly more families in poverty than the rest of their respective counties.

Table 2.17 shows there are also considerable differences in poverty levels among the seven counties in the Region and between the Region's largest cities and their surrounding areas. Ozaukee County (3.2 percent) had the lowest percentage of families in poverty among the Region's counties in 2010 and Milwaukee County (17.3 percent) had the highest. The Cities of Milwaukee, Racine, Kenosha, and Waukesha each had a significantly higher percentage of families in poverty than the remainders of their respective counties. These concentrations of families in poverty are shown on Map 2.10.

Population and Employment Trends in Northeastern Illinois

Table 2.18 shows that Lake and McHenry Counties, located immediately south of the Region, continued to grow and develop during the 2000s, although at a slower rate than the 1990s. The population of Lake County grew by 9 percent during the 2000s, compared to 25 percent during the 1990s. The population of McHenry County grew by 19 percent during the 2000s, compared to 42 percent during the 1990s. The combined population of the two counties was over 1,012,000 people in 2010. Both counties also experienced moderate employment growth during the 2000s. The combined total employment for the two counties was about 535,000 jobs in 2010. A significant number of Kenosha and Walworth County residents are employed in Northeastern Illinois.

Table 2.16
Personal Income Levels in the Region by Area: 1999 and 2010

Geographic Area	Per Capita Income			Median Family Income		
	1999	2010	Percent Change	1999	2010	Percent Change
City of Kenosha						
Reported Dollars	$19,600	$21,900	11.7	$51,000	$56,300	10.4
Constant 2010 Dollars	25,100	21,900	-12.7	65,300	56,300	-13.8
Remainder of Kenosha County						
Reported Dollars	$23,600	$30,100	27.5	$64,900	$74,500	14.8
Constant 2010 Dollars	30,200	30,100	-0.3	83,100	74,500	-10.3
Kenosha County						
Reported Dollars	$21,200	$25,500	20.3	$56,500	$65,500	15.9
Constant 2010 Dollars	27,200	25,500	-6.3	72,400	65,500	-9.5
City of Milwaukee						
Reported Dollars	$16,200	$17,900	10.5	$37,900	$38,300	1.1
Constant 2010 Dollars	20,800	17,900	-13.9	48,600	38,300	-21.2
Remainder of Milwaukee County						
Reported Dollars	$26,500	$29,500	11.3	$61,900	$72,200	16.6
Constant 2010 Dollars	33,900	29,500	-13.0	79,300	72,200	-9.0
Milwaukee County						
Reported Dollars	$19,900	$22,400	12.6	$47,200	$50,700	7.4
Constant 2010 Dollars	25,500	22,400	-12.2	60,500	50,700	-16.2
Ozaukee County						
Reported Dollars	$31,900	$39,000	22.3	$72,500	$89,200	23.0
Constant 2010 Dollars	40,900	39,000	-4.6	92,900	89,200	-4.0
City of Racine						
Reported Dollars	$17,700	$18,200	2.8	$45,200	$39,100	-13.5
Constant 2010 Dollars	22,700	18,200	-19.8	57,900	39,100	-32.5
Remainder of Racine County						
Reported Dollars	$24,900	$29,500	18.5	$65,000	$77,100	18.6
Constant 2010 Dollars	31,900	29,500	-7.5	83,300	77,100	-7.4
Racine County						
Reported Dollars	$21,800	$25,600	17.4	$56,300	$62,200	10.5
Constant 2010 Dollars	27,900	25,600	-8.2	72,100	62,200	-13.7
Walworth County						
Reported Dollars	$21,200	$24,200	14.2	$55,300	$61,200	10.7
Constant 2010 Dollars	27,200	24,200	-11.0	70,800	61,200	-13.6
Washington County						
Reported Dollars	$24,300	$28,800	18.5	$63,500	$74,400	17.2
Constant 2010 Dollars	31,100	28,800	-7.4	81,300	74,400	-8.5
City of Waukesha						
Reported Dollars	$23,200	$26,500	14.2	$60,800	$69,200	13.8
Constant 2010 Dollars	29,700	26,500	-10.8	77,900	69,200	-11.2
Remainder of Waukesha County						
Reported Dollars	$30,500	$36,200	18.7	$74,700	$92,300	23.6
Constant 2010 Dollars	39,100	36,200	-7.4	95,700	92,300	-3.6
Waukesha County						
Reported Dollars	$29,200	$34,900	19.5	$71,800	$87,600	22.0
Constant 2010 Dollars	37,400	34,900	-6.7	92,000	87,600	-4.8

Source: U.S. Bureau of the Census, U.S. Bureau of Labor Statistics, and SEWRPC

Table 2.17
Families in Poverty in the Region by Area: 2010

Geographic Area	Total Families	Families in Poverty	Percent
Kenosha County	41,329	4,762	11.5
City of Kenosha	23,306	4,216	18.1
Remainder of Kenosha County	18,023	546	3.0
Milwaukee County	211,936	36,736	17.3
City of Milwaukee	125,710	31,721	25.2
Remainder of Milwaukee County	86,226	5,015	5.8
Ozaukee County	23,890	757	3.2
Racine County	47,084	5,675	12.1
City of Racine	17,512	3,984	22.8
Remainder of Racine County	29,572	1,691	5.7
Walworth County	27,957	2,704	9.7
Washington County	36,759	1,883	5.1
Waukesha County	108,718	4,142	3.8
City of Waukesha	17,305	1,554	9.0
Remainder of Waukesha County	91,413	2,588	2.8
Region	497,673	56,659	11.4

Source: U.S. Bureau of the Census and SEWRPC

2.3 LAND USE

The Commission's land use inventory places all land and water areas of the Region into one of 65 discrete land use categories, which provides a basis for analyzing land use.

The Commission relies on two types of inventories and analyses in order to monitor urban growth and development in the Region—an urban growth analysis and a land use inventory. The urban growth analysis identifies concentrations of urban development and depicts the urbanization of the Region over the past 160 years. When related to urban population levels, the urban growth analysis provides a good basis for calculating urban population and household densities. By contrast, the Commission land use inventory is a more detailed inventory that places all land and water areas of the Region into one of 65 discrete land use categories, providing a basis for analyzing specific land uses. Both the urban growth analysis and the land use inventory for the Region have been updated to the year 2010 under the continuing regional planning program.

Urban Growth Analysis

The urban growth analysis shows the historical pattern of urban settlement, growth, and development of the Region since 1850 for selected points in time. Areas identified as urban under this time series analysis include areas of the Region where residential structures or other buildings have been constructed in relatively compact groups, thereby indicating a concentration of residential, commercial, industrial, governmental, institutional, or other urban land uses. In addition, the identified urban areas encompass certain open space lands such as urban parks and small areas being preserved for resource conservation purposes within the urban areas.[8]

[8] *As part of the urban growth analysis, urban areas are defined as concentrations of residential, commercial, industrial, governmental, or institutional buildings or structures, along with their associated yards, parking, and service areas, having a combined area of five acres or more. In the case of residential uses, such areas must include at least 10 structures—over a maximum distance of one-half mile—located along a linear feature, such as a roadway or lakeshore, or at least 10 structures located in a relatively compact group within a residential subdivision. Urban land uses that do not meet these criteria because they lack the concentration of buildings or structures—such as cemeteries, airports, public parks, and golf courses—are identified as urban where such uses are surrounded on at least three sides by urban land uses that do meet the aforementioned criteria.*

Map 2.10
Concentrations of Families in Poverty in the Region: 2008-2012

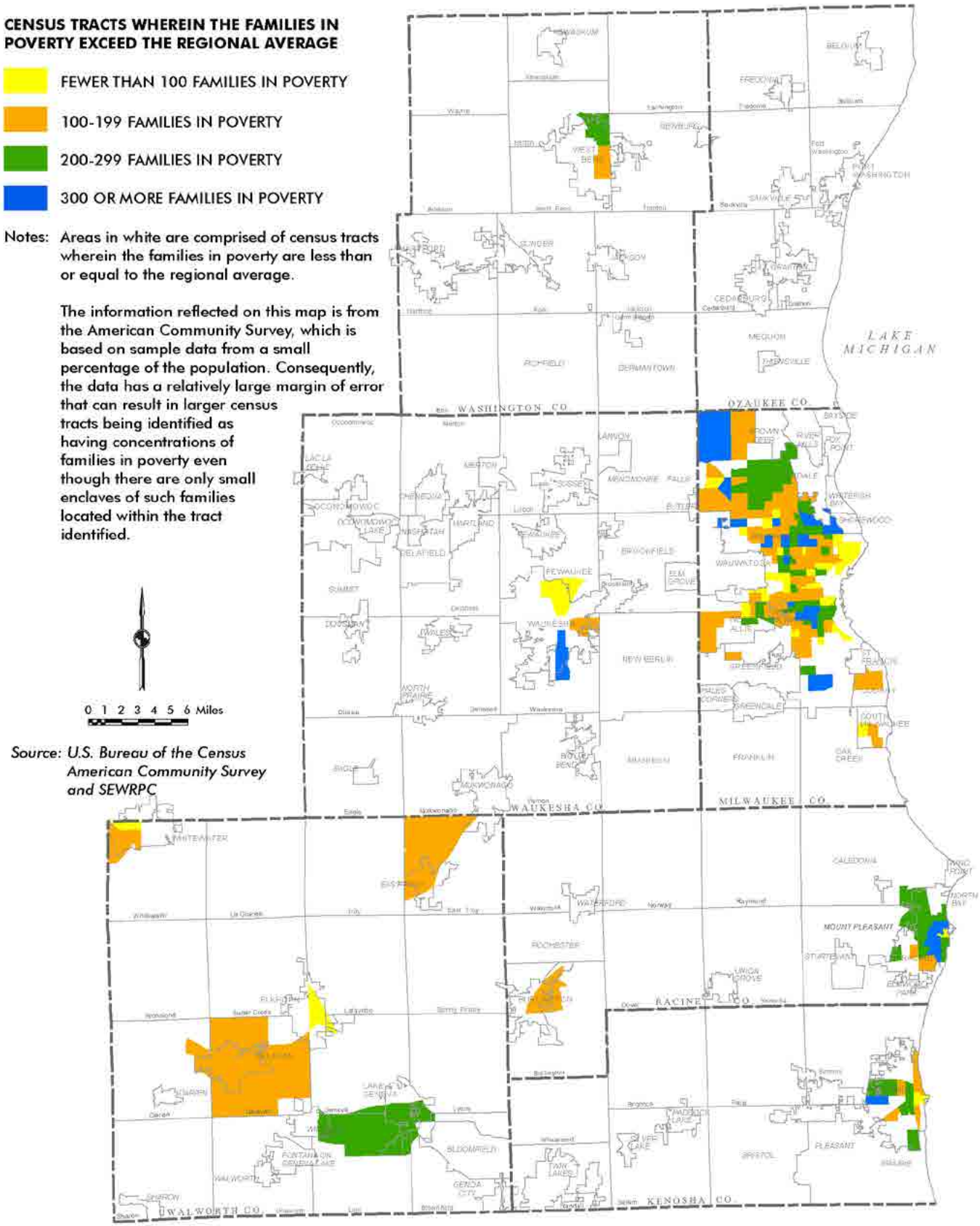


Table 2.18
Population and Employment in Lake and McHenry Counties, Illinois: 1980-2010

		Population			Employment		
			Change from Preceding Census			Change from Preceding Census	
	Year	Population Level	Number	Percent	Employment Level (Jobs)	Number	Percent
Lake County	1980	440,372	--	--	186,200	--	--
	1990	516,418	76,046	17.3	273,100	86,900	46.7
	2000	644,356	127,938	24.8	390,000	116,900	42.8
	2010	703,462	59,106	9.2	413,600	23,600	6.1
McHenry County	1980	147,987	--	--	56,300	--	--
	1990	183,241	35,254	23.8	82,500	26,200	46.5
	2000	260,077	76,836	41.9	110,400	27,900	33.8
	2010	308,760	48,683	18.7	121,200	10,800	9.8

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

As part of the urban growth analysis, urban growth for the years prior to 1940 was identified using a variety of sources, including the records of local historical societies, land subdivision plat records, farm plat maps, U.S. Geological Survey maps, and Wisconsin Geological and Natural History Survey records. Because of limitations inherent in the source materials, information presented for the years prior to 1940 represents the extent of urban development at approximately those points in time. Urban growth for the years 1940, 1950, 1963, 1970, 1980, 1990, 2000, and 2010 was identified using aerial photographs for those years.

Urban development occurred in concentric rings around urban centers prior to 1950, resulting in a relatively compact regional settlement pattern. Considerable development started to occur in isolated enclaves in outlying areas of the Region after 1950.

The urban growth analysis, updated through 2010, is presented graphically on Map 2.11. In 1850, the urban portion of the Region was concentrated primarily in the larger urban centers located at Burlington, Kenosha, Milwaukee, Port Washington, Racine, Waukesha, and West Bend, along with many smaller settlements throughout the Region. Over the 100-year period from 1850 to 1950, urban development in the Region occurred in a pattern resembling concentric rings around existing urban centers, resulting in a relatively compact regional settlement pattern. After 1950, there was a significant change in the pattern and rate of urban development in the Region. While substantial amounts of development continued to occur adjacent to established urban centers, considerable development also occurred in isolated enclaves in outlying areas of the Region. Map 2.11 indicates a continuation of this trend during the 2000s, with significant amounts of development occurring adjacent to existing urban centers, and with considerable development continuing to occur in scattered fashion in outlying areas.

The urban growth analysis, in conjunction with the Federal Censuses, provides a basis for calculating urban population and household densities in the Region and changes in density over time. Table 2.19 relates the urban area identified by the urban growth analysis with the urban population and urban households, going back to 1940. With minor exception, the "urban population" indicated in Table 2.19 is the total population of the Region excluding the rural farm population, as reported by the U.S. Bureau of the Census. Similarly, "urban households" as reported in that table consist of all households other than rural farm households.[9]

[9] *The rural farm population and household data for 2010 were not reported in the 2010 Census; accordingly, those figures have been estimated for purposes of this analysis.*

Map 2.11
Historic Urban Growth in the Region: 1850-2010

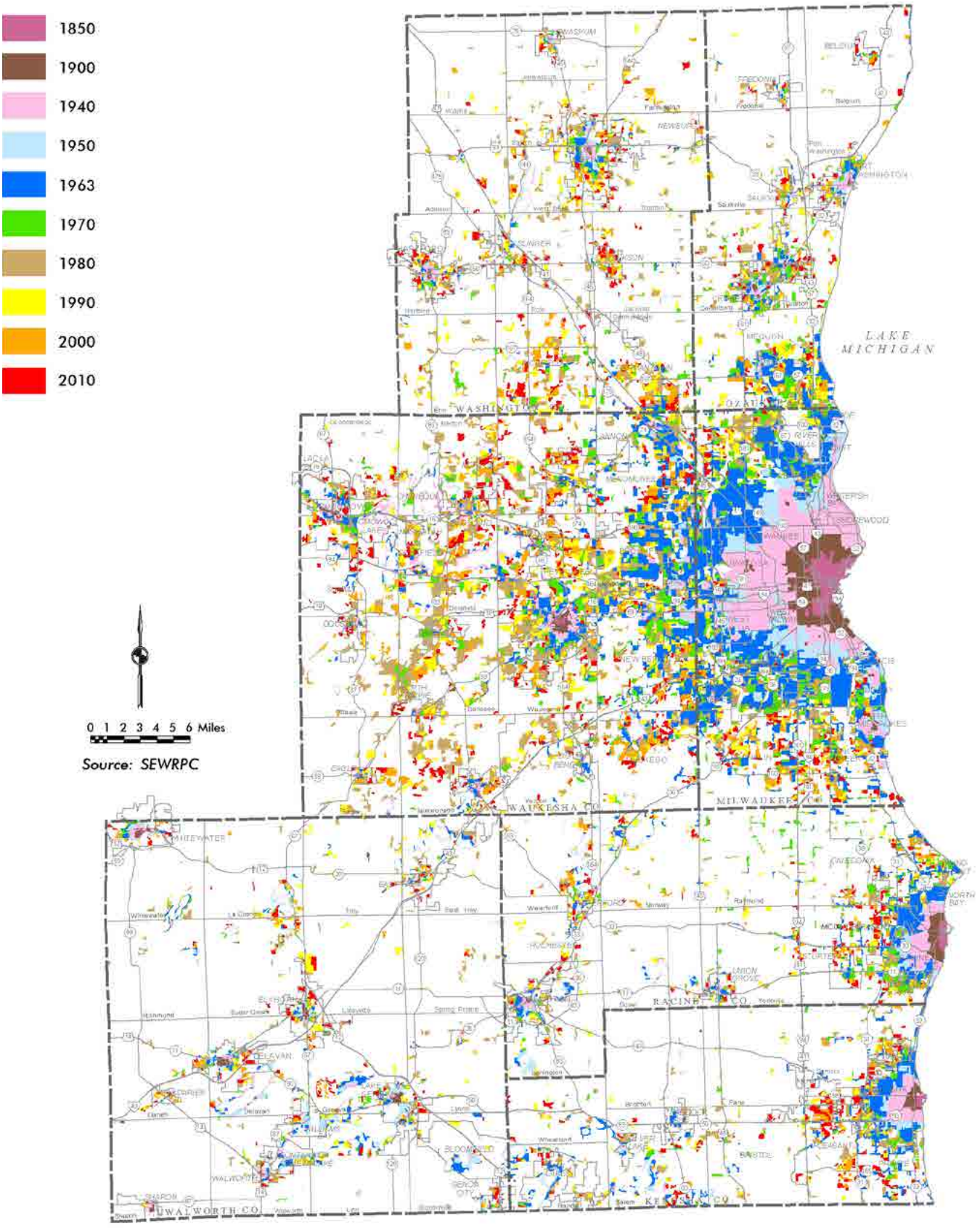


Table 2.19
Urban Population and Household Density in the Region: 1940-2010

Year	Urban Area[a] (square miles)	Urban Population		Urban Households	
		People[b]	Density (people per urban square mile)	Households[c]	Density (households per urban square mile)
1940	93	991,535	10,662	272,077	2,926
1950	146	1,179,084	8,076	338,572	2,319
1963	282	1,634,200	5,795	470,856	1,670
1970	338	1,728,666	5,114	529,404	1,566
1980	444	1,749,238	3,940	623,441	1,404
1990	509	1,800,751	3,538	672,896	1,322
2000	579	1,923,674	3,322	746,500	1,289
2010	633	2,012,741	3,180	797,621	1,260

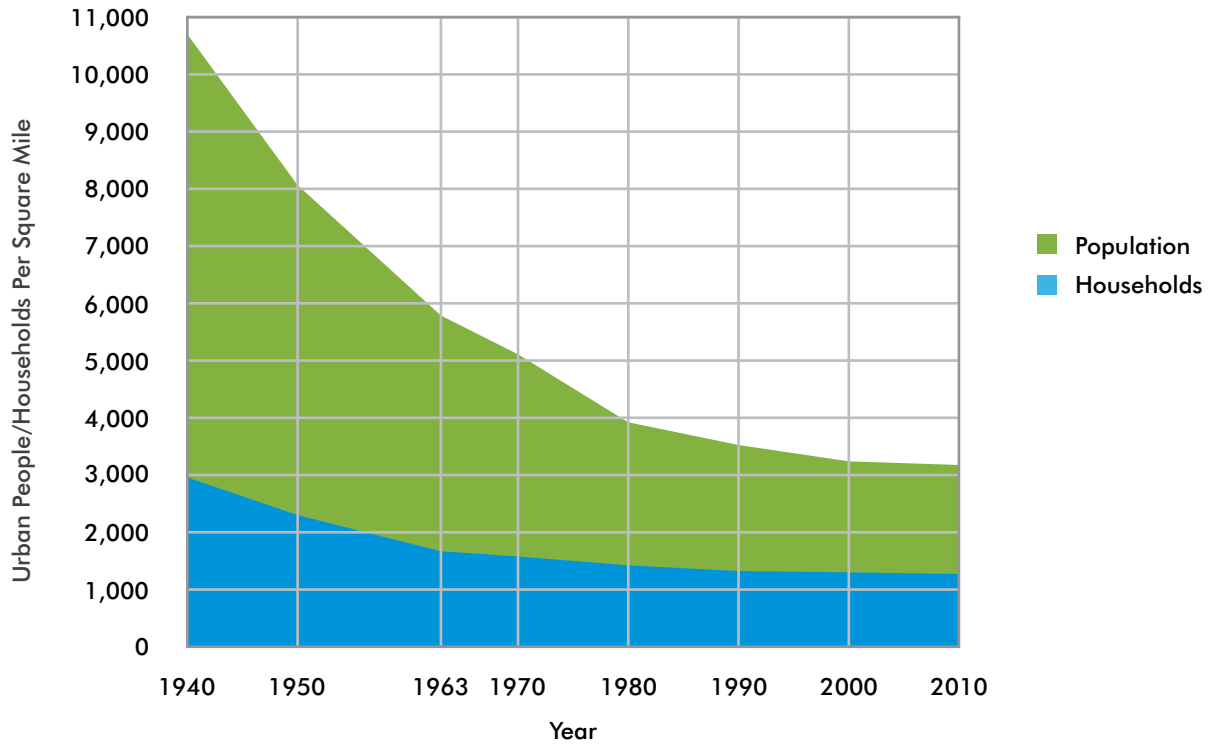
[a] *Based upon the Regional Planning Commission urban growth analysis.*

[b] *Total population, excluding rural farm population, as reported in the Census; 1963 and 2010 are Commission estimates.*

[c] *Total households, excluding rural farm households, as reported in the Census; 1963 and 2010 are Commission estimates.*

Source: U.S. Bureau of the Census and SEWRPC

Figure 2.9
Urban Population and Household Density in the Region: 1940-2010



Source: U.S. Bureau of the Census and SEWRPC

Urban population density has decreased every decade between 1940 and 2010, with the greatest decreases happening in the 1940's and 1950's.

As indicated in Table 2.19 and Figure 2.9, the population density of the urban portion of the Region decreased modestly over the past two decades from about 3,500 people per square mile in 1990 to 3,300 in 2000 and 3,200 in 2010. This stands in marked contrast to the substantial decrease in urban population density that occurred in the Region between 1940 and 1980. The urban household density experienced a only slight decrease over the past two decades—from about 1,320 households per square mile in 1990 to 1,290 in 2000 and 1,260 in 2010.

Land Use Inventory

The Commission land use inventory identifies existing land use by detailed land use category for the entire area of the Region at selected points in time. The land use classification system used in the inventory consists of nine major categories that are divisible into 65 sub-categories, making the inventory suitable for land use and transportation planning; adaptable to stormwater drainage, public utility, and community facility planning; and compatible with other land use classification systems. Aerial photographs (orthophotographs) serve as the primary basis for identifying existing land use, supplemented by available oblique aerial photography and other secondary source material as appropriate. The most recent regional land use inventory was carried out based upon aerial photography taken in spring of 2010. Existing 2010 land use in the Region is shown on Map 2.12. The extent of existing land use in the Region in 2010 and prior years is indicated in Table 2.20.

Aerial photos are the primary basis for identifying existing land use.

Developed Land

As indicated in Table 2.20, developed lands in the Region—consisting of lands that have been developed for residential; commercial; industrial; transportation, communication, and utility; governmental and institutional; and recreational uses—encompassed about 779 square miles, or 29.0 percent of the total area of the Region, in 2010. Residential land encompassed 401 square miles, accounting for more than half of the developed land area of the Region, followed by transportation, communication, and utilities, with 214 square miles. Commercial land and industrial land each encompassed over 35 square miles. Governmental/institutional land and recreational land encompassed 37 square miles and 56 square miles, respectively.

The developed land area of the Region increased by 67 square miles, or 9.4 percent between 2000 and 2010, including the following:

- Residential land: 39.2 square miles (10.8 percent increase)
- Commercial land: 5.4 square miles (17.9 percent increase)
- Industrial land: 2.3 square miles (7.0 percent increase)
- Transportation, communication, and utility land: 11.1 square miles (5.5 percent increase)
- Governmental and institutional land: 3.3 square miles (9.8 percent increase)
- Recreational land: 5.6 square miles (11.1 percent increase)

Based upon available annual data on building permits and land subdivision activity, development activity in the Region slowed considerably during the major economic recession that began in late 2007.[10]

Development activity in the Region slowed considerably during the major economic recession that began in late 2007.

Undeveloped Land

As further indicated in Table 2.20, in 2010 about 1,911 square miles, or 71.0 percent of the Region, consisted of undeveloped lands. Agricultural land encompassed 1,156 square miles, or about 60 percent of all undeveloped

[10] An average of about 3,000 new housing units per year were built in the Region from 2008 through 2010, compared to an average of more than 9,400 per year from 2000 through 2005. An average of about 670 new residential lots per year were created through subdivision plats in the Region from 2008 through 2010, compared to about 4,100 per year from 2000 through 2005.

Map 2.12
Existing Land Use in the Region: 2010

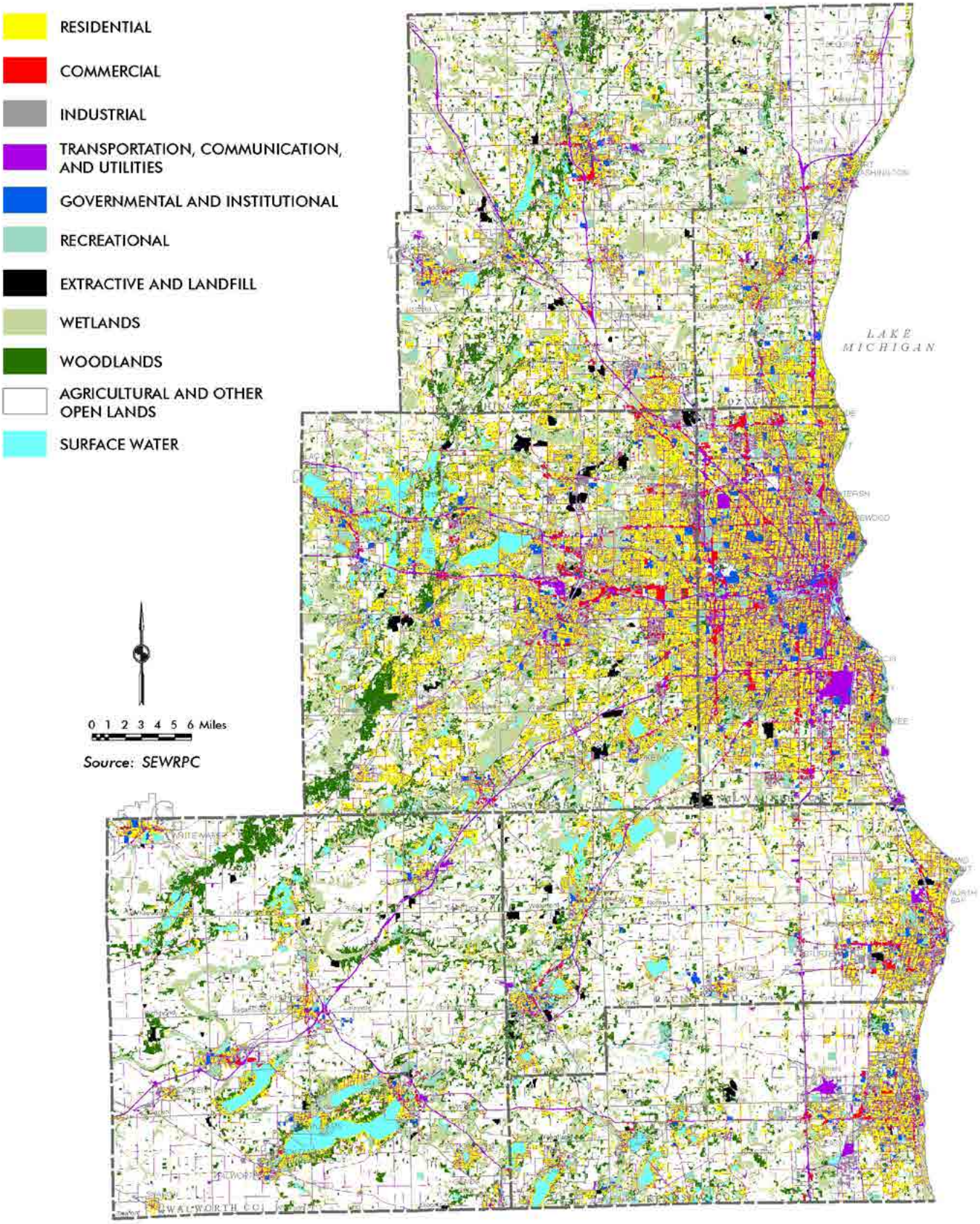


Table 2.20
Generalized Land Use in the Region: 1963-2010

Land Use Category[a]	Existing Land Use								Change in Land Use					
	1963		1980		2000		2010		1963-1980		1980-2000		2000-2010	
	Square Miles	Percent of Total	Square Miles	Percent of Total	Square Miles	Percent of Total	Square Miles	Percent of Total	Square Miles	Percent	Square Miles	Percent	Square Miles	Percent
Developed Land														
Residential	180.0	6.7	269.1	10.0	361.7	13.4	400.9	14.9	89.1	49.5	92.6	34.4	39.2	10.8
Commercial	11.5	0.4	19.3	0.7	30.2	1.1	35.6	1.3	7.8	67.8	10.9	56.5	5.4	17.9
Industrial	13.5	0.5	22.0	0.8	32.9	1.2	35.2	1.3	8.5	63.0	10.9	49.5	2.3	7.0
Transportation, Communication, and Utilities	134.9	5.0	166.1	6.2	202.7	7.5	213.8	8.0	31.2	23.1	36.6	22.0	11.1	5.5
Governmental and Institutional	21.8	0.8	30.0	1.1	33.7	1.3	37.0	1.4	8.2	37.6	3.7	12.3	3.3	9.8
Recreational	26.0	1.0	39.3	1.5	50.4	1.9	56.0	2.1	13.3	51.2	11.1	28.2	5.6	11.1
Developed Land Subtotal	387.7	14.4	545.8	20.3	711.6	26.4	778.5	29.0	158.1	40.8	165.8	30.4	66.9	9.4
Undeveloped Land														
Agricultural	1,637.1	60.9	1,475.4	54.9	1,256.4	46.7	1,155.5[b]	43.0	-161.7	-9.9	-219.0	-14.8	-100.9	-8.0
Natural Resource Areas														
Surface Water	71.6	2.7	76.2	2.8	77.4	2.9	84.7	3.1	4.6	6.4	1.2	1.6	7.3	9.4
Wetlands	274.3	10.2	266.6	9.9	276.5	10.3	315.2	11.7	-7.7	-2.8	9.9	3.7	38.7	14.0
Woodlands	186.8	6.9	181.9	6.8	184.3	6.9	191.4	7.1	-4.9	-2.6	2.4	1.3	7.1	3.9
Natural Resource Areas Subtotal	532.7	19.8	524.7	19.5	538.2	20.1	591.3	21.9	-8.0	-1.5	13.5	2.6	53.1	9.9
Unused & Other Open Lands[c]	131.7	4.9	143.4	5.3	183.7	6.8	164.5	6.1	11.7	8.9	40.3	28.1	-19.2	-10.5
Undeveloped Land Subtotal	2,301.5	85.6	2,143.5	79.7	1,978.3	73.6	1,911.3	71.0	-158.0	-6.9	-165.2	-7.7	-67.0	-3.4
Total	2,689.2	100.0	2,689.3	100.0	2,689.9	100.0	2,689.8	100.0	0.1	--	0.6	--	-0.1	--

Note: As a result of a change in inventory procedures, the 2010 data for agriculture, wetlands, and surface water are not directly comparable with data for the year 2000 and prior years. As part of the 2010 land use inventory, wetlands were mapped at a much finer scale and level of detail as compared to prior inventories, increasing the accuracy and precision of wetland mapping throughout the Region and providing for basic consistency with the Wisconsin Wetlands Inventory. This resulted in the identification of more, smaller wetlands than in the past, contributing to the reported increase in the wetland area. This effort also resulted in the identification of more, smaller surface water areas than in the past, contributing to the reported increase in the overall surface water area. The more comprehensive mapping of wetlands and surface water is, in turn, responsible for part of the reported decrease in the agricultural land area of the Region.

[a] *Off-street parking is included in the associated land use.*

[b] *Includes farmed wetlands, which encompassed 9.6 square miles in 2010.*

[c] *Includes landfills, mineral extraction sites, and unused land.*

Source: SEWRPC

lands.[11] Wetlands, woodlands, and surface water combined encompassed 591 square miles, while unused and other open land encompassed 164 square miles.[12] Undeveloped lands in the Region decreased by 67 square miles, or 3.4 percent, between 2000 and 2010.

It should be noted that, as a result of a change in inventory procedures, the 2010 data for agriculture, wetlands, and surface water are not directly comparable with data for the year 2000 and prior years as presented in Table 2.20. As part of the 2010 land use inventory, wetlands were mapped at a much finer scale and level of detail as compared to prior inventories, increasing the accuracy and precision of wetland mapping throughout the Region and providing for basic consistency with the Wisconsin Wetlands Inventory. This resulted in the identification of more, smaller wetlands than in the past, contributing to the reported increase in the wetland area. This effort also resulted in the identification of more, smaller surface water areas than in the past, contributing to the reported increase in the overall surface water area. The more comprehensive mapping of wetlands and surface water is, in turn, responsible for part of the reported decrease in the agricultural land area of the Region.

The change in inventory procedures notwithstanding, much of the change in wetlands, agriculture, and woodlands between 2000 and 2010 indicated in Table 2.20 reflects real change in use, hydrology, or land cover, as discussed below.

Many areas were identified as having reverted to wetlands between 2000 and 2010. A striking example is in the DNR Turtle Valley Wildlife Area, where about two square miles were restored to wetlands.

Change in Wetlands

The increase in the wetland area indicated in Table 2.20 is attributable in part to the more comprehensive mapping of wetlands in 2010, as noted above, and to actual wetland gains in excess of wetland losses in the past 10 years. Wetland gains typically occur as a result of failure to maintain agricultural drainage systems and managed wetland restoration efforts, while wetland losses typically occur as a result of drainage or filling activities attendant to urban development. During the land use inventory update, many areas were identified as having reverted to wetlands since the previous inventory in 2000. A striking example of this is the wetland restoration effort in the Wisconsin Department of Natural Resources (DNR) Turtle Valley Wildlife Area, which resulted in the restoration of about two square miles of agricultural-related land to wetlands.

Change in Agricultural Land

The decrease in the agricultural area indicated in Table 2.20 is attributable in part to the more comprehensive mapping of wetlands noted above; to the actual conversion of agricultural land to urban use; and to agricultural lands being taken out of production but remaining in open use—reverting to wetlands or woodlands or otherwise lying fallow.

Change in Woodlands

The increase in woodland area indicated in Table 2.20 primarily reflects actual gains in woodlands in excess of woodland losses in the Region since

[11] Farmed wetlands are included in the agricultural land use category in Table 2.20. Farmed wetlands consist for the most part of wetlands that are cultivated only during drought years and periods of low water table. Such areas encompassed 9.6 square miles in the Region in 2010.

[12] Unused land consists of open lands other than wetlands and woodlands that were not used for agriculture and not developed for any particular use at the time of the land use inventory.

Table 2.21
Existing Area and Population Served by Public Sanitary Sewers in the Region by County: 2000 and 2010

County	Area Served by Public Sanitary Sewers				Population Served by Public Sanitary Sewers			
	2000		2010		2000		2010	
	Square Miles	Percent of County/ Region	Square Miles	Percent of County/ Region	People	Percent of County/ Region	People	Percent of County/ Region
Kenosha	41.2	14.8	45.8	16.5	133,800	89.5	150,200	90.3
Milwaukee	193.2	79.6	198.7	81.9	938,800	99.9	947,000	99.9
Ozaukee	29.3	12.4	33.3	14.1	64,400	78.2	67,800	78.5
Racine	51.6	15.1	57.0	16.7	169,900	90.0	176,100	90.1
Walworth	27.6	4.8	30.3	5.3	62,100	67.5	70,500	69.0
Washington	23.2	5.3	29.1	6.7	71,500	60.9	84,300	63.9
Waukesha	110.7	19.1	130.3	22.4	272,200	75.5	301,100	77.2
Region	476.8	17.7	524.5	19.5	1,712,700	88.7	1,797,000	89.0

Source: SEWRPC

the last inventory in 2000. During the land use inventory update, many new woodland areas were identified, appropriately reflecting the results of managed reforestation efforts and natural succession over time.

2.4 PUBLIC UTILITIES

Sanitary sewerage and water supply utilities are particularly important to land use planning because the location and density of urban development influences the need for such facilities and, conversely, the existence of such facilities influences the location and density of new urban development. The extent and location of areas served by existing sanitary sewerage and water supply utilities are thus important considerations in land use and transportation planning.

An estimated 1.8 million people, or about 89% of the Region's population, were served by public sewers in 2010.

Sanitary Sewer Service

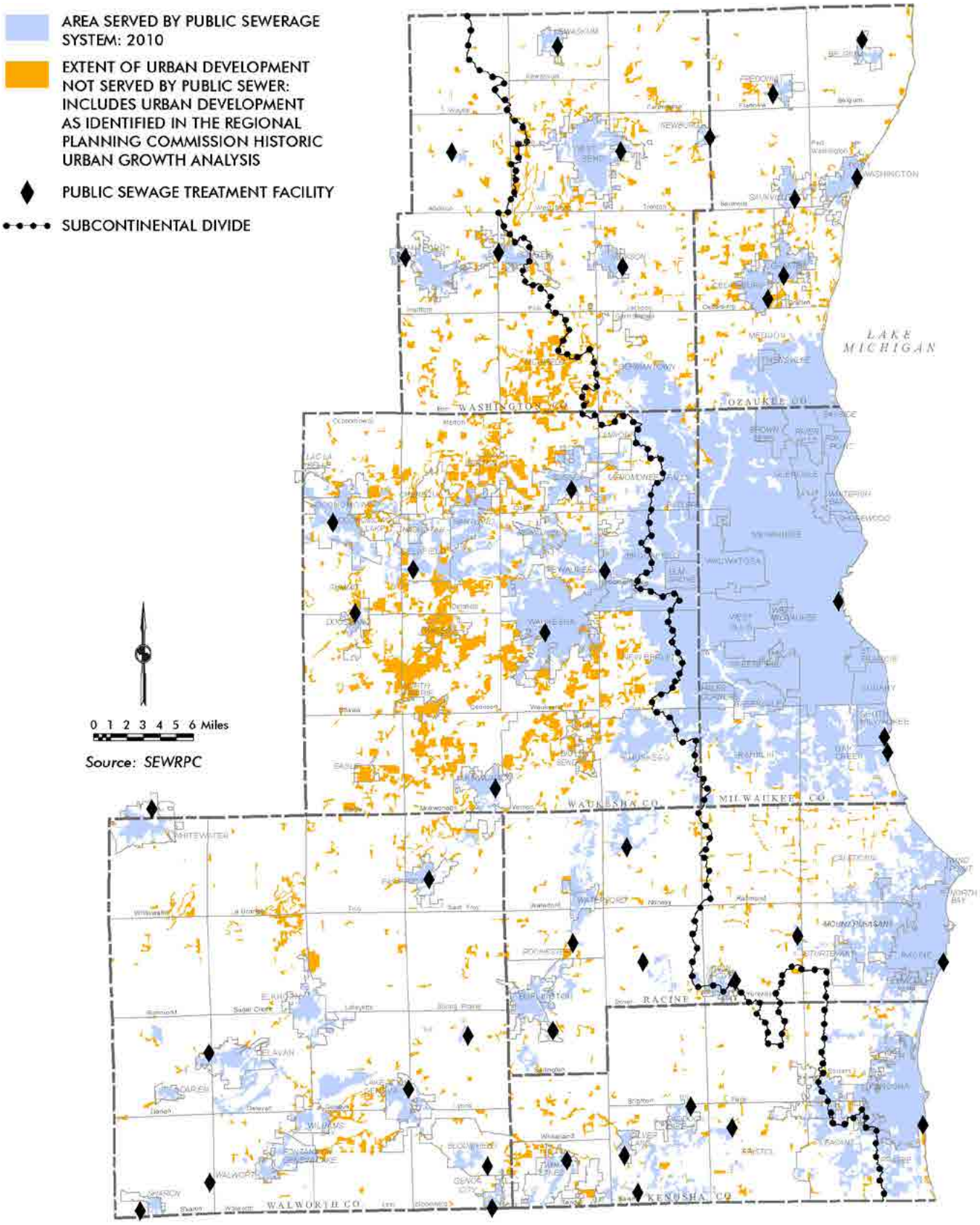
Areas served by public sanitary sewers in 2010 encompassed about 525 square miles, or about 19.5 percent of the total area of the Region—compared to about 477 square miles, or about 17.7 percent of the Region, in 2000 (see Table 2.21 and Map 2.13). An estimated 1.80 million people, or 89.0 percent of the regional population, were served by public sanitary sewers in 2010, compared to 1.71 million people, or 88.7 percent of the regional population, in 2000.

The increase in the land area and population served by public sanitary sewers primarily reflects new development designed to be served by sanitary sewers that occurred during the 2000s. Some of the increase is also the result of the retrofitting of certain developed areas—initially served by private onsite wastewater treatment systems—with public sanitary sewers. Examples of such retrofitting efforts include the extension of sanitary sewer service to developed areas around Upper and Lower Nashotah Lakes, Upper and Lower Nemahbin Lakes, and Silver Lake in Waukesha County.

Public sewers can only be extended within planned sanitary sewer service areas identified in local sanitary sewer service area plans adopted as part of the Commission's regional water quality management plan.

Under State administrative rules, sanitary sewers may be extended only to areas located within planned sanitary sewer service areas identified in local sanitary sewer service area plans adopted as part of the Commission's regional water quality management plan. Sewer service area plans are long-range plans intended to guide the provision of sanitary sewer service over a 20-year period. Sewer service area plans are prepared through a cooperative planning process involving the local unit of government

Map 2.13
Areas Served by Public Sanitary Sewerage Systems and Sewage Treatment Facilities in the Region: 2010



responsible for operation of the sewage treatment facility; in some instances, a different local unit of government served by the sewage treat facility; the Regional Planning Commission; and the DNR. Such plans may be amended in response to changing local conditions and needs as well as in response to new population projections, subject to the provisions of *Wisconsin Administrative Code* Chapter NR 121. Currently adopted sanitary sewer service areas in the Region are shown on Map 2.14.

Water Supply Service

Areas with water supply service provided by public water utilities in 2010 encompassed about 444 square miles, or 16.5 percent of the total area of the Region—compared to about 390 square miles, or 14.5 percent of the Region, in 2000 (see Map 2.15 and Table 2.22). An estimated 1.68 million people, or 83.2 percent of the regional population, were served by public water utilities in 2010, compared to 1.58 million people, or 81.9 percent of the regional population, in 2000. The increase in the land area and population served by public water supply systems primarily reflects new urban development during the 2000s, and, to a lesser extent, the retrofitting of certain already developed areas—initially served by private wells—with public water supply service.

An estimated 1.68 million people, or about 83% of the Region's population, were served by public water utilities in 2010.

2.5 NATURAL RESOURCE BASE

Land use and transportation planning must recognize the existence of a limited natural resource base to which urban and rural development should be properly adjusted. This section provides a description of some of the key elements of the natural resource base of the Region.

Physiography and Topography

Glaciation has largely determined the physiography and topography, as well as the soils of the Region. Of the four major stages of glaciation, the last and most influential in terms of present physiography and topography was the Wisconsin Stage, which is believed to have ended in the area about 11,000 years ago. As shown on Map 2.16, the dominant physiographic and topographic feature in the Region is the Kettle Moraine, which consists of a complex system of glacial landforms including kames, kettle holes, moraines, eskers, drumlins, outwash plains, and lake basin deposits. The resulting topography ranges from steep and rolling hills in the western portion of the Region to level or gently sloping areas in the eastern portion of the Region.

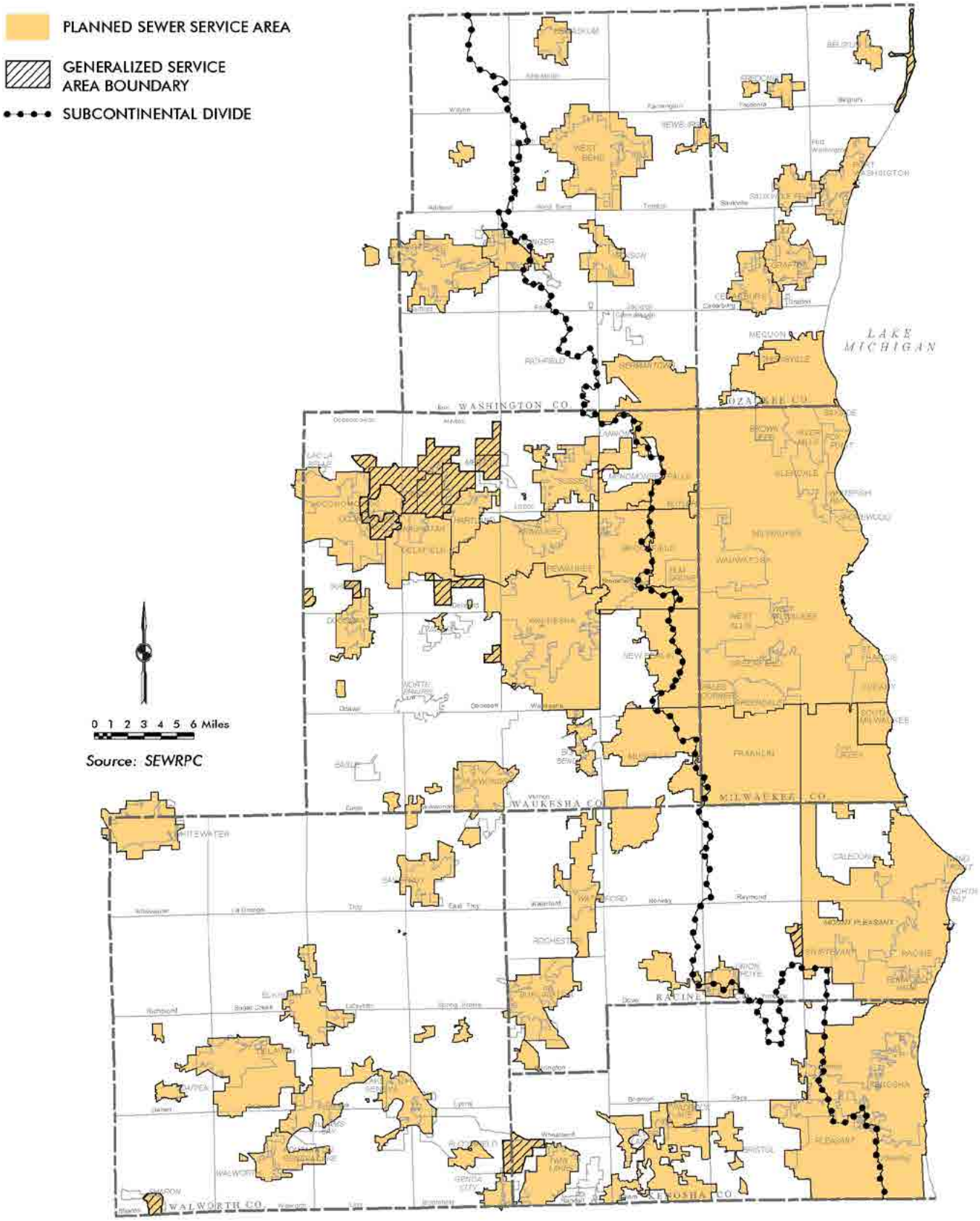
Soils

Soil properties exert a strong influence on the manner in which land is used. Consequently, a need exists in any comprehensive planning effort to examine not only how soils and land are currently used, but also how they can best be used and managed over time. Map 2.17 shows the location and extent of eight broad groups of soils in Southeastern Wisconsin, providing an overview of the general pattern of soils that exists in the Region. Underlying this generalized soils map are detailed soil surveys that provide definitive data on the physical, chemical, and biological properties of specific soil types, along with interpretations of the soil properties for planning, engineering, agricultural, and resource conservation purposes. Soil survey maps and soil attribute data can be accessed through the U.S. Natural Resources Conservation Service website.

Surface Drainage and Surface Water

The surface drainage pattern of the Region is very complex because of the effects of glaciation. The land surface is complex as a result of being covered

Map 2.14
Planned Sanitary Sewer Service Areas in the Region: December 2013



Map 2.15
Areas Served by Public Water Utilities in the Region: 2010

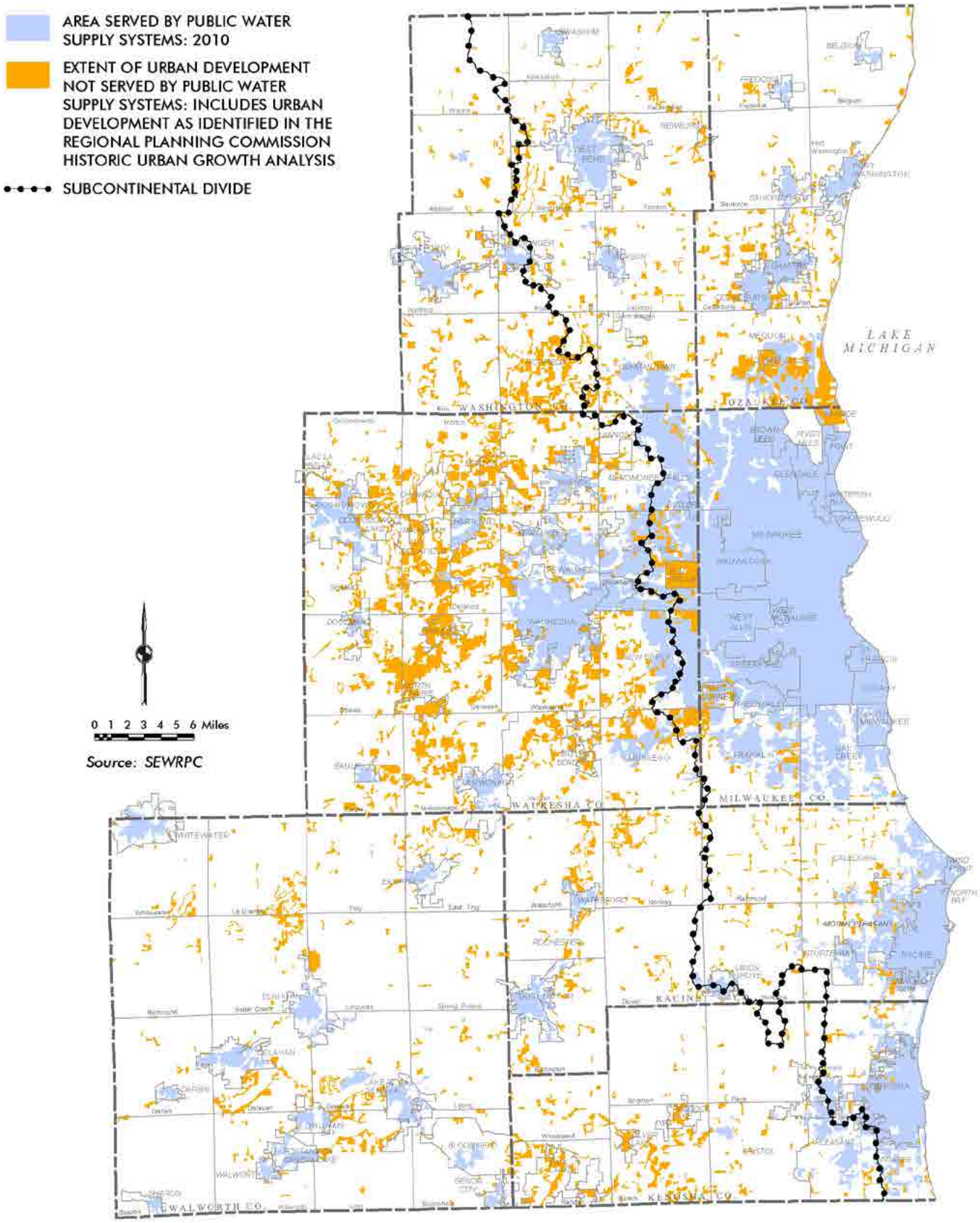


Table 2.22
Existing Area and Population Served by Public Water Utilities in the Region by County: 2000 and 2010

	Area Served by Public Water Utilities				Population Served by Public Water Utilities			
	2000		2010		2000		2010	
County	Square Miles	Percent of County/ Region	Square Miles	Percent of County/ Region	People	Percent of County/ Region	People	Percent of County/ Region
Kenosha	29.8	10.7	34.7	12.5	111,000	74.2	125,800	75.6
Milwaukee	180.9	74.5	187.3	77.2	927,300	98.6	938,400	99.0
Ozaukee	15.7	6.7	23.4	9.9	45,400	55.2	55,800	64.6
Racine	37.9	11.1	44.3	13.0	146,400	77.5	154,900	79.3
Walworth	22.0	3.8	24.4	4.2	56,200	61.1	63,400	62.0
Washington	21.4	4.9	27.1	6.2	66,800	56.9	80,100	60.7
Waukesha	82.3	14.2	102.6	17.7	228,100	63.2	261,500	67.1
Region	390.0	14.5	443.8	16.5	1,581,200	81.9	1,679,900	83.2

Source: SEWRPC

by glacial deposits containing thousands of closed depressions that range in size from potholes to large areas. Significant areas of the Region are covered by wetlands, and many streams are mere threads of water through these wetlands.

About 62% of the Region is located west of a major subcontinental divide and drains to the Mississippi River. The remaining 38% is east of the divide and drains to the Great Lakes Basin.

There are 11 major watersheds in the Region as shown on Map 2.18. Also shown on this map, a major subcontinental drainage divide, oriented in a generally northwesterly-southeasterly direction, bisects the Region. About 1,680 square miles, or 62 percent of the Region, are located west of the divide and drain to the Upper Mississippi River system; the remaining 1,009 square miles, or 38 percent, drain to the Great Lakes-St. Lawrence River system. The subcontinental divide is a major feature of the overall drainage pattern of the Region, having important implications for the use of Lake Michigan as a source of water supply. The Great Lakes-St. Lawrence River Water Resources Compact, implemented in Chapter 281 of the *Wisconsin Statutes*, prohibits the diversion of water from the Great Lakes Basin, with very limited exceptions.

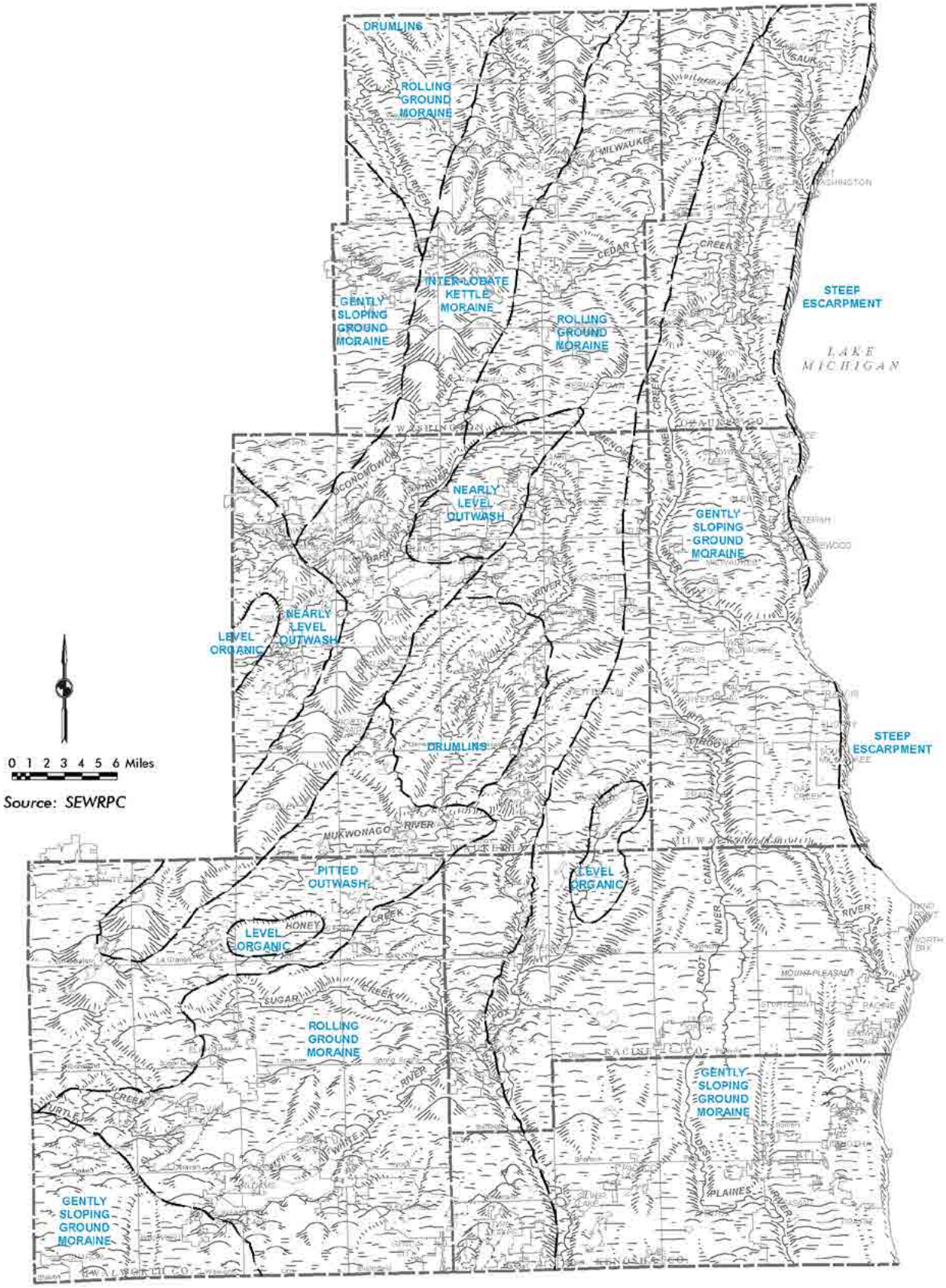
The Great Lakes Compact prohibits diverting water from the Great Lakes Basin, with very limited exceptions.

Also shown on Map 2.18 are the 101 major lakes of at least 50 acres in area and the 1,150-mile perennial stream network in the Region. In addition, the Region encompasses numerous lakes and ponds less than 50 acres in size and an extensive network of smaller, intermittent streams. The Region is bounded on the east by Lake Michigan, with 77 miles of shoreline extending from the Wisconsin-Illinois border to the Ozaukee-Sheboygan County line.

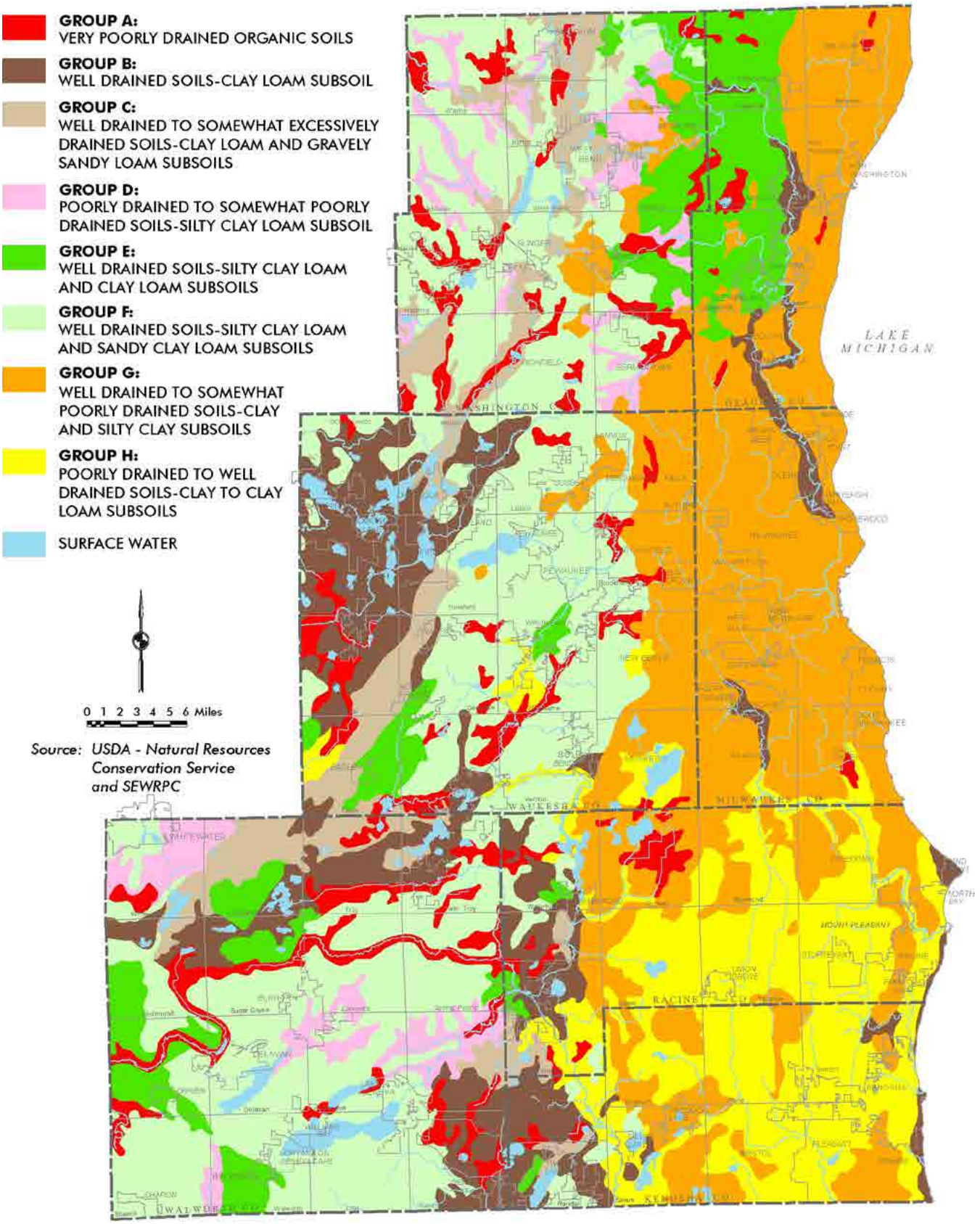
The quality of the Region's surface waters can potentially degenerate as a result of—among other factors—malfunctioning or improperly placed private onsite wastewater treatment systems; inadequate operation of wastewater treatment facilities; inadequate soil conservation and other agricultural practices; construction site erosion; and urban runoff. Lakes and streams may also be adversely affected by the excessive development of lacustrine and riverine areas and the filling of peripheral wetlands.

Objectives, or classifications, for biological and recreational uses, as well as for public health and welfare and wildlife protection, have been developed for streams and lakes by the DNR and integrated into the regional water quality management plan developed by the Regional Planning Commission. The objectives for biological and recreational uses range from coldwater fishery and full recreational use to limited aquatic life and limited recreational

Map 2.16
Physiographic Features of the Region

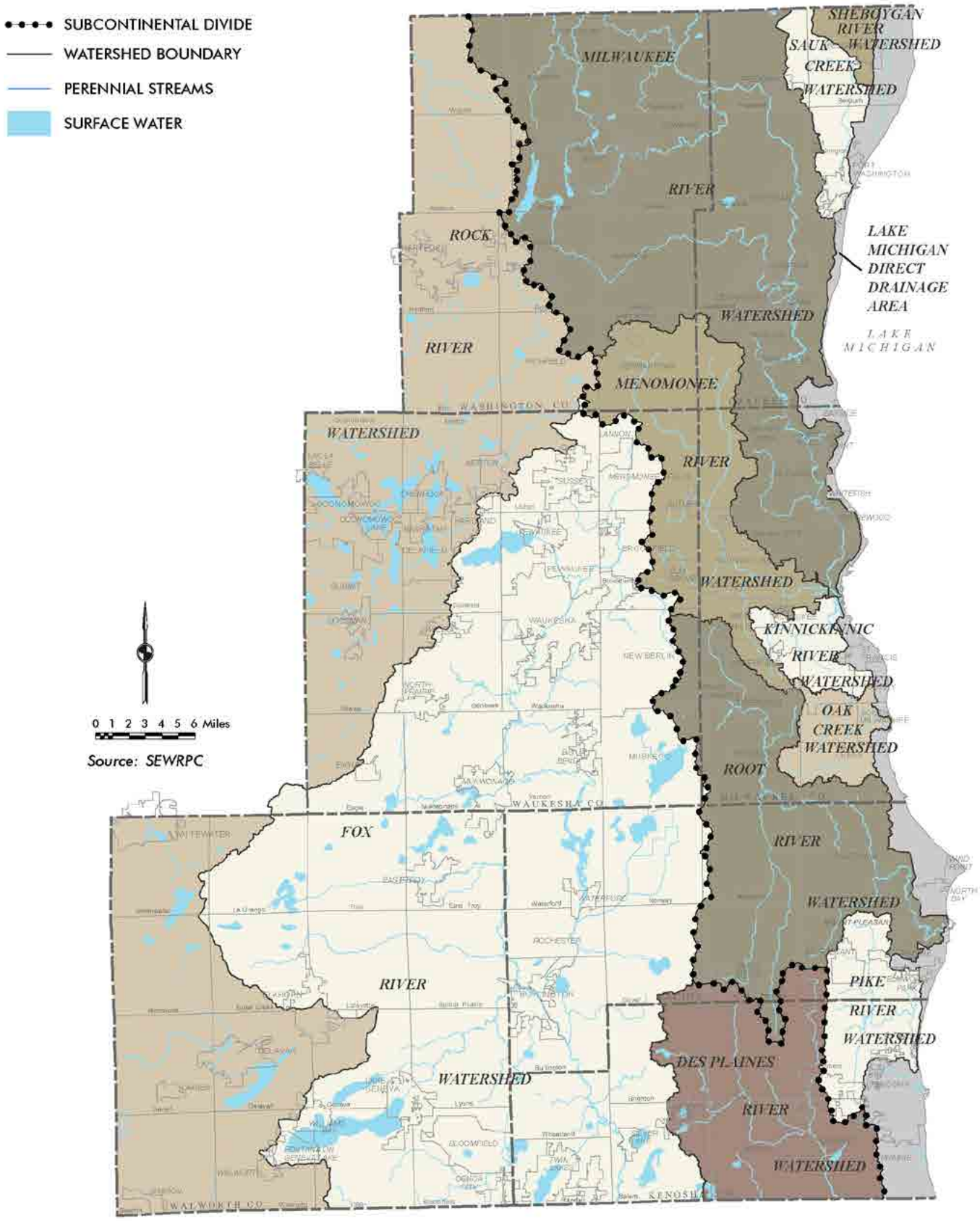


Map 2.17
Generalized Soil Association Groups in the Region



Source: USDA - Natural Resources Conservation Service and SEWRPC

Map 2.18
Surface Drainage and Surface Water in the Region



use. Water use objectives for streams and lakes are set forth in Chapter NR 102 of the *Wisconsin Administrative Code* and are summarized in SEWRPC Memorandum Report No. 93, *A Regional Water Quality Management Plan for Southeastern Wisconsin: An Update and Status Report*, and SEWRPC Planning Report No. 50, *A Regional Water Quality Management Plan Update for the Greater Milwaukee Watersheds*.

In addition, the DNR has identified a limited number of streams and lakes as "outstanding" and "exceptional" resource waters. "Outstanding" resource waters have the highest value as a resource, excellent water quality, and high-quality fisheries; they do not receive wastewater discharges, and point source discharges will not be allowed in the future unless the quality of such a discharge meets or exceeds the quality of the receiving water. Within the Region, Bluff, Potawatomi, and Van Slyke Creeks, all in Walworth County, along with Lulu Lake in Walworth County and Spring Lake in Waukesha County have been classified as outstanding resource waters. "Exceptional" resource waters have excellent water quality and valued fisheries but already receive wastewater discharges or may in the future receive discharges necessary to correct environmental or public health problems. Within the Region, the following have been classified as exceptional resource waters: the East Branch of the Milwaukee River from the Long Lake outlet to STH 28 in Washington County; and Genesee Creek above STH 59, the Mukwonago River from Eagle Springs Lake to Upper Phantom Lake, and the Oconomowoc River below North Lake to Okauchee Lake, all in Waukesha County.

Groundwater is a major source of water supply for domestic, municipal, industrial, and agricultural users.

Groundwater Resources

Groundwater resources constitute another key element of the natural resource base of the Region. Groundwater not only sustains lake levels and wetlands and provides the base flows of streams in the Region, it also comprises a major source of water supply for domestic, municipal, industrial, and agricultural water users.

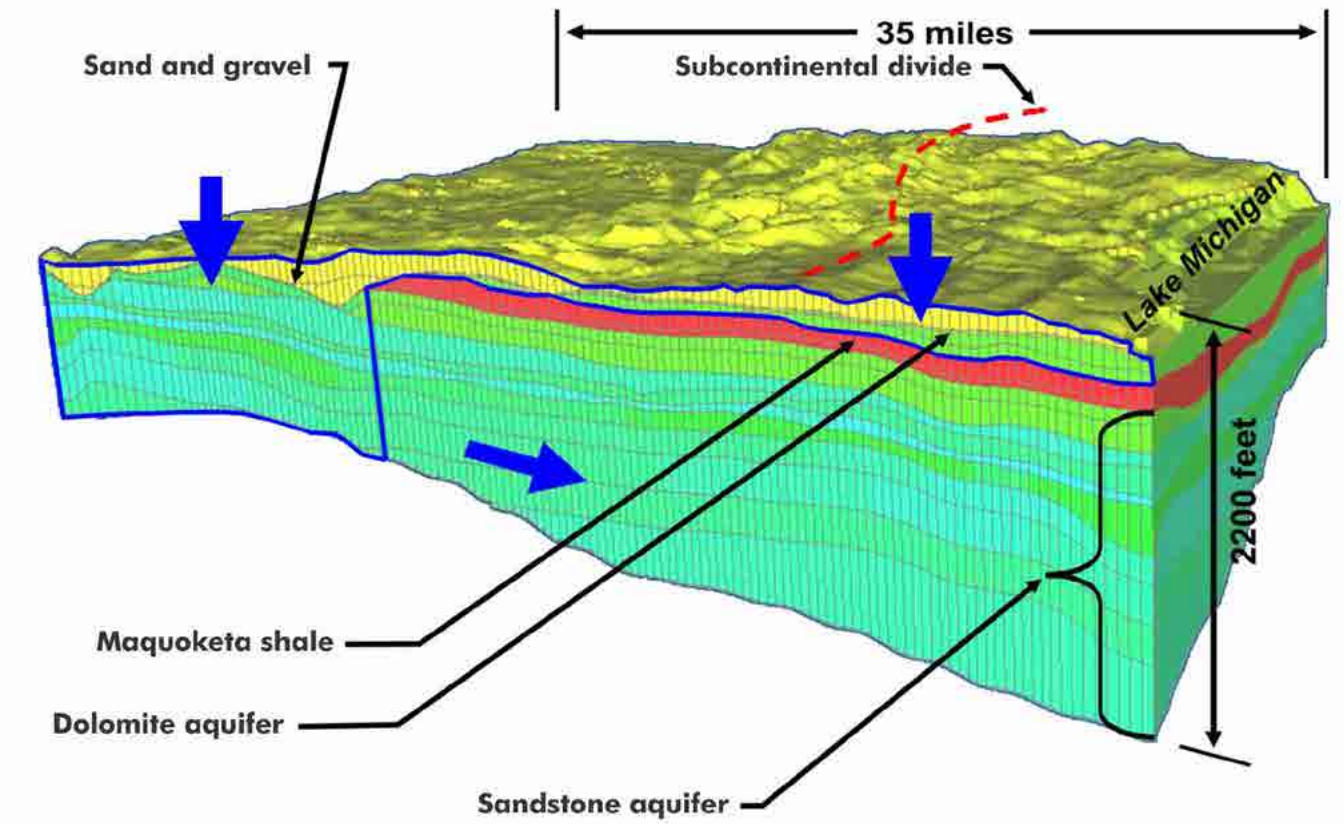
Groundwater occurs within three major aquifers that underlie the Region. From the land's surface downward, they are: 1) the sand and gravel deposits in the glacial drift; 2) the shallow dolomite strata in the underlying bedrock; and 3) the deeper sandstone, dolomite, siltstone, and shale strata. Because of their proximity to the land's surface and hydraulic interconnection, the first two aquifers are commonly referred to collectively as the "shallow aquifer," while the latter is referred to as the deep aquifer. Within most of the Region, the shallow and deep aquifers are separated by the Maquoketa shale, which forms a relatively impermeable barrier between the two aquifers (see Figure 2.10).

Groundwater is susceptible to depletion and deterioration as a result of urban and rural development.

Like surface water, groundwater is susceptible to depletion in quantity and to deterioration in quality as a result of urban and rural development in the Region. Natural conditions may limit the use of groundwater as a source of water supply, including the relatively high levels of naturally occurring radium in groundwater in the deep sandstone aquifer, found in certain areas of the Region.

Recharge of the aquifers underlying the Region is derived largely by precipitation. Areas of groundwater recharge potential are shown on Map 2.19. The map identifies areas based upon the rate of annual groundwater recharge from precipitation in the Region. The areas with high or very high recharge potential are particularly important to the maintenance of groundwater resources.

Figure 2.10
Aquifer Systems in Southeastern Wisconsin



Source: US Geological Survey

Vegetation

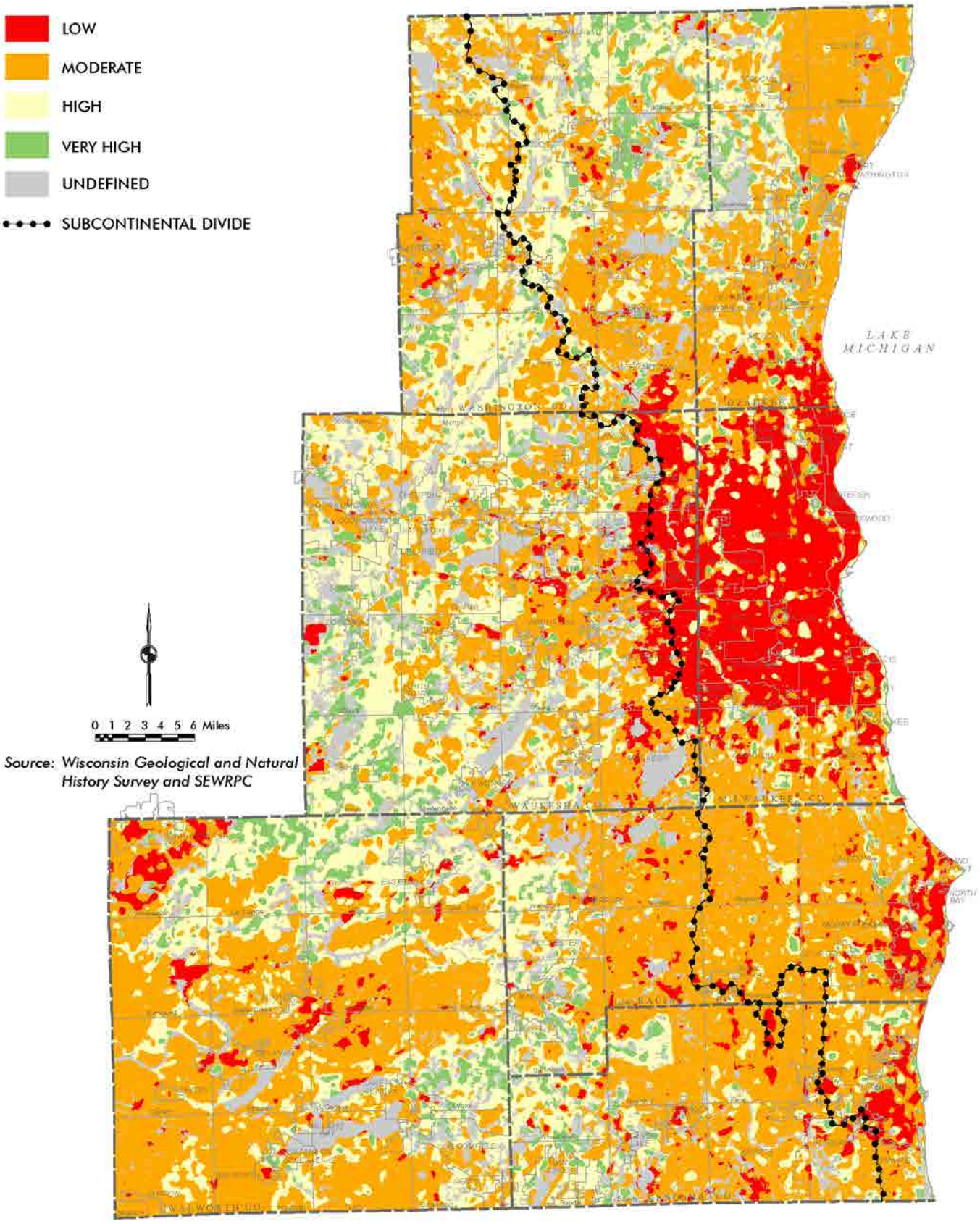
Presettlement Vegetation

Historically, vegetational patterns in the Region were influenced by such factors as climate, soils, fire, topography, and natural drainage patterns. Historical records, particularly the records of the original U.S. Public Land Survey carried out within the Region in 1835 and 1836, indicate that large portions of Southeastern Wisconsin once consisted of open, level plains containing orchard-like stands of oak or prairies dominated by big blue-stem grass and colorful prairie forbs. Other portions of the Region were covered by mixed hardwood forests.

Prairies

Prairies are treeless or generally treeless areas dominated by perennial native grasses. For the purpose of this report, prairies also include savannas, which are defined as areas dominated by native grasses but having between one and 17 trees per acre. In Southeastern Wisconsin, there are two types of savannas: oak openings and cedar glades. Prairies, which once covered extensive areas of Southeastern Wisconsin, have been reduced to scattered remnants, primarily in the southern and western portions of the Region. The chief causes of the loss of prairies is their conversion to urban and agricultural use and the suppression of wildfires, which had served to constrain the advancing shrubs and trees that shade out the prairie plants. The remaining prairies in the Region have important ecological and scientific value. Many of the remaining prairies are encompassed within the natural areas and critical species habitat sites described later in this section.

Map 2.19
Groundwater Recharge Potential in the Region



Source: *Wisconsin Geological and Natural History Survey and SEWRPC*

Woodlands

Six woodland types are recognized in the Region: northern upland hardwoods, southern upland hardwoods, northern lowland hardwoods, southern lowland hardwoods, northern lowland conifers, and northern upland conifers. The northern and southern upland hardwood types are the most common in the Region. The remaining stands of trees within the Region consist largely of even-aged mature, or nearly mature specimens, with insufficient reproduction and saplings to maintain the stands when the old trees are harvested or die of disease or age. Located largely on ridges and slopes and along lakes and streams, woodlands are a natural resource of immeasurable value. Woodlands enhance the natural beauty of, and are essential to the overall environmental wellbeing of, the Region.

Woodlands covered about 191 square miles, or about 7% of the total area of the Region in 2010.

Woodlands encompassed about 191 square miles, or 7 percent of the total area of the Region, in 2010.[13] Existing woodlands in the Region are shown on Map 2.20. It should be noted that lowland wooded areas, such as tamarack swamps, are classified as wetlands.

Wetlands

Wetlands generally occur in depressions and near the bottom of slopes, particularly along lakeshores and stream banks, and on large land areas that are poorly drained.[14] Wetlands may, however, under certain conditions, occur on slopes and even on hilltops. Wetlands perform an important set of natural functions, which include support of a wide variety of desirable, and sometimes unique, forms of plant and animal life; water quality protection; stabilization of lake levels; reduction in peak rates of stormwater runoff and streamflows by providing areas for floodwater impoundment and storage; protection of shorelines from erosion; and provision of groundwater discharge areas.

Wetlands support a variety of plant and animal life, protect water quality, and reduce streamflows.

Wetlands encompassed about 325 square miles, or 12 percent of the total area of the Region, in 2010. Those wetlands are shown on Map 2.20. The wetlands shown on Map 2.20 are based upon the Wisconsin Wetlands Inventory completed in the Region in 2008, updated to the year 2010 as part of the regional land use inventory. It should be noted that the wetlands shown on Map 2.20 include wetlands that have been identified as "farmed wetlands," which are subject to Federal wetland regulations. These areas meet the definition of a wetland but were being actively farmed in 2010. In 2010, farmed wetlands encompassed about 10 square miles in the Region.

Wetlands covered about 325 square miles, or about 12% of the total area of the Region in 2010.

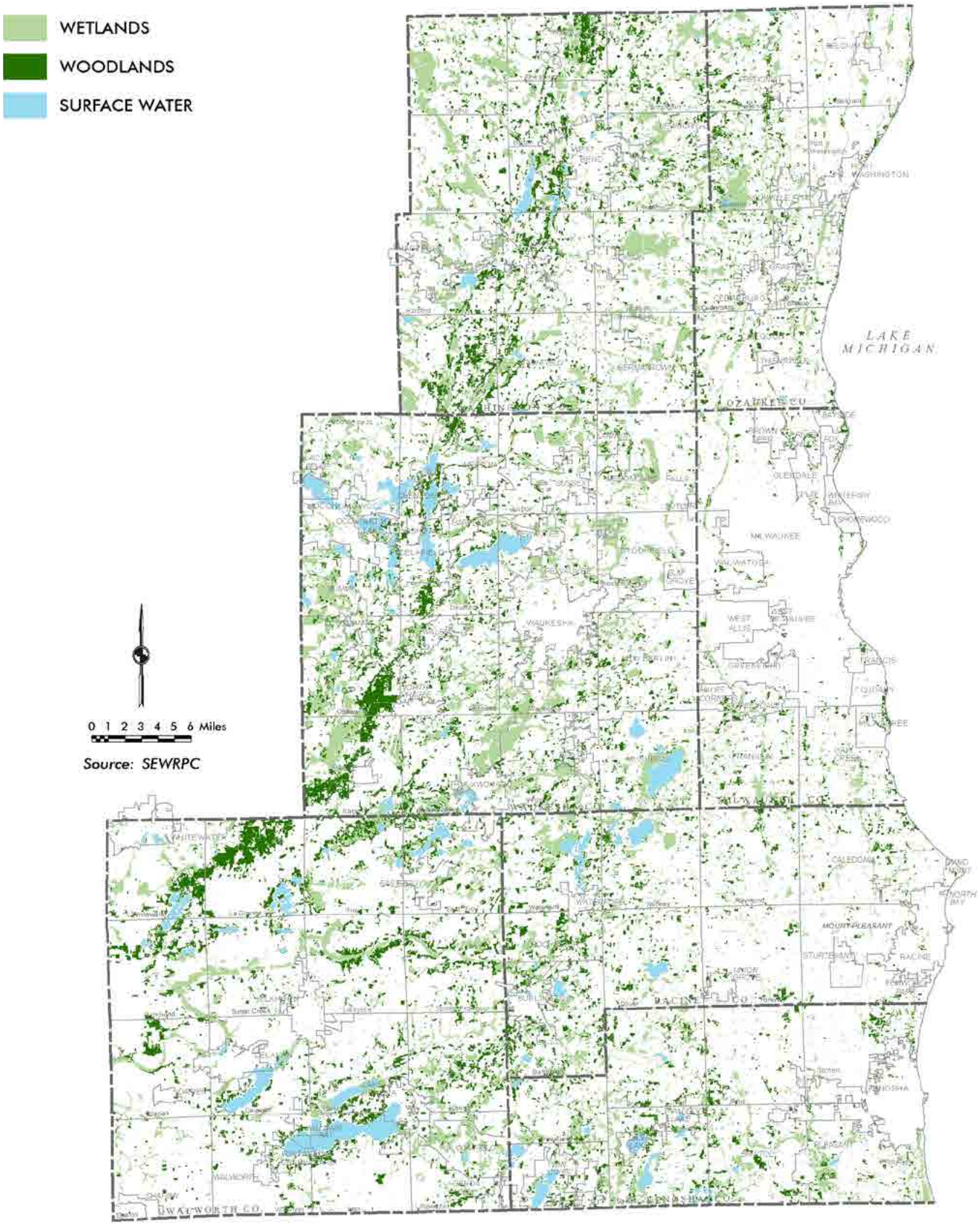
Wetlands and their boundaries are continuously changing in response to changes in drainage patterns and climatic conditions. While wetland inventory maps provide a sound basis for areawide planning, detailed field investigations are often necessary to precisely identify wetland boundaries for individual tracts of land at a given point in time.

---

[13] For purposes of this report, woodlands are defined as areas having 17 or more deciduous trees per acre each measuring at least four inches in diameter at breast height and having at least a 50 percent canopy cover. In addition, coniferous tree plantations and reforestation projects are defined as woodlands.

[14] The definition of wetlands utilized by the Commission is the same as that of the U.S. Army Corps of Engineers and the U.S. Environmental Protection Agency. Under this definition, wetlands are areas that are inundated or saturated by surface water or groundwater at a frequency, and with a duration sufficient to support, and that under normal circumstance do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.

Map 2.20
Wetlands and Woodlands in the Region: 2010



Natural Areas and Critical Species Habitat Sites

A comprehensive inventory of "natural areas" and "critical species habitat sites" in the Region was completed by the Commission in 1994. The inventory sought to identify the most significant remaining natural areas—essentially, remnants of the pre-European settlement landscape—as well as other areas vital to the maintenance of endangered, threatened, and rare plant and animal species in the Region. A comprehensive update to the inventory was conducted by the Commission in 2009 as part of an amendment to the regional natural areas and critical species habitat protection and management plan.[15]

Natural areas are tracts of land or water that contain intact native plant and animal communities representative of the pre-European-settlement landscape. There are 494 natural areas in the Region covering 101 square miles.

Natural areas are tracts of land or water so little modified by human activity, or sufficiently recovered from the effects of such activity, that they contain intact native plant and animal communities believed to be representative of the landscape before European settlement. Natural areas are classified into one of three categories: natural areas of statewide or greater significance (NA-1), natural areas of countywide or regional significance (NA-2), and natural areas of local significance (NA-3). Classification of an area into one of these three categories is based upon consideration of the diversity of plant and animal species and community types present; the structure and integrity of the native plant or animal community; the extent of disturbance from human activity; the commonness of the plant or animal community; the uniqueness of the natural features; the size of the site; and the educational value. A total of 494 natural areas were identified in the Region in 2009. In combination, these sites encompassed 101 square miles, or 4 percent of the total area of the Region. The location of the natural area sites in the Region is shown on Map 2.21.

Critical species habitat sites support endangered, threatened, or rare plant or animal species. There are 271 sites in the Region covering 31 square miles.

Critical species habitat sites consist of areas, located outside natural areas, which are important for their ability to support endangered, threatened, or rare plant or animal species. Such areas constitute "critical" habitat considered to be important to the survival of a species or group of species of special concern. A total of 271 critical species habitat sites were identified in the Region in 2009. Together, these critical species habitat sites encompassed 31 square miles, or 1 percent of the Region. These sites are also shown on Map 2.21. Most of the identified natural areas and critical species habitat sites in Southeastern Wisconsin are located within the Commission-identified environmental corridors and isolated natural resource areas described below.

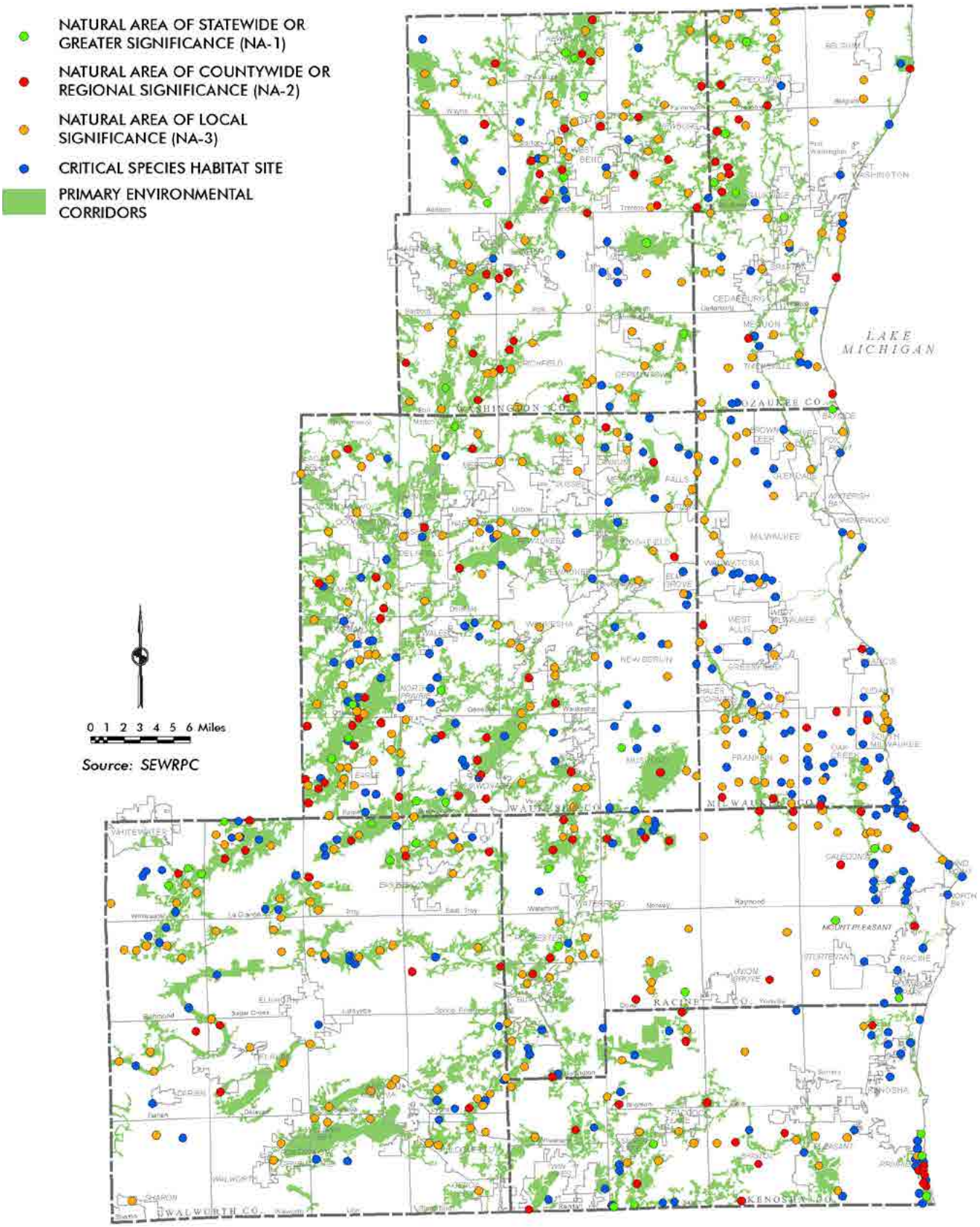
Environmental Corridors

One of the most important tasks completed under the regional planning program for Southeastern Wisconsin has been the identification and delineation of areas of the Region in which concentrations of the best remaining elements of the natural resource base occur. It was recognized that preservation of such areas is important to both the maintenance of the overall environmental quality of the Region and to the continued provision of amenities required to maintain a high quality of life for the resident population.

Under the regional planning program, seven elements of the natural resource base have been considered essential to the maintenance of the ecological balance, natural beauty, and overall quality of life in Southeastern Wisconsin: 1) lakes, rivers, and streams, and their associated shorelands

[15] *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.*

Map 2.21
Natural Areas and Critical Species Habitat Sites in the Region: 2009



and floodlands; 2) wetlands; 3) woodlands; 4) prairies; 5) wildlife habitat areas; 6) wet, poorly drained, and organic soils; and 7) rugged terrain and high-relief topography. In addition, certain other elements, although not part of the natural resource base per se, are closely related to, or centered upon, that base and are a determining factor in identifying and delineating areas with recreational, aesthetic, ecological, and cultural value. These five additional elements are: 1) existing park and open space sites; 2) potential park and open space sites; 3) historic sites; 4) scenic areas and vistas; and 5) natural areas and critical species habitat sites.

The delineation of these 12 natural resource and natural resource-related elements on maps results, in most areas of the Region, in an essentially linear pattern of relatively narrow, elongated areas that have been termed "environmental corridors" by the Commission.16 Primary environmental corridors include a variety of the aforementioned important natural resource and resource-related elements and are at least 400 acres in size, two miles in length, and 200 feet in width. Secondary environmental corridors generally connect with the primary environmental corridors and are at least 100 acres in size and one mile in length. In addition, smaller concentrations of natural resource base elements that are separated physically from the environmental corridors by intensive urban or agricultural land uses have also been identified. These areas, which are at least five acres in size, are referred to as isolated natural resource areas.

The most important elements of the Region's natural resource base often occur in a linear pattern of relatively narrow, elongated areas termed "environmental corridors."

The preservation of environmental corridors and isolated natural resource areas in essentially natural, open uses, yields many benefits, including recharge and discharge of groundwater; maintenance of surface and groundwater quality; attenuation of flood flows and stages; maintenance of base flows of streams and watercourses; reduction of soil erosion; abatement of air and noise pollution; provision of wildlife habitat; protection of plant and animal diversity; protection of rare and endangered species; maintenance of scenic beauty; and provision of opportunities for recreational, educational, and scientific pursuits. Conversely, since these areas are generally poorly suited for urban development, their preservation can help avoid serious and costly development problems.

Environmental corridors are generally poorly suited for urban development. Preserving them can help avoid serious and costly development problems.

Because of the many interacting relationships existing between living organisms and their environment, the destruction or deterioration of one important element of the total environment may lead to a chain reaction of deterioration and destruction of other elements. The drainage of wetlands, for example, may destroy fish spawning areas, wildlife habitat, groundwater recharge areas, and natural filtration and floodwater storage areas of interconnecting stream systems. The resulting deterioration of surface-water quality may, in turn, lead to a deterioration of the quality of the groundwater that serves as a source of domestic, municipal, and industrial water supply, and upon which low flows of rivers and streams may depend. Similarly, destruction of ground cover may result in soil erosion, stream siltation, more rapid runoff, and increased flooding, as well as the destruction of wildlife habitat. Although the effect of any one of these environmental changes may not in and of itself be overwhelming, the combined effects may eventually lead to a serious deterioration of the underlying and sustaining natural resource base and of the overall quality of the environment for life. In addition to such environmental impacts, the intrusion of intensive urban land uses into such

[16] *A detailed description of the process of delineating environmental corridors in Southeastern Wisconsin is presented in the March 1981 issue (Volume 4, No. 2) of the* SEWRPC Technical Record.

areas may result in the creation of serious and costly development problems, such as failing foundations for pavements and structures, wet basements, excessive operation of sump pumps, excessive clear-water infiltration into sanitary sewerage systems, and poor drainage.

Primary Environmental Corridors

Primary environmental corridors contain almost all the best remaining woodlands, wetlands, and wildlife habitat in the Region. They covered about 484 square miles, or about 18% of the Region, in 2010.

As shown on Map 2.22, the primary environmental corridors in the Region are generally located along major stream valleys, around major lakes, and along the Kettle Moraine. These primary environmental corridors contain almost all of the best remaining woodlands, wetlands, and wildlife habitat areas in the Region, and represent a composite of the best remaining elements of the natural resource base. As indicated in Table 2.23, primary environmental corridors encompassed about 484 square miles, or about 18 percent of the total area of the Region, in 2010. The protection of the primary environmental corridors from additional intrusion by incompatible land uses, degradation, and destruction is one of the key objectives of the adopted regional land use plan.

Secondary Environmental Corridors

Secondary environmental corridors contain a variety of resource elements, often remnants from primary corridors that were developed for intensive urban or agricultural uses. They covered about 79 square miles, or about 3% of the Region, in 2010.

As further shown on Map 2.22, secondary environmental corridors are generally located along the small perennial and intermittent streams within the Region. Secondary environmental corridors also contain a variety of resource elements, often remnant resources from primary environmental corridors that have been developed for intensive urban or agricultural purposes. Secondary environmental corridors facilitate surface water drainage, maintain pockets of natural resource features, and provide corridors for the movement of wildlife, as well as for the movement and dispersal of seeds for a variety of plant species. In 2010, secondary environmental corridors encompassed about 79 square miles, or about 3 percent of the total area of the Region.

Isolated Natural Resource Areas

In addition to the primary and secondary environmental corridors, other smaller pockets of wetlands, woodlands, surface water, or wildlife habitat exist within the Region (see Map 2.22). These pockets are isolated from the environmental corridors by urban development or agricultural use, and although separated from the environmental corridor network, these isolated natural resource areas have significant value. They may provide the only available wildlife habitat in an area, usually provide good locations for local parks, and lend unique aesthetic character and natural diversity to an area. Widely scattered throughout the Region, isolated natural resource areas encompassed about 70 square miles, or just under 3 percent of the total area of the Region, in 2010.

Isolated natural resource areas are pockets of natural resources isolated from corridors by urban or agricultural uses. They covered about 70 square miles, or a little less than 3% of the Region, in 2010.

It should be noted that the extent of environmental corridors and isolated natural resources identified in 2010 is somewhat greater than in 2000. Thus, the primary environmental corridors encompassed 484 square miles in 2010, compared to 462 square miles in 2000. Secondary environmental corridors encompassed 79 square miles in 2010, compared to 75 square miles in 2000. Isolated natural resource areas encompassed 70 square miles in 2010, compared to 63 square miles in 2000. These patterns are generally consistent with the increase in the extent of wetlands and woodlands identified in 2010 compared to 2000, described earlier in this chapter.

Map 2.22
Environmental Corridors and Isolated Natural Resource Areas in the Region: 2010

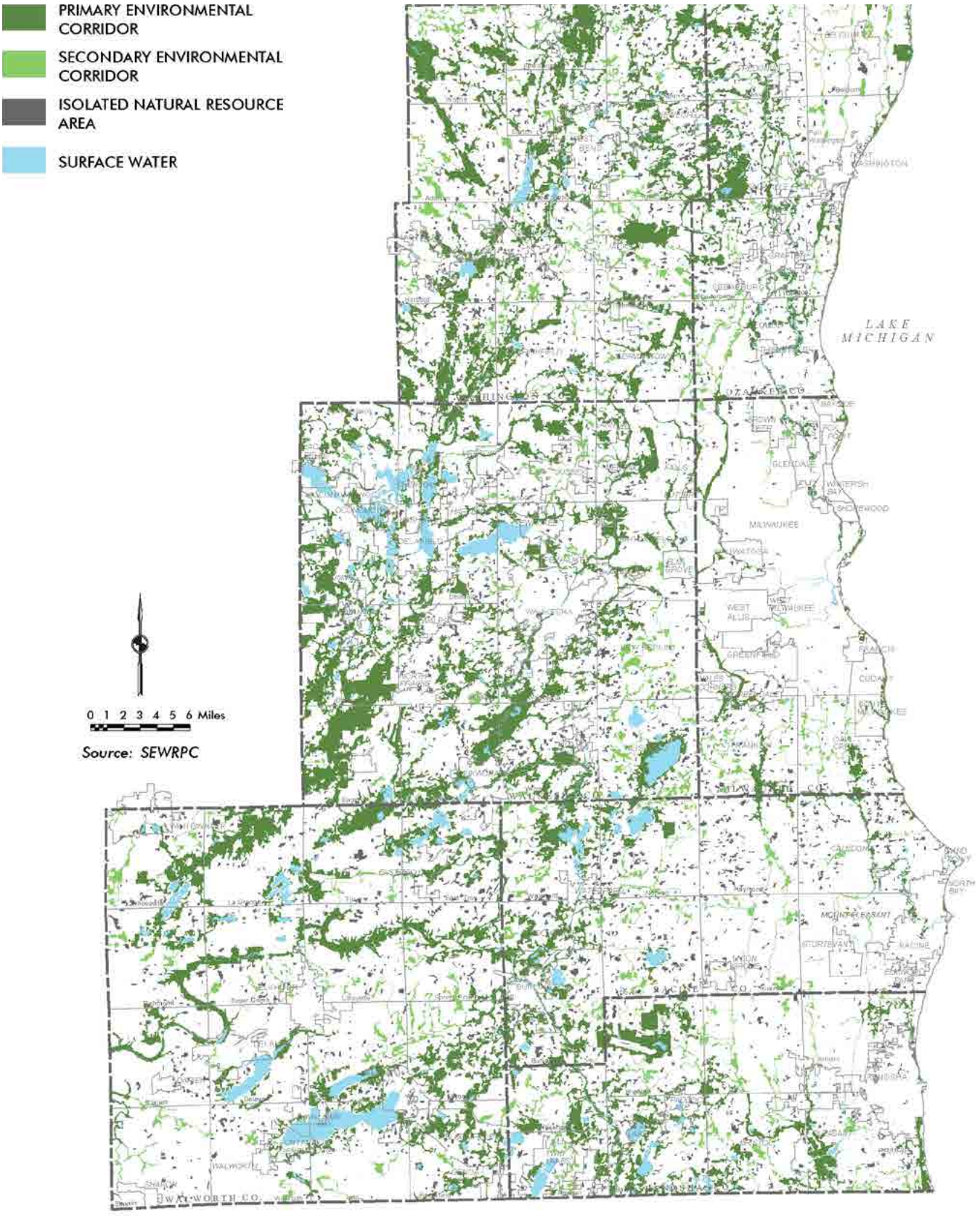


Table 2.23
Environmental Corridors and Isolated Natural Resource Areas in the Region by County: 2010

County	Primary Environmental Corridors		Secondary Environmental Corridors		Isolated Natural Resource Areas		Total	
	Square Miles	Percent of County/ Region	Square Miles	Percent of County/ Region	Square Miles	Percent of County/ Region	Square Miles	Percent of County/ Region
Kenosha	45.1	16.2	10.6	3.8	6.5	2.3	62.2	22.3
Milwaukee	15.5	6.4	5.7	2.3	3.7	1.5	24.9	10.2
Ozaukee	33.8	14.3	8.4	3.6	6.3	2.7	48.5	20.6
Racine	36.9	10.8	11.2	3.3	13.2	3.9	61.3	18.0
Walworth	106.3	18.4	14.8	2.6	14.4	2.5	135.5	23.5
Washington	97.6	22.4	16.2	3.7	11.3	2.6	125.1	28.7
Waukesha	148.8	25.6	12.1	2.1	14.2	2.5	175.1	30.2
Region	484.0	18.0	79.0	2.9	69.6	2.6	632.6	23.5

Source: SEWRPC

Air Quality

The Clean Air Act requires the U.S. Environmental Protection Agency (EPA) to set national ambient air quality standards (NAAQS) for six criteria pollutants (carbon monoxide, lead, nitrogen dioxide, particulate matter, ozone, and sulfur oxides) that are considered harmful to public health and the environment. Benefits of attaining air quality standards include reduced mortality, hospital admissions due to respiratory ailments, school and work absenteeism, and incidence of asthma. Areas not meeting the NAAQS for one or all of the criteria pollutants are designated as nonattainment areas by the EPA. In areas where observed pollutant levels exceed the established NAAQS and are designated as "nonattainment" areas by the EPA, growth and development patterns may be constrained. For example, major sources of pollutants seeking to locate or expand in a designated nonattainment area, or close enough to impact upon it, must apply emission control technologies. In addition, new or expanding industries may be required to obtain a greater than one-for-one reduction in emissions from other sources in the nonattainment area so as to provide a net improvement in ambient air quality. Nonattainment area designation may, therefore, create an economic disincentive for industry with significant emission levels to locate or expand within or near the boundaries of such an area. To eliminate this disincentive and relieve the potential constraint on development, it is necessary to demonstrate compliance with the NAAQS and petition the EPA for redesignation of the nonattainment areas. Areas designated as being in nonattainment or in maintenance of a NAAQS are also required to demonstrate that transportation plans and programs are consistent with air quality goals established by State implementation of maintenance plans to ensure that the plans and programs do not prevent continued improvement in air quality and achievement or maintenance of a NAAQS.

The combination of local controls and offsets implemented within and outside the Region and national vehicle emissions control requirements have resulted in a significant improvement in ambient air quality.

Over the past decade, the combination of local controls and offsets implemented within and external to the Region, along with national vehicle emissions control requirements, have resulted in a significant improvement in ambient air quality within the Region as well as nationally. The Southeastern Wisconsin Region currently meets all but the ozone NAAQS. The EPA has designated Kenosha County east of IH 94 as part of the Tri-State Chicago-Naperville, IL-IN-WI Marginal Nonattainment Area for the 2008 8-hour

ozone standard.[17] Ozone is formed when precursor pollutants, such as volatile organic compounds and nitrogen oxides, react in the presence of sunlight. The ozone air quality problem within the Region is complex because ozone is meteorologically dependent. In addition, the ozone problem in the Region is believed to be attributable in large part to precursor emissions generated in the large urban areas located to the south and southeast and carried by prevailing winds into the Region. The ozone problem thus remains largely beyond the control of the Region and State and can be effectively addressed only through a multi-state abatement effort.

2.6 AGRICULTURAL RESOURCE BASE

About 1,156 square miles, or 43 percent of the total area of the Region, were in agricultural use in 2010. This figure includes lands actually used for agriculture—primarily cultivated lands and lands used for pasture. As shown on Map 2.23, large, essentially uninterrupted blocks of agricultural land remain in the Region, particularly in outlying areas. In other areas, farmland is more fragmented, being intermixed with nonagricultural uses.

About 1,156 square miles, or 43% of the Region, were in agricultural use in 2010. Most of this land has highly productive soils.

As further shown on Map 2.23, much of the existing agricultural land in the Region is covered by highly productive soils—comprised of soils in agricultural capability Class I and Class II, as classified by the U.S. Natural Resources Conservation Service. Agricultural lands covered by Class I and Class II soils encompassed about 887 square miles, or 77 percent of all agricultural land in the Region, in 2010. The adopted regional land use plan recommends the preservation of Class I and Class II soils insofar as practicable.

2.7 EXISTING PLANS AND ZONING

There is a long history of planning at the regional, county, and local level in Southeastern Wisconsin. This section provides an overview of the existing planning framework of the Region, focusing on adopted regional plans and county and local comprehensive plans. This section also describes existing zoning arrangements in the Region, zoning being one of the most important measures available to county and local units of government to implement their plans.

Regional Plans

The Regional Planning Commission has prepared and adopted a number of regional plans that together provide a comprehensive plan for the Region. The regional land use and transportation plans are the most basic regional plan elements. A description of the currently adopted year 2035 regional land use and transportation plans, and the implementation status of these plans, is presented in Chapter 3 of this volume. Other key elements of the overall plan for the Region are described as follows.

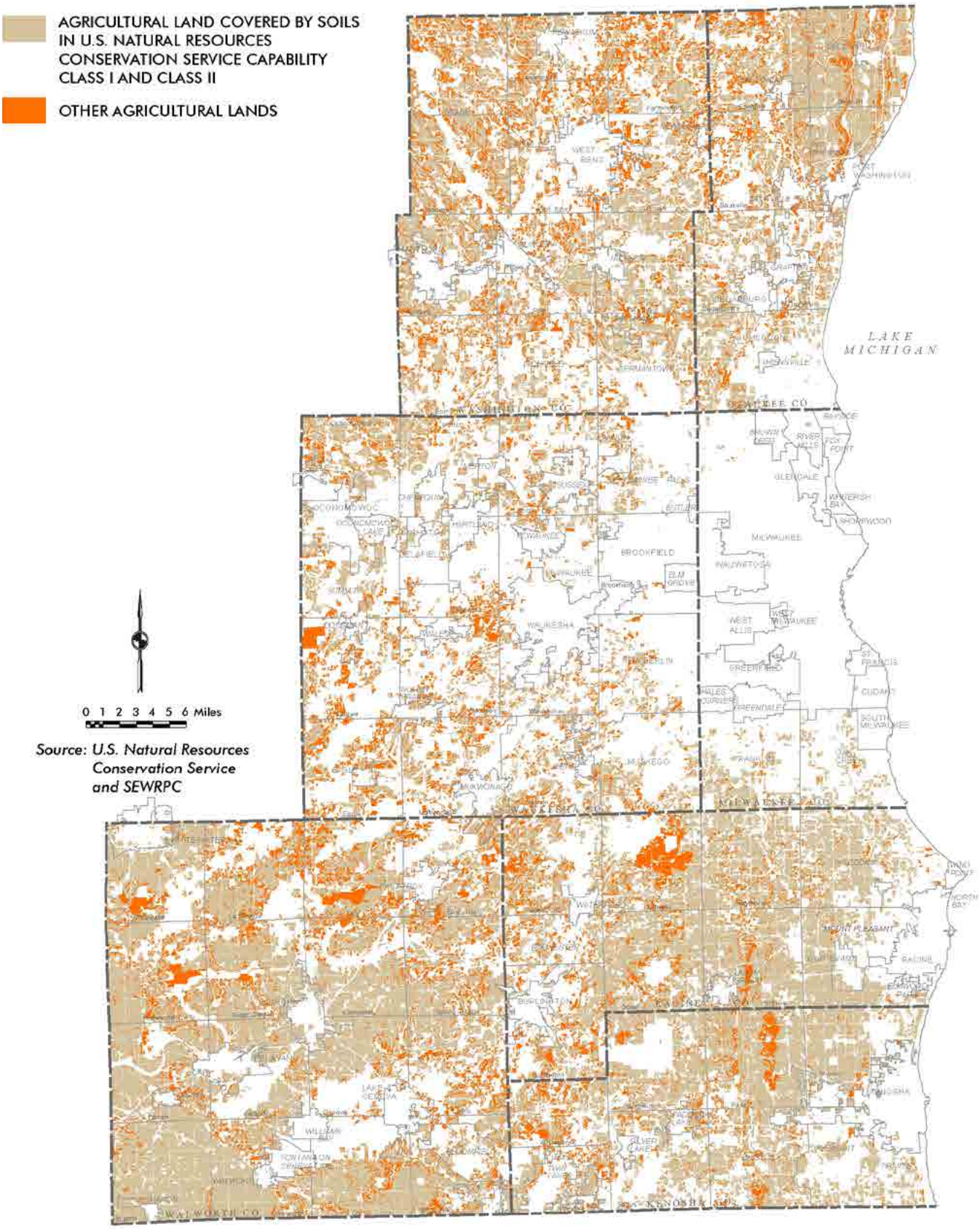
The Commission has prepared and adopted a number of regional plans that together provide a comprehensive plan for the Region.

Regional Water Quality Management Plan

The Commission completed and adopted a regional water quality management plan in 1979, in part to meet the Congressional mandate that the waters of the United States be made "fishable and swimmable" to the extent practical. The plan is documented in SEWRPC Planning Report No. 30, *A Regional Water Quality Management Plan for Southeastern Wisconsin*, Volume One, *Inventory Findings;* Volume Two, *Alternative Plans;* and Volume

[17] *There is also a three-county maintenance area for the 2006 24-hour fine particulate standard consisting of Milwaukee, Racine, and Waukesha Counties, which requires offsets and other measures to ensure that this standard continues to be met.*

Map 2.23
Agricultural Lands in the Region: 2010



Three, *Recommended Plan*, July 1979. It provides recommendations for controlling water pollution from point sources such as wastewater treatment plants, points of separate and combined sewer overflow, and industrial waste outfalls. It also recommends controlling nonpoint sources such as urban and rural stormwater runoff. The plan provides the basis for:

- Continued eligibility of local units of government for Federal and State grants that support sewerage system development and redevelopment
- Issuance of waste discharge permits by the DNR
- Review and approval of public sanitary sewer extensions by the DNR
- Review and approval of private sanitary sewer extensions and large onsite wastewater treatment systems and holding tanks by the Wisconsin Department of Safety and Professional Services

The Commission adopted an update of the regional water quality management plan for the Greater Milwaukee Watersheds in December 2007.[18] This effort was coordinated with a parallel sewerage facilities planning program carried out by the Milwaukee Metropolitan Sewerage District (MMSD). It was designed to utilize the watershed planning approach consistent with historic SEWRPC practice and evolving EPA policies. The update resulted in the re-evaluation and, as necessary, revision of the three major elements comprising the original plan (land use, point source pollution abatement, and nonpoint source pollution abatement). In addition, a groundwater element was added based largely on companion work programs. The updated plan is documented in SEWRPC Planning Report No. 50, *A Regional Water Quality Management Plan Update for the Greater Milwaukee Watersheds*, December 2007.

The regional water quality management plan provides a basis for review and approval of public sewer extensions by the DNR.

Regional Water Supply Plan

The Commission adopted a regional water supply plan in December 2010 that represents the third, and final, element of the SEWRPC regional water supply management program. The first two elements included the development of basic groundwater inventories and the development of a groundwater simulation model for the Region. The program involved interagency partnerships with the U.S. Geological Survey, Wisconsin Geological and Natural History Survey, University of Wisconsin-Milwaukee, DNR, and water supply utilities serving the Region. The plan is documented in SEWRPC Planning Report No. 52, *A Regional Water Supply Plan for Southeastern Wisconsin*, December 2010, and includes the following major components:

Important groundwater recharge areas were identified as part of the regional water supply plan.

- Development of recommended water supply service areas and forecast demand for water use
- Development of recommendations for water conservation efforts to reduce water demand
- Evaluation of alternative sources of supply, culminating in identification of recommended sources of supply for each service area and in

[18] *The greater Milwaukee watersheds include the Kinnickinnic, Menomonee, Milwaukee, and Root River watersheds; the Oak Creek watershed; the Lake Michigan direct drainage area from the northern boundary of the Town of Grafton to the northern boundary of the Root River watershed at Lake Michigan; the Milwaukee Harbor estuary; and the nearshore area of Lake Michigan from the northern boundary of the Village of Fox Point south to the Village of Wind Point.*

recommendations for development of the basic infrastructure required to deliver that supply

- Identification of important groundwater recharge areas
- Specification of new institutional structures found necessary to carry out the plan recommendations

The regional park and open space plan includes recommendations to preserve environmental corridors.

Regional Park and Open Space Plan

The Commission adopted a regional park and open space plan for Southeastern Wisconsin in December 1977. The plan has an open space preservation element and an outdoor recreation element. The open space preservation element consists of recommendations for preserving environmental corridors and other environmentally significant areas in the Region. The outdoor recreation element consists of:

- A resource-oriented outdoor recreation plan providing recommendations for the number and location of large parks, recreation corridors to accommodate trail-oriented activities, and water-access facilities to enable the recreational use of rivers, inland lakes, and Lake Michigan
- An urban outdoor recreation plan providing recommendations for the number and distribution of local parks and outdoor recreational facilities located in urban areas of the Region

The initial regional park and open space plan is documented in SEWRPC Planning Report No. 27, *A Regional Park and Open Space Plan for Southeastern Wisconsin: 2000*, November 1977. The Commission assists counties in the Region in preparing county-level park and open space plans. These plans refine, detail, and extend the regional park and open space plan. The county plans serve as amendments to the regional plan upon their adoption by the Commission.

The regional natural areas plan identifies areas vital to the maintenance of endangered, threatened, and rare plant and animal species.

Regional Natural Areas Plan

A regional natural areas and critical species habitat protection and management plan for Southeastern Wisconsin was adopted by the Commission in 1997 and amended in 2010. The plan is documented in SEWRPC Planning Report No. 42, *A Regional Natural Areas and Critical Species Habitat Protection and Management Plan for Southeastern Wisconsin*, as amended in 2010. The planning effort was undertaken to identify the most significant remaining natural areas in the Region that are essentially remnants of the pre-European-settlement landscape. Other areas vital to the maintenance of endangered, threatened, and rare plant and animal species in the Region were also identified. The plan recommends preserving 494 natural areas and 271 critical species habitat sites, primarily through public and private conservancy ownership.

Regional Housing Plan

The Commission adopted the year 2035 regional housing plan in March 2013. That plan is documented in SEWRPC Planning Report No. 54, *A Regional Housing Plan for Southeastern Wisconsin: 2035*. The regional housing plan provides further detail to the residential component of the year 2035 regional land use plan. The focus of the housing plan is providing an adequate supply of affordable housing for all current residents and the anticipated future population of the Region through the design year 2035.

Implementing the plan recommendations will benefit current and future residents by:

- Providing housing affordable to all residents of the Region, with a focus on housing affordable to the existing and projected workforce
- Reinforcing the need for improved and expanded public transit in Southeastern Wisconsin
- Providing enough subsidized and low-income tax credit housing to meet the needs of extremely and very low-income households and help address the problem of dilapidated, substandard, and unsafe housing in the Region
- Better meeting the existing and future need for accessible housing for people with disabilities
- Increasing racial and economic integration throughout the Region
- Promoting compact development to achieve more efficient, cost-effective development and preservation of farmland

County and Local Comprehensive Plans

The Wisconsin Legislature enacted legislation that expanded the scope and significance of comprehensive planning in the State in 1999. The legislation, sometimes referred to as the State's "Smart Growth" law, provides a framework for the development, adoption, implementation, and amendment of comprehensive plans by county, city, village, and town units of government. The law is set forth in Section 66.1001 of the *Wisconsin Statutes* and has been amended periodically since its enactment. The law effectively requires the adoption of a comprehensive plan by cities, villages, towns, and counties that administer a general zoning ordinance, a shoreland zoning ordinance, a land subdivision ordinance, or an official mapping ordinance. The law requires consistency between comprehensive plans and such ordinances enacted or amended on or after January 1, 2010. The law also requires comprehensive plans to address the following nine elements: issues and opportunities; housing; transportation; utilities and community facilities; agricultural, natural, and cultural resources; economic development; intergovernmental cooperation; land use; and implementation.

State comprehensive planning law effectively requires the adoption of a comprehensive plan by cities, villages, towns, and counties that administer a general zoning ordinance, a shoreland zoning ordinance, a land subdivision ordinance, or an official mapping ordinance.

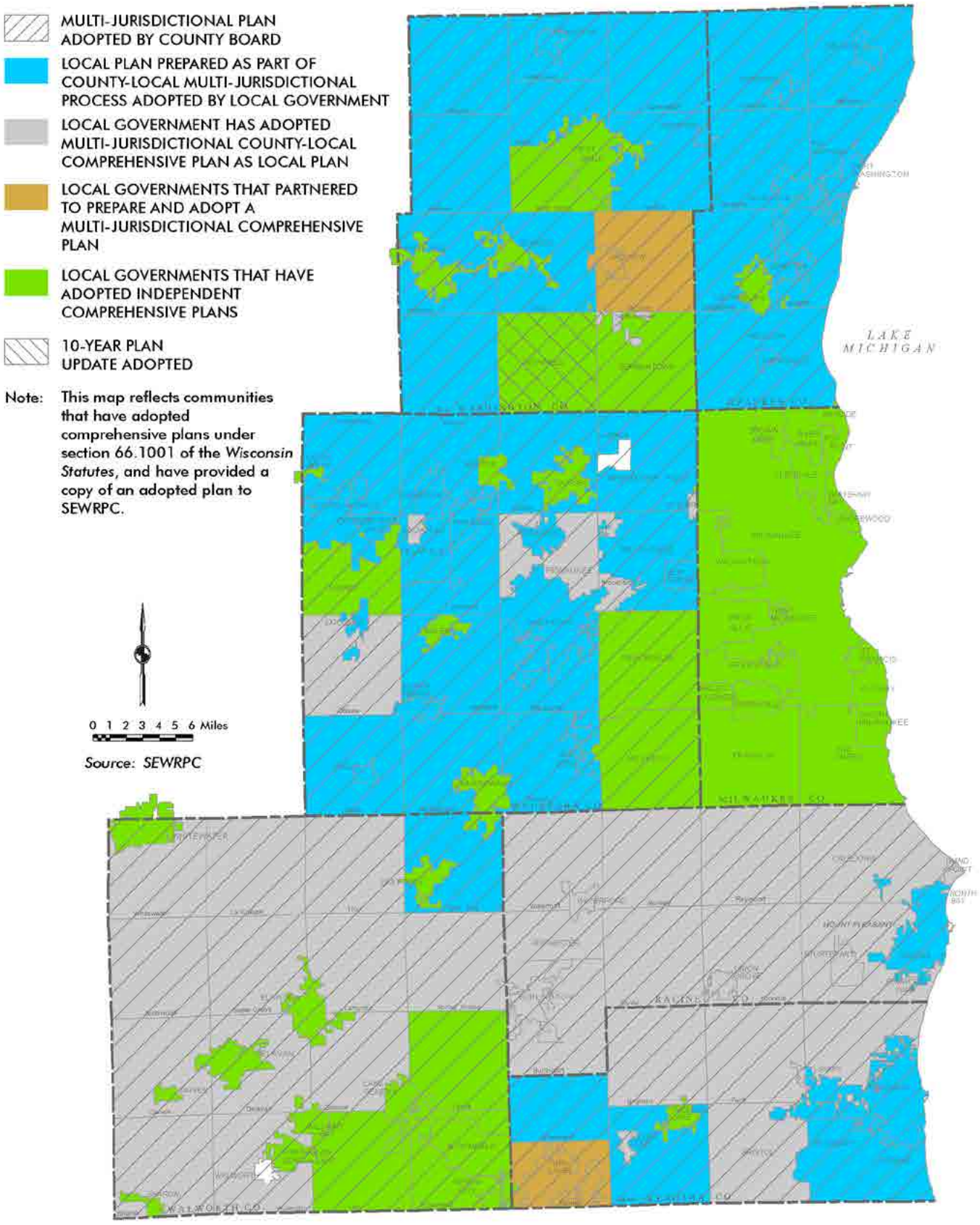
Existing Comprehensive Plans

Map 2.24 shows that almost every city, village, and town in the Region has adopted a comprehensive plan per State legislation.[19] Six of the seven counties (all except Milwaukee County) have also adopted comprehensive plans.[20] The development of the Region is heavily influenced by these plans, which provide a guide for general location and density of development at least 20 years into the future. Community comprehensive plans were considered in the regional planning process due to their influence. An important step in this process was to understand the amount of development that could be potentially accommodated by community comprehensive plans.

[19] *The State comprehensive planning law and adopted county and local government comprehensive plans are discussed further in Appendix B.*

[20] *Milwaukee County has not prepared a comprehensive plan because it does not administer a zoning, subdivision, or official mapping ordinance.*

Map 2.24
Comprehensive Plan Status in the Region: 2014



An analysis of comprehensive plans adopted by communities in the Region was undertaken by the Commission during preparation of the year 2035 regional housing plan. The analysis identifies the amount of residential and job-supporting development—and the associated increase in housing and jobs—that could be expected in the Region if community comprehensive plans were to be fully implemented. The analysis was limited to areas planned by communities to be provided with sanitary sewer service and was conducted at a necessarily general, regionwide scope, which was appropriate for use in the development of a regional-level housing plan.

The analysis indicates that local comprehensive plans would accommodate substantial growth in housing and employment levels in the Region. It is estimated that local comprehensive plans for sewered communities in the Region could potentially accommodate a total of about 1,052,000 housing units and 2,091,000 jobs under full development—or "buildout"—conditions. In comparison, the currently adopted regional land use plan, which is based upon an intermediate-growth scenario, indicates that sewered communities in the Region may be expected to accommodate a total of 864,000 housing units and 1,327,000 jobs by the year 2035 (see Table 2.24).

Community comprehensive plans call for significantly more housing units (1,052,000 compared to 864,000) and jobs (2,091,000 compared to 1,327,000) than reasonably expected under the 2035 regional land use plan.

The higher level of growth associated with the comprehensive plans is primarily due to the practice of many communities to plan for the full buildout of the community and adjacent areas that may be annexed over a relatively long period of time. In many cases these conditions would likely not materialize until long after the stated plan design year (typically 2035). In a number of communities, planned future growth areas extend beyond the long-range planned sewer service areas embodied in the regional land use plan.

Counties and communities often work to align the goals and objectives set forth in other planning efforts, such as county land and water resource management plans or community sustainability plans, with their comprehensive plans. An example is the City of Milwaukee's *ReFresh Milwaukee* sustainability plan, which was published in 2013. *ReFresh Milwaukee* is a citywide strategic plan to develop a sound environmental, economic, and socially sustainable future. The plan seeks to implement sustainable projects and complement many of the policies set forth in the City's comprehensive plan by creating goals, targets, and strategies that refine and detail the comprehensive plan.

Local Zoning Regulations

A zoning ordinance is a public law that regulates the use of property in the public interest. Local zoning regulations include general zoning regulations and special-purpose regulations governing floodplain and shoreland areas. General and special-purpose zoning regulations may be adopted as a single ordinance or as separate ordinances, and may or may not be included in the same document. As previously noted, the State comprehensive planning law establishes a close link between comprehensive plans and zoning, by requiring consistency between comprehensive plans and general zoning and shoreland zoning ordinances enacted or amended on or after January 1, 2010. A description of existing zoning arrangements in cities, villages, towns, and counties in the Region follows.

State comprehensive planning law requires consistency between comprehensive plans and zoning ordinances.

General Zoning

General zoning divides a community into districts for the purpose of regulating the use of land, water, and structures; the height, size, shape, and placement of structures; and the density of population. Cities in Wisconsin are granted authority under Section 62.23 of the *Wisconsin Statutes* to enact general

Table 2.24
Housing and Employment Accommodated by Community Comprehensive Plans and the Year 2035 Regional Land Use Plan[a]

County	Housing Units			Jobs		
	Regional Land Use Plan[b]	Comprehensive Plans	Difference	Regional Land Use Plan	Comprehensive Plans	Difference
Kenosha	79,000	84,100	5,100	86,200	306,200	220,000
Milwaukee	427,400	448,000	20,600	628,000	787,000	159,000
Ozaukee	34,800	61,900	27,100	59,800	99,800	40,000
Racine	77,500	92,300	14,800	101,100	186,300	85,200
Walworth	43,800	77,900	34,100	62,300	153,700	91,400
Washington	46,400	61,600	15,200	68,900	144,900	76,000
Waukesha	155,100	225,800	70,700	320,000	412,900	92,900
Region	864,000	1,051,600	187,600	1,327,200	2,090,800	763,600

[a] *Limited to areas planned by local governments to be provided with sanitary sewer service.*

[b] *Refers to the number of occupied housing units, or households, under the regional land use plan.*

Source: SEWRPC

General zoning divides a community into districts to regulate the use of land, water, and structures; the height, size, and placement of structures; and population density. General zoning is in effect for all of the communities in the Region.

zoning. The same authority is granted to villages under Section 61.35 of the Statutes. General zoning in unincorporated areas is enabled under several statutory provisions. Counties are granted general zoning authority in unincorporated areas under Section 59.69 of the Statutes; however, a county zoning ordinance is only effective in towns that ratify the county ordinance. This is referred to as "county-town" zoning because it is administered jointly by the county and the ratifying towns.

Towns that do not adopt a county zoning ordinance may adopt village powers to use city and village general zoning authority, subject to county board approval where a general county zoning ordinance exists. This is referred to as "town-county" zoning because no town zoning ordinance or ordinance amendment may take effect unless approved by a county board. A town may adopt a zoning ordinance under Section 60.61 of the Statutes in counties that have not adopted a general zoning ordinance, but only if the county board fails to adopt a county ordinance at the request of the town board concerned.

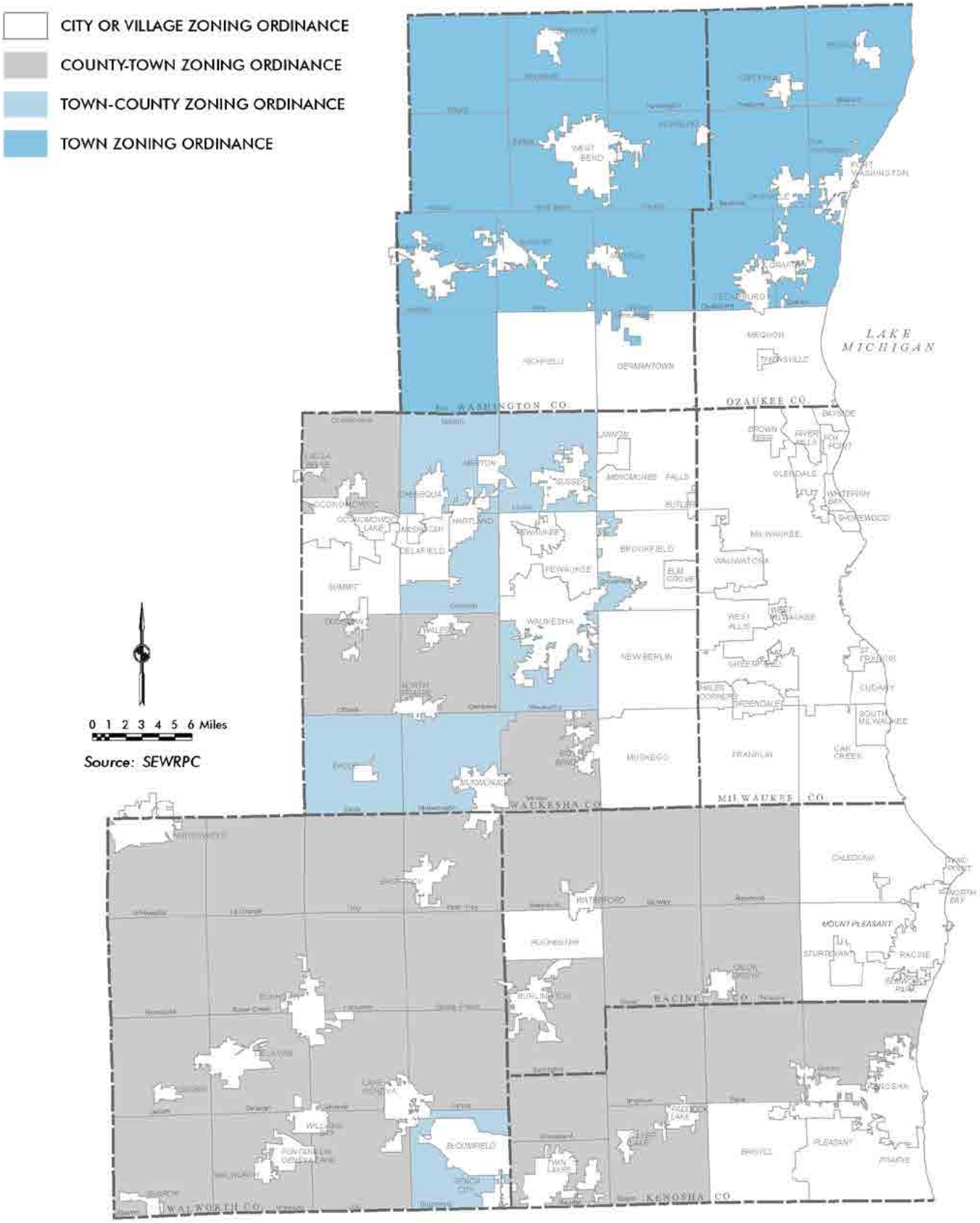
The status of general zoning in the Region in 2014 is shown on Map 2.25. General zoning was in effect in each of the 29 cities, 61 villages, and 57 towns. There were 31 towns under the jurisdiction of county zoning ordinances in Kenosha, Racine, Walworth, and Waukesha Counties.

In addition, Section 62.23 of the Statutes grants cities and villages the authority to enact extraterritorial zoning in adjoining unincorporated areas. Extraterritorial zoning jurisdiction is limited to the unincorporated areas within three miles of the corporate limits of a city of the first, second, or third class and within 1.5 miles of a city of the fourth class or a village. Cities and villages must follow a procedure that involves adjoining towns before enacting a permanent extraterritorial zoning ordinance and map.

Floodplain Zoning

Floodplain zoning is intended to preserve the floodwater conveyance and storage capacity of floodplain areas and to avoid flood-damage-prone urban development in flood hazard areas. Cities, villages, and counties (in their unincorporated areas) are required to adopt floodplain zoning under Section 87.30 of the *Wisconsin Statutes*, provided that the hydraulic and engineering data required to create the ordinance are available. The

Map 2.25
General Zoning Ordinances in the Region: 2014



minimum standards for floodplain zoning ordinances are set forth in Chapter NR 116 of the *Wisconsin Administrative Code*. These regulations must govern filling and development activities within the entire one-percent-annual-probability (100-year recurrence interval) floodplain, which is the area subject to inundation during a flood event with a one percent probability of occurrence during any year. Local floodplain zoning regulations must prohibit nearly all forms of development in the floodway under minimum State requirements. The floodway is the area of the floodplain required to convey the one-percent-probability peak flood flow. Local regulations must also restrict filling and development in the flood fringe, which consists of the portion of the floodplain located outside the floodway that would be covered by floodwaters during a one-percent-probability flood event.

The status of floodplain zoning in the Region in 2014 is shown on Map 2.26. Floodplain ordinances have been adopted throughout almost all of Southeastern Wisconsin. They were in effect in all six counties with unincorporated territory, as well as 83 of the 90 cities and villages in the Region.

Shoreland Zoning

Section 59.692 of the *Wisconsin Statutes* requires counties to adopt regulations to ensure protection and proper development of shorelands in their unincorporated areas. Shoreland areas are those lands within 1,000 feet of a navigable lake, pond, or flowage, or within 300 feet of a navigable stream or to the landward side of the floodplain, whichever distance is greater. Minimum standards for county shoreland regulations are set forth in Chapter 115 of the *Wisconsin Administrative Code*. Shoreland regulations must include minimum requirements for lot sizes and building setbacks as well as restrictions on the cutting of trees and shrubbery. State regulations also require that counties place all shoreland wetlands at least five acres in size in a protective conservancy district. Under Sections 62.231 and 61.351 of the *Wisconsin Statutes*, cities and villages are also required to enact regulations that protect wetlands five acres in size lying in shoreland areas as defined above. Rules pertaining to city and village shoreland-wetland zoning are set forth in Chapter NR 117 of the *Wisconsin Administrative Code*.

The status of shoreland zoning in the Region in 2014 is shown on Map 2.27. Shoreland ordinances were in effect in each of the six counties with unincorporated areas. Shoreland-wetland zoning was in effect in 74 of the 90 cities and villages in the Region.

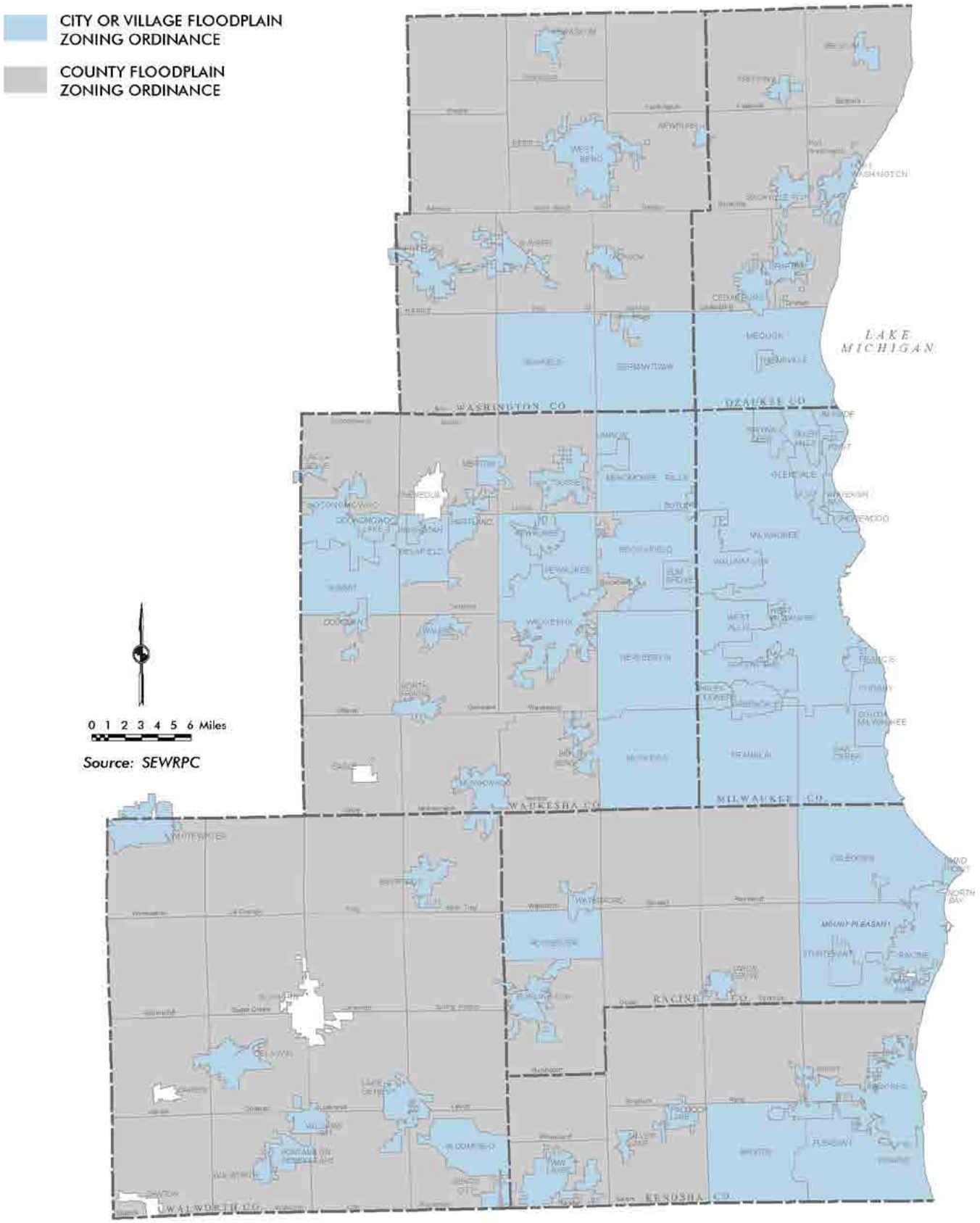
2.8 SUMMARY

A major inventory update effort was conducted in the early 2010s in support of preparing VISION 2050 and other elements of the comprehensive plan for the Region. This chapter presents a summary of the results of that inventory update pertaining to the population, economy, land use, sanitary sewer and water supply services, natural resource base, agricultural resource base, and existing planning framework within the Region. Transportation-related inventory and survey data are presented in Chapters 4 and 5 of this volume.

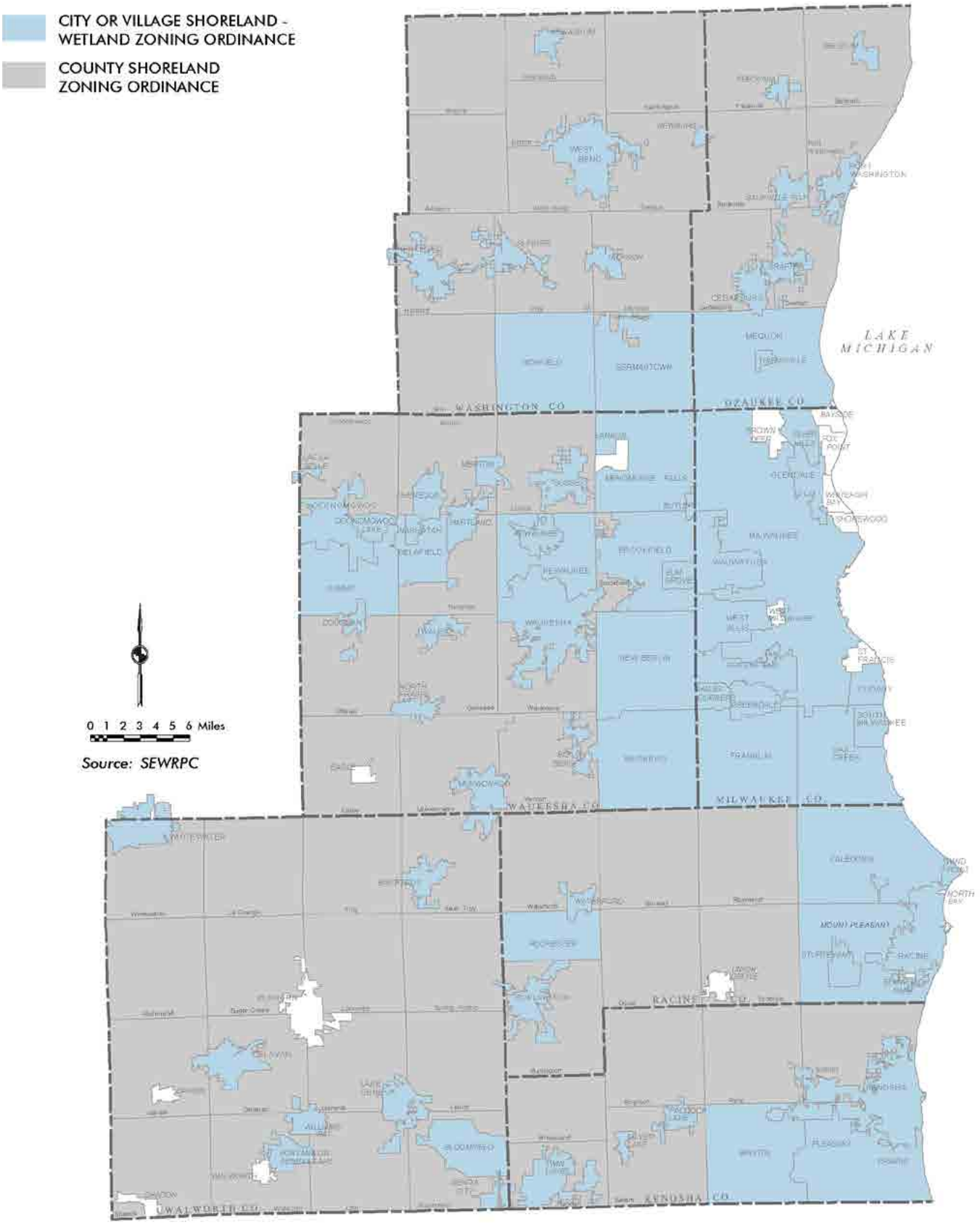
Demographic and Economic Base

- The population of the Region in 2010 was 2,020,000 people, which is an increase of 4.6 percent (88,800 people) over the 2000 population of 1,931,200 people. The population increase in the Region between 2000 and 2010 can be largely attributed to natural increase. There was

Map 2.26
Floodplain Zoning Ordinances in the Region: 2014



Map 2.27
Shoreland Zoning Ordinances in the Region: 2014



a natural increase of about 109,200 people in the Region; however, there was a net out-migration of about 20,400 people. All seven counties gained population, including Milwaukee County after three decades of decline. Although Milwaukee County gained population during the 2000s, its share of the regional population decreased by about 2 percent. The share of the other six counties remained about the same or increased slightly.

- The minority share of the total population increased throughout the Region between 1980 and 2010; however, minority populations remain concentrated in the Region's largest cities.

- There were about 800,100 households in the Region in 2010. This is an increase of just over 51,000 households, or 6.8 percent, over the 2000 level of 749,000 households. The rate of growth in number of households in the Region during the 2000s exceeded the rate of population growth, which has been a continuing pattern observed since 1950. The differential growth rates in households and population over the long term have been accompanied by a decline in average household size. The average household size for the Region decreased from 2.52 people in 2000 to 2.47 people in 2010.

- The number of jobs in the Region, as reported by the U.S. Bureau of Economic Analysis, fluctuated somewhat between 2000 and 2010. The number of jobs decreased during the early 2000s, increased during the mid-2000s, and decreased again after 2008. This fluctuation resulted in a decrease of about 33,200 jobs, or 2.7 percent, during the 2000s, to 1,176,600 jobs in 2010. There was a long period of uninterrupted job growth between 1983 and 2000. Historically, both national and regional employment levels tend to fluctuate in the short-term, rising and falling in accordance with business cycles. The long period of uninterrupted job growth between 1983 and 2000 is unusual in this respect.

- Five of the seven counties in the Region gained jobs between 2000 and 2010. Kenosha County gained 7,000 jobs during the 2000s, which was the most of any county in the Region. There were also job increases in Washington County (3,600 jobs), Ozaukee County (2,100 jobs), Walworth County (1,500 jobs), and Waukesha County (1,000 jobs). The number of jobs decreased in both Milwaukee and Racine Counties, with much of the decrease occurring during the recession of the late 2000s.

- The shift in the regional economy from manufacturing to a service orientation continued during the 2000s. Manufacturing employment decreased by 31 percent between 2000 and 2010, and by 38 percent over the last four decades. Conversely, service-related employment increased by 10 percent during the 2000s, and by 183 percent over the last four decades. The State and the Nation have experienced a similar shift from manufacturing to service-related employment; however, both the Region and the State have a larger share of manufacturing relative to total employment than the Nation.

- The Region's per capita income was $25,900 in 2010, which is about the same as per capita income for the State and Nation. Per capita income in the Region decreased by 11.3 percent during the 2000s (measured in constant dollars). Constant dollar per capita income

for Wisconsin and the Nation also decreased. The Region's median family income was $65,400 in 2010, which exceeded that of the State and Nation. Median family income (constant dollar) in the Region decreased by 11.0 percent during the 2000s, and also decreased for the State and the Nation.

Land Use

- Developed lands in the Region—consisting of lands that have been developed for residential; commercial; industrial; transportation, communication, and utility; governmental and institutional; and recreational uses—encompassed about 779 square miles, or 29.0 percent of the total area of the Region, in 2010. Residential land encompassed 401 square miles, accounting for more than half of the developed land area of the Region, followed by transportation, communication, and utilities, with 214 square miles. Commercial land and industrial land each encompassed just over 35 square miles. Governmental/institutional land and recreational land encompassed 37 square miles and 56 square miles, respectively.

- The developed land area of the Region increased by 67 square miles, or 9.4 percent, between 2000 and 2010, including the following: residential land—39.2 square miles, or 10.8 percent; commercial land—5.4 square miles, or 17.9 percent; industrial land—2.3 square miles, or 7.0 percent; transportation, communication, and utility land—11.1 square miles, or 5.5 percent; governmental and institutional land—3.3 square miles, or 9.8 percent; and recreational land—5.6 square miles, or 11.1 percent.

- Undeveloped lands encompassed about 1,911 square miles, or 71.0 percent of the total area of the Region in 2010. This includes 1,156 square miles of agricultural lands; 591 square miles of wetlands, woodlands, and surface water combined; and 164 square miles of unused land and other open land. Undeveloped lands decreased by 67 square miles, or 3.4 percent, between 2000 and 2010.

- The population density of the urban portion of the Region, based upon the Commission's urban growth analysis, decreased modestly over the past two decades from about 3,500 people per square mile in 1990 to 3,300 in 2000 and 3,200 in 2010. This stands in marked contrast to the substantial decrease in urban population density that occurred in the Region between 1940 and 1980. The urban household density experienced an only slight decrease over the past two decades—from about 1,320 households per square mile in 1990 to 1,290 in 2000 and 1,260 in 2010.

Public Utilities

- Areas served by public sanitary sewers in 2010 encompassed about 525 square miles, or 19.5 percent of the total area of the Region—compared to about 477 square miles, or 17.7 percent of the Region in 2000. An estimated 1.80 million people, or 89.0 percent of the regional population, were served by public sanitary sewers in 2010, compared to 1.71 million people, or 88.7 percent of the regional population, in 2000. The increase in the land area and population served primarily reflects new development designed to be served by sanitary sewers that occurred during the 2000s. Some of the increase is also the result of the retrofitting of certain developed areas—initially

served by private onsite wastewater treatment systems—with public sanitary sewers.

- Areas served by public water utilities in 2010 encompassed about 444 square miles, or 16.5 percent of the total area of the Region, compared to 390 square miles, or 14.5 percent of the Region in 2000. An estimated 1.68 million people, or 83.2 percent of the regional population, were served by public water utilities in 2010, compared to 1.58 million people, representing 81.9 percent of the regional population, in 2000. The increase in the land area and population served primarily reflects new urban development designed to be served by public water supply during the 2000s, and, to a lesser extent, the retrofitting of certain already developed areas—initially served by private wells—with public water supply service.

Natural Resource Base

- Surface and groundwater resources comprise an extremely important component of the natural resource base of the Region. The Region encompasses 101 major lakes (lakes of at least 50 acres in area) and 1,150 miles of perennial streams. In addition, the Region encompasses numerous lakes and ponds less than 50 acres in area and an extensive network of smaller, intermittent streams. Groundwater sustains lake levels and provides the base flows of streams in the Region. Groundwater also comprises a major source of water supply for domestic, municipal, industrial, and agricultural water users.

- A major subcontinental drainage divide, oriented in a generally northwesterly-southeasterly direction, bisects the Region. About 1,680 square miles, or 62 percent of the Region, are located west of the divide and drain to the Upper Mississippi River system; the remaining 1,009 square miles, or 38 percent, drain to the Great Lakes-St. Lawrence River system. The subcontinental divide is a major feature of the overall drainage pattern of the Region, having important implications for the use of Lake Michigan as a source of water supply. The Great Lakes Compact, implemented in Chapter 281 of the *Wisconsin Statutes*, prohibits the diversion of water from the Great Lakes Basin, with very limited exceptions.

- Upland woodlands encompassed about 191 square miles, or 7 percent of the total area of the Region, in 2010. Wetlands encompassed about 325 square miles, or 12 percent of the Region. Prairies, which once covered extensive areas of Southeastern Wisconsin, have been reduced to scattered remnants, primarily in the southern and western portions of the Region.

- A comprehensive inventory of "natural areas" and "critical species habitat sites" in the Region was completed by the Regional Planning Commission in 1994 and updated in 2009. Natural areas are tracts of land or water so little modified by human activity, or sufficiently recovered from the effects of such activity, that they contain intact native plant and animal communities believed to be representative of the landscape before European settlement. A total of 494 natural areas, encompassing a total of 101 square miles, have been identified in the Region. Critical species habitat sites consist of areas that are important for their ability to support endangered, threatened, or rare plant or animal species. A total of 271 critical species habitat sites encompassing a total of 31 square miles have been identified. Most

of the critical species habitat sites in the Region are located within the Commission-identified environmental corridors and isolated natural resource areas.

- The most important elements of the natural resource base and features closely related to that base—including wetlands; woodlands; prairies; wildlife habitat; major lakes and streams and associated shorelands and floodlands; and historic, scenic, and recreational sites—when combined result in essentially elongated patterns referred to by the Commission as "environmental corridors." "Primary" environmental corridors, which are the longest and widest type of environmental corridor, are generally located along major stream valleys, around major lakes, and along the Kettle Moraine. They encompassed 484 square miles, or 18 percent of the total area of the Region, in 2010. "Secondary" environmental corridors are generally located along small perennial and intermittent streams. They encompassed 79 square miles, or 3 percent of the Region, in 2010. In addition to the environmental corridors, "isolated natural resource areas," consisting of small pockets of natural resource base elements separated physically from the environmental corridor network, have been identified. Widely scattered throughout the Region, isolated natural resource areas encompassed about 70 square miles, or just under 3 percent of the Region, in 2010.

- Over the past decade, the combination of local controls and offsets implemented within and external to the Region, along with national vehicle emissions control requirements have resulted in a significant improvement in ambient air quality within the Region as well as nationally. The Region currently meets all national ambient air quality standards except for ozone. The EPA has designated Kenosha County east of IH 94 as a part of the Tri-State Chicago-Naperville, IL-IN-WI Marginal Nonattainment Area for the 2008 8-hour ozone standard. Ozone is formed when precursor pollutants, such as volatile organic compounds and nitrogen oxides, react in the presence of sunlight. The ozone air quality problem within the Region is a complex problem because ozone is meteorologically dependent. In addition, the ozone problem in the Region is believed to be attributable in large part to precursor emissions that are generated in the large urban areas located to the south and southeast and carried by prevailing winds into the Region. The ozone problem thus remains largely beyond the control of the Region and State and can be effectively addressed only through a multi-state abatement effort.

Agricultural Resource Base

- About 1,156 square miles, or 43 percent of the total area of the Region, were in agricultural use in 2010. This figure includes lands actually used for agriculture—primarily cultivated lands and lands used for pasture. Large, essentially uninterrupted blocks of agricultural land remain in the Region, particularly in outlying areas. In other areas, farmland is more fragmented, being intermixed with nonagricultural uses.

- Much of the existing agricultural land in the Region is covered by highly productive soils—comprised of soils in agricultural capability Class I and Class II, as classified by the U.S. Natural Resources Conservation Service. Agricultural lands covered by Class I and Class II soils encompassed about 887 square miles, or 77 percent of all agricultural land in the Region, in 2010. The 2035 regional land use

plan recommends the preservation of Class I and Class II soils insofar as practicable.

Existing Plans and Zoning

- The Regional Planning Commission has prepared and adopted a number of regional plans that together provide a comprehensive plan for the Region. The regional land use and transportation plans are the most basic regional plan elements. Additional plan elements include water quality management, water supply, parks and open space, natural areas, and housing. Together, these plans set forth the fundamental concepts that are recommended to guide the development of Southeastern Wisconsin. Regional plan recommendations can be implemented, in part, by integrating them into county and local government comprehensive plans.

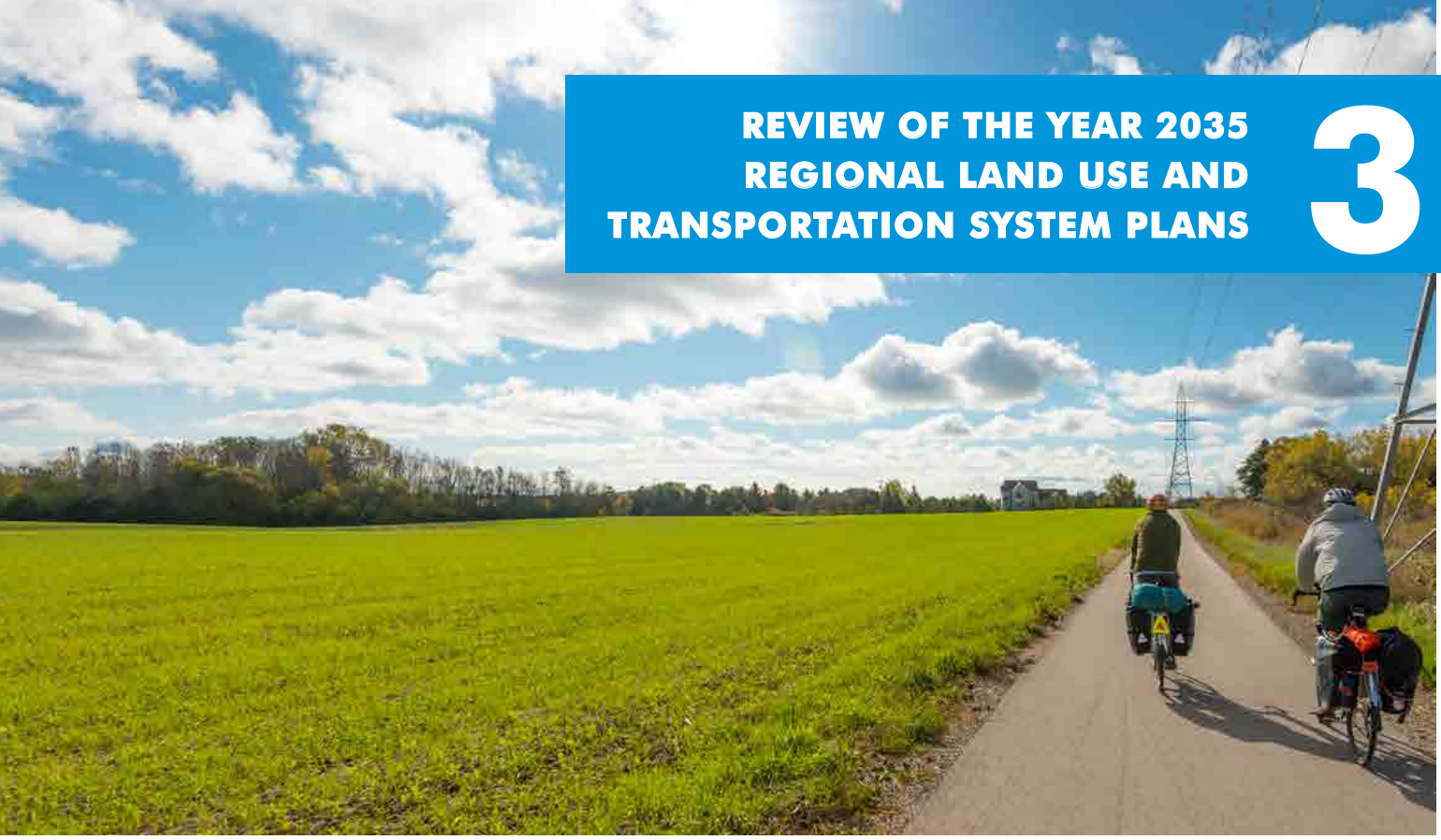
- The Wisconsin Legislature enacted legislation that expanded the scope and significance of comprehensive planning in the State in 1999. The legislation, sometimes referred to as the State's "Smart Growth" law, provides a framework for the development, adoption, implementation, and amendment of comprehensive plans by county, city, village, and town units of government. The law effectively requires the adoption of a comprehensive plan by cities, villages, towns, and counties that administer a general zoning ordinance, a shoreland zoning ordinance, a land subdivision ordinance, or an official mapping ordinance. The law requires consistency between comprehensive plans and such ordinances enacted or amended on or after January 1, 2010.

- Almost every city, village, and town in the Region has adopted a comprehensive plan per State legislation. Community comprehensive plans were considered in the regional planning process. An important step in this process was to understand the amount of development that could be potentially accommodated by community comprehensive plans. It is estimated that local comprehensive plans for sewered communities in the Region could potentially accommodate a total of about 1,052,000 housing units and 2,091,000 jobs under full development—or "buildout"—conditions. In comparison, the 2035 regional land use plan, which is based upon an intermediate-growth scenario, indicates that sewered communities in the Region may be expected to accommodate a total of 864,000 housing units and 1,327,000 jobs by the year 2035.

- A zoning ordinance is a public law that regulates the use of property in the public interest. It is one of the most important measures available to a community to implement its comprehensive plan. Local zoning regulations include general zoning regulations and special-purpose regulations governing floodland and shoreland areas. General zoning was in effect in each of the 29 cities, 61 villages, and 57 towns in the Region in 2014. Floodplain zoning was in effect in all six counties with unincorporated territory, as well as 83 of the 90 cities and villages in the Region. Shoreland ordinances were in effect in each of the six counties with unincorporated areas. Shoreland-wetland zoning was in effect in 74 of the 90 cities and villages in the Region.

REVIEW OF THE YEAR 2035 REGIONAL LAND USE AND TRANSPORTATION SYSTEM PLANS

3



Credit: Wisconsin Bike Fed

This chapter reviews the year 2035 land use and transportation plans and their underlying forecasts, assessing how well the plans have been implemented since their adoption.

3.1 INTRODUCTION

Before preparing a new regional land use and transportation plan for the year 2050, it is important to evaluate the preceding year 2035 land use and transportation plans, and the underlying forecasts, relative to change that has occurred in the Region since 2000, the plan base year. Section 3.2 of this chapter reviews the population, households, and employment forecasts on which the year 2035 plans are based, in light of actual trends to date. Section 3.3 provides an overview of the year 2035 regional land use plan and an assessment of how well the plan has been implemented. Similarly, Section 3.4 provides an overview of the year 2035 regional transportation system plan, an assessment of the implementation status of the plan, and a review of the transportation forecasts attendant to the plan.

3.2 REVIEW OF THE YEAR 2035 POPULATION, HOUSEHOLD, AND EMPLOYMENT FORECASTS

The regional land use and transportation plans preceding VISION 2050 were designed to accommodate anticipated future change in population, households, and employment in the Region through the year 2035. Prior to the preparation of those plans, the Commission in 2004 prepared a range of population, household, and employment projections—high, intermediate, and low—to the year 2035 for the Region. The intermediate projections were considered the most likely to be achieved for the Region and constituted the Commission's "forecast," which was used as the basis for the preparation of the year 2035 plans. The high and low projections were intended to provide an indication of the population, household, and employment levels

that could conceivably be achieved under significantly higher and lower, but nevertheless plausible, growth scenarios for the Region.[21]

As indicated in Table 3.1 and Figure 3.1, the actual population of the Region was about 2,025,900 people in 2013, representing an increase of 94,700 people, or 5 percent, over the 2000 base year population of 1,931,200 people. The Commission's year 2013 forecast population of 2,064,900 people exceeded the actual 2013 population by about 2 percent. The forecast population differed from the actual population by less than 3.0 percent in Kenosha, Milwaukee, Racine, Washington, and Waukesha Counties; by 4.3 percent in Ozaukee County; and by 6.6 percent in Walworth County.

As indicated in Table 3.2 and Figure 3.2, the actual number of households in the Region was about 805,000 in 2013, representing an increase of 56,000 households, or 7 percent, over the 2000 base year figure of 749,000 households. The Commission's year 2013 forecast of 826,200 households exceeded the actual number of households in 2013 by about 3 percent. The forecast differed from the actual number of households by less than 4.0 percent in each county except Kenosha and Walworth, where the differences were 4.4 percent and 6.0 percent, respectively.

As shown in Figure 3.3, total employment, or the number of jobs, in the Region decreased during the early 2000s, increased through the mid-2000s, and then decreased during the economic recession of the late 2000s. Since 2010, the number of jobs in the Region has increased slightly, to about 1,208,300 in 2013. The Commission's year 2013 forecast of 1,266,700 jobs exceeded the actual number of jobs in the Region in 2013 by approximately 5 percent (see Table 3.3). Among the seven counties, the differences between forecast and actual employment levels ranged from 3.7 percent in Ozaukee County to 10.2 percent in Racine County. In evaluating the employment forecasts, it is important to recognize that the forecasts are intended to indicate the long-term trend in the number of jobs through the year 2035. The forecasts do not reflect the fluctuation in job levels that may be expected to occur as a result of periods of growth and decline in the economy typically associated with shorter-term business cycles.

Summary and Conclusions for Section 3.2

Section 3.2 of this chapter has provided a review of the forecasts of population, households, and employment used in the preparation of the year 2035 regional land use and transportation plans in light of recent population, household, and employment trends in the Region. That review indicated the following:

- The Commission population forecast for the Region for the year 2013 was higher by approximately 2 percent than the actual level in 2013, as estimated by the Wisconsin Department of Administration.

- The Commission household forecast for the Region for the year 2013 was higher by approximately 3 percent than the actual level in 2013, as estimated based upon the Wisconsin Department of Administration annual housing survey and census data.

[21] *A projection indicates the future value of a variable, such as population or employment, under a set of assumptions that affect that variable. Typically more than one projection is developed, each with its own set of assumptions. A forecast involves an element of judgment, it being the projection deemed most likely to occur.*

Table 3.1
Actual and Forecast Population in the Region by County: 2013

County	Actual Population 2000[a]	Actual Population 2013[b]	Forecast Population 2013[c]	Percent Difference Between Actual and Forecast Population: 2013
Kenosha	149,600	166,900	171,400	2.7
Milwaukee	940,200	950,400	961,500	1.2
Ozaukee	82,300	86,700	90,400	4.3
Racine	188,800	195,200	197,600	1.2
Walworth	92,000	102,600	109,400	6.6
Washington	117,500	132,600	135,500	2.2
Waukesha	360,800	391,500	399,100	1.9
Region	1,931,200	2,025,900	2,064,900	1.9

[a] *2000 Census.*

[b] *Wisconsin Department of Administration estimate.*

[c] *SEWRPC intermediate-growth scenario.*

Source: U.S. Bureau of the Census, Wisconsin Department of Administration, and SEWRPC

Table 3.2
Actual and Forecast Households in the Region by County: 2013

County	Actual Households 2000[a]	Actual Households 2013[b]	Forecast Households 2013[c]	Percent Difference Between Actual and Forecast Households: 2013
Kenosha	56,100	63,200	66,000	4.4
Milwaukee	377,700	384,900	399,400	3.8
Ozaukee	30,900	34,500	35,200	2.0
Racine	70,800	75,900	76,200	0.4
Walworth	34,500	39,900	42,300	6.0
Washington	43,800	52,200	52,800	1.1
Waukesha	135,200	154,400	154,300	-0.1
Region	749,000	805,000	826,200	2.6

[a] *2000 Census.*

[b] *Estimate based upon Wisconsin Department of Administration Annual Housing Survey.*

[c] *SEWRPC intermediate-growth scenario.*

Source: U.S. Bureau of the Census, Wisconsin Department of Administration, and SEWRPC

Table 3.3
Actual and Forecast Employment in the Region by County: 2013

County	Actual Employment 2000[a]	Actual Employment 2013[b]	Forecast Employment 2013[c]	Percent Difference Between Actual and Forecast Employment: 2013
Kenosha	67,900	75,500	78,900	4.5
Milwaukee	618,300	585,200	608,400	4.0
Ozaukee	50,400	54,300	56,300	3.7
Racine	93,800	89,300	98,400	10.2
Walworth	51,200	54,800	60,200	9.9
Washington	60,300	67,600	70,500	4.3
Waukesha	267,900	281,600	294,000	4.4
Region	1,209,800	1,208,300	1,266,700	4.8

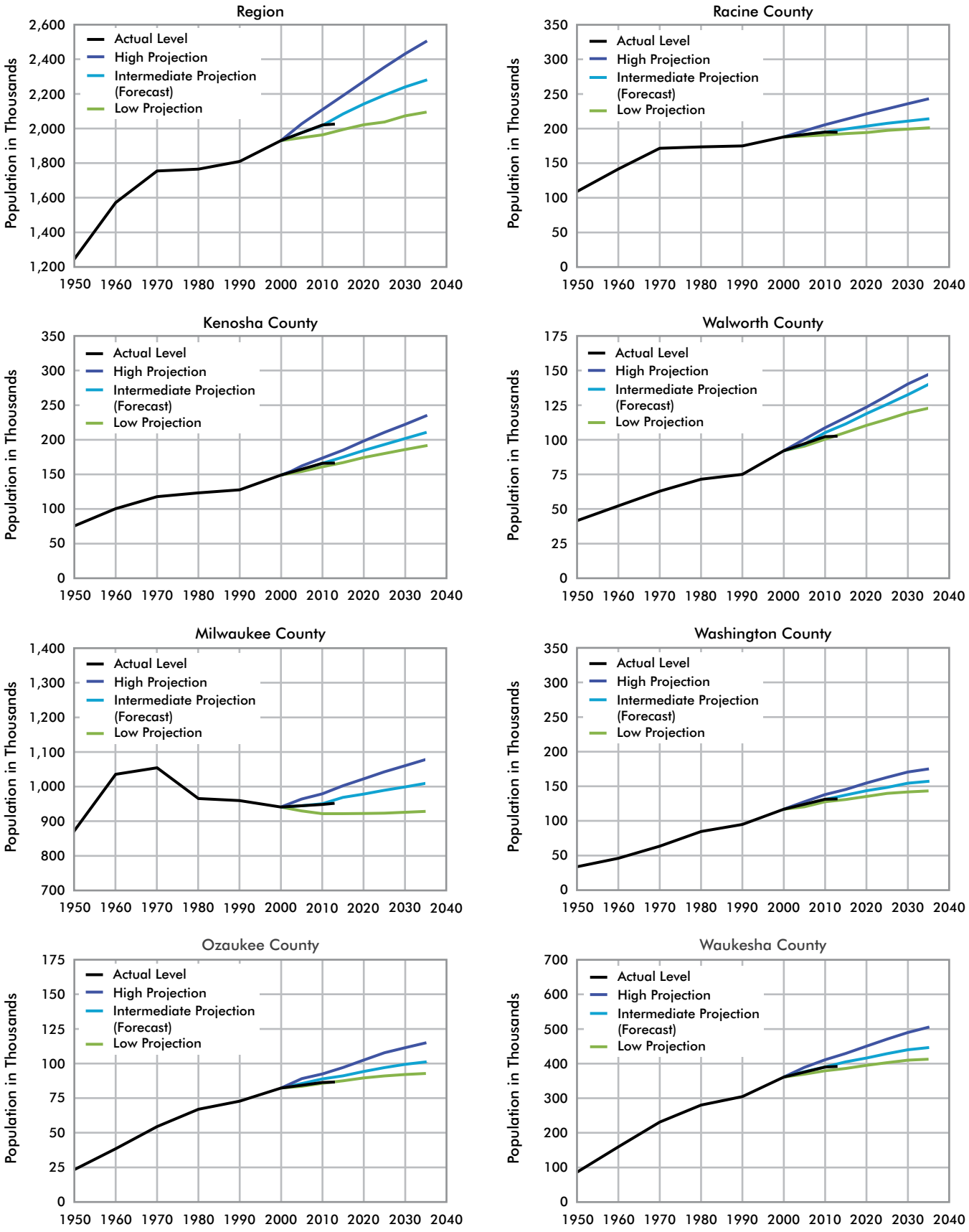
[a] *U.S. Bureau of Economic Analysis.*

[b] *Estimate based upon U.S. Bureau of Economic Analysis and Quarterly Census of Employment and Wages data.*

[c] *SEWRPC intermediate-growth scenario.*

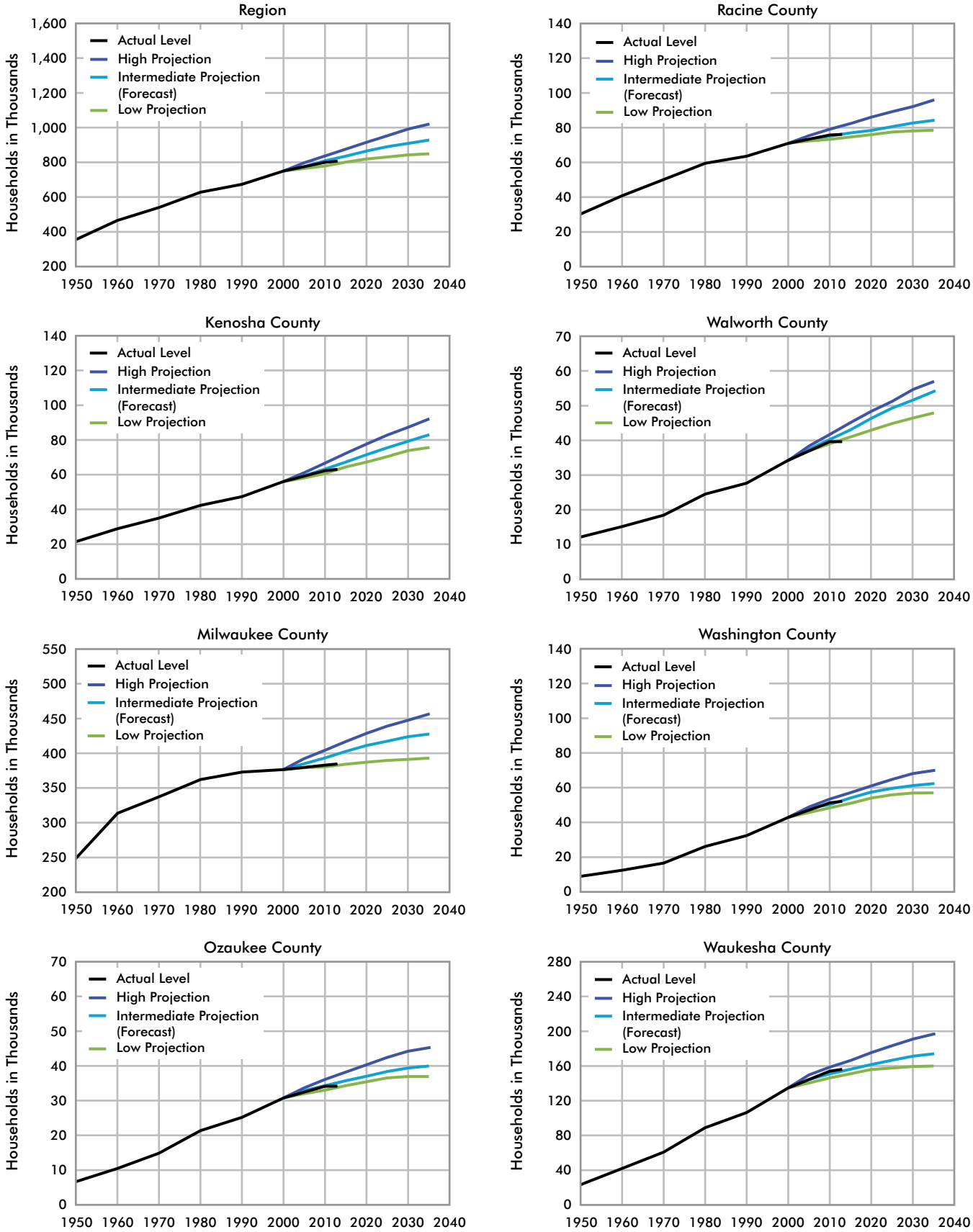
Source: U.S. Bureau of Economic Analysis, Quarterly Census of Employment and Wages; and SEWRPC

Figure 3.1
Actual and Projected Regional and County Population Levels: 1950-2035



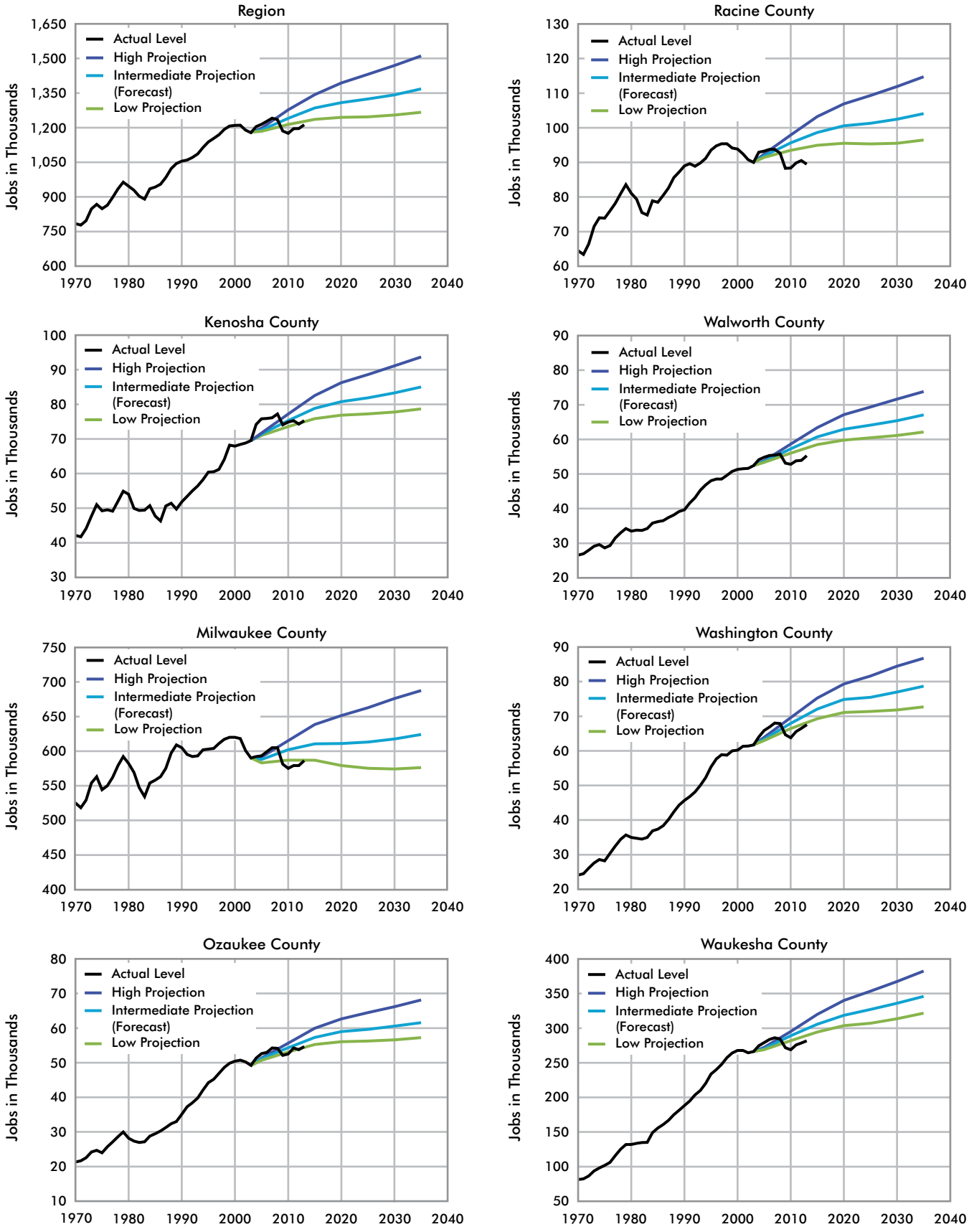
Source: U.S. Bureau of the Census, Wisconsin Department of Administration, and SEWRPC

Figure 3.2
Actual and Projected Regional and County Household Levels: 1950-2035



Source: U.S. Bureau of the Census, Wisconsin Department of Administration, and SEWRPC

Figure 3.3
Actual and Projected Regional and County Employment Levels: 1970-2035



Source: U.S. Bureau of Economic Analysis, Quarterly Census of Employment and Wages; and SEWRPC

- The Commission employment forecast for the Region for the year 2013 was higher by approximately 5 percent than the actual level in 2013, based upon the most recent available employment estimates.

The Commission population and household forecasts conform to actual trends somewhat better than the employment forecasts. It is important to recognize that, in comparison to population and household trends, employment levels are more subject to relatively short-term fluctuations related to business cycles. In reviewing the Commission employment forecasts, it is important to note that in 2013 employment in the Region was still recovering from the low levels associated with the major recession of the late 2000s, during which the Region experienced a loss of over 60,000 jobs.

Employment forecasts are intended to show a long-term trend, and do not reflect short-term fluctuations in job levels such as those related to the major recession of the late 2000s.

3.3 REVIEW OF THE 2035 REGIONAL LAND USE PLAN

The year 2035 regional land use plan is a fifth-generation plan, the Commission having previously prepared and adopted land use plans with plan design years of 1990, 2000, 2010, and 2020. Prior regional land use planning efforts evaluated a wide range of spatial design alternatives for the Region. Three plan design alternatives and an unplanned alternative were evaluated in the first regional planning study carried out in the 1960s. The three alternatives included a "controlled existing trend" plan, a "corridor" plan, and a "satellite city" plan. The controlled existing trend plan was adopted based on public and technical evaluation.[22] The plan recommended that most urban development occur in existing urban centers and in rings along the periphery of existing urban centers. The second regional planning effort considered a "controlled centralization" alternative and a "controlled decentralization" alternative. The controlled centralization plan was adopted, again based on extensive public and technical evaluation.[23] Like the initial design year 1990 plan, the year 2000 controlled centralization plan recommended a relatively compact pattern of development, with new urban development recommended to occur in planned neighborhoods that provide a full range of urban services and facilities. The first and second generation regional land use plans also recommended preserving environmentally significant lands, with an emphasis on preserving primary environmental corridors and preserving prime farmland.

Four alternative plans were evaluated in the first regional planning study during the 1960s.

The succeeding regional land use plans, including the year 2035 plan, incorporated many of the basic concepts of the initial plans, refining and extending the plan recommendations as appropriate. Each plan considered growth and change that occurred in the Region since the preparation of the previous plan and new projections of population, households, and employment. The basic concepts and recommendations of the year 2035 regional land use plan are summarized in the following section.

The year 2035 plan includes many basic concepts of the initial regional plan.

Summary Description of the Year 2035 Regional Land Use Plan

The regional land use plan, summarized graphically on Map 3.1, serves as a generalized long-range guide to future urban development, rural development, and open space preservation in Southeastern Wisconsin. The plan was designed to accommodate anticipated future population, household, and employment levels in the Region through the year 2035 in a

[22] *See SEWRPC Planning Report No. 7,* Regional Land Use-Transportation Study, *Volume Two,* Forecasts and Alternative Plans: 1990*, June 1966*.

[23] *See SEWRPC Planning Report No. 25,* A Regional Land Use Plan and a Regional Transportation Plan for Southeastern Wisconsin: 2000*, Volume Two,* Alternative and Recommended Plans*, May 1978*.

Map 3.1
Adopted Regional Land Use Plan: 2035

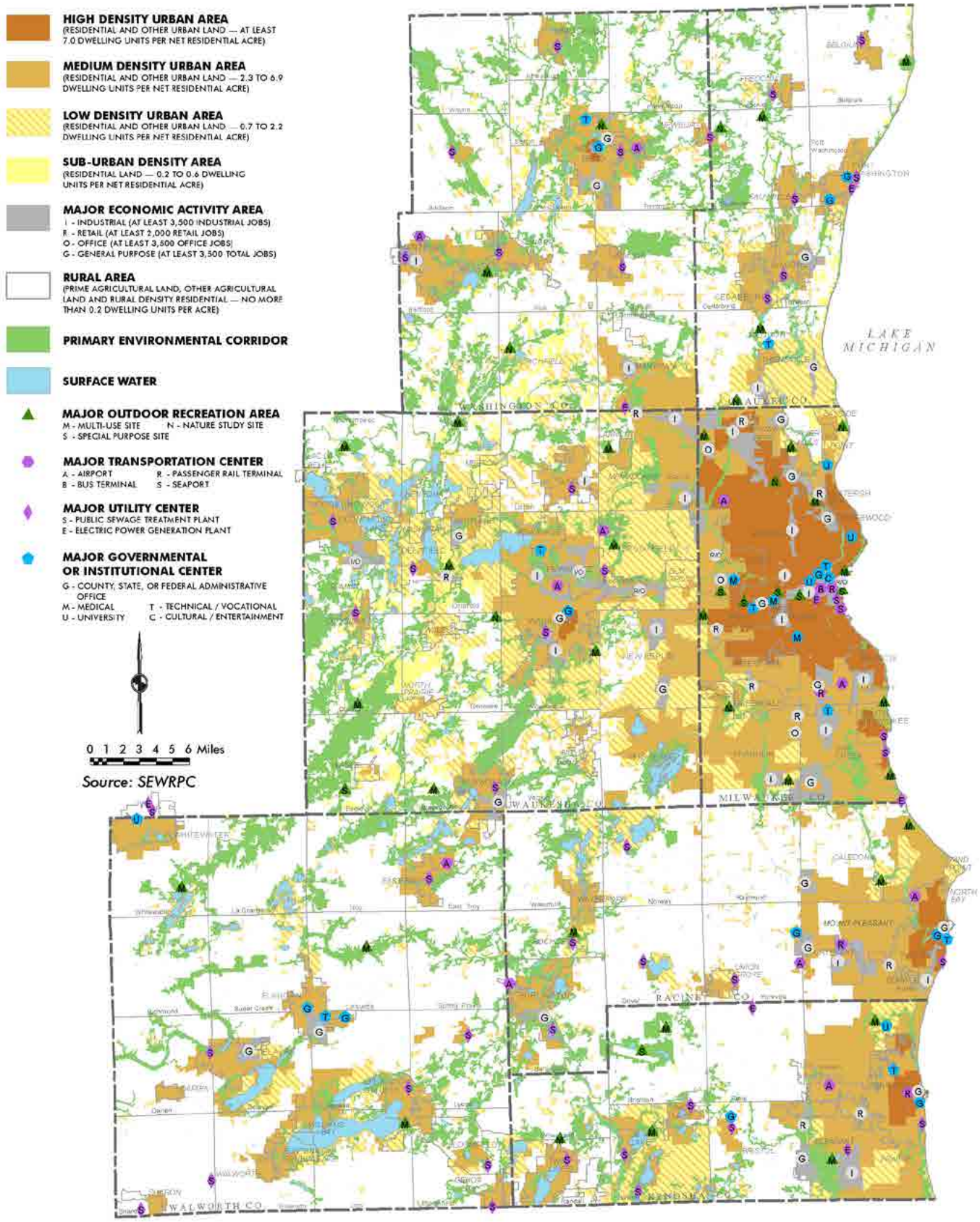


Table 3.4
Land Use Development Objectives of the 2035 Regional Land Use Plan

Objective Number	Land Use Development Objectives
1	A balanced allocation of space to the various land use categories which meets the social, physical, and economic needs of the regional population.
2	A spatial distribution of the various land uses which will result in a convenient and compatible arrangement of land uses.
3	A spatial distribution of the various land uses which maintains biodiversity and which will result in the preservation and wise use of the natural resources of the Region.
4	A spatial distribution of the various land uses which is properly related to the supporting transportation, utility, and public facility systems in order to assure the economical provision of transportation, utility, and public facility services.
5	The development and preservation of residential areas within a physical environment that is healthy, safe, convenient, and attractive.
6	The preservation, development, and redevelopment of a variety of suitable industrial and commercial sites both in terms of physical characteristics and location.
7	The conservation, renewal, and full use of existing urban areas of the Region.
8	The preservation of productive agricultural land.
9	The preservation and provision of open space to enhance the total quality of the regional environment, maximize essential natural resource availability, give form and structure to urban development, and provide opportunities for a full range of outdoor recreational activities.

Source: SEWRPC

manner consistent with the land use objectives adopted as part of the plan (see Table 3.4).

Like the previous generations of the regional land use plan, the year 2035 plan places heavy emphasis on the continued operation of the urban land market in determining the location, intensity, and character of future development, while seeking to influence the operation of the market in several important ways to achieve a more healthy, attractive, and efficient settlement pattern. The plan includes recommendations pertaining to future urban development, environmentally significant lands, and agricultural and other open lands. Key recommendations for future urban development in the Region are summarized below:

The regional land use plan seeks to achieve a more healthy, attractive, and efficient settlement pattern through recommendations for future urban development, environmentally significant lands, and agricultural and other open lands.

- Urban development—including urban residential, commercial, and governmental and institutional land—should occur primarily within existing urban centers as infill development and redevelopment, as well as within defined urban growth areas adjoining these centers.

- New urban development should occur in areas that are covered by soils suitable for urban use and that are not subject to flooding and erosion.

- New urban development should occur in areas that can readily be served by basic municipal facilities, including public sanitary sewers and other urban facilities and services as appropriate.

- Most new housing should be developed at urban residential densities, with the majority occurring at a medium density, generally characterized by a combination of single-family development averaging about four housing units per acre and multifamily development averaging about

10 housing units per acre.[24] Urban density residential development should occur in planned neighborhoods and mixed-use areas served by public sanitary sewerage and water supply facilities, and to the extent practicable, by a local park, school, and shopping area.

- New sub-urban density residential development, characterized by single-family homes on lots of two to three acres, should be limited to development that is already committed in subdivision plats and certified surveys. Sub-urban residential development is neither truly urban nor rural in character and would not generally occur in planned neighborhood units; would not be provided with public sanitary sewerage and water supply facilities; and would receive only minimal public services, such as public safety services.

- Regional-scale commercial and industrial centers should be maintained and developed consistent with the needs of the regional population and economy. The regional plan envisions 60 major economic activity centers in the Region in 2035. These include 45 centers that met the major economic activity center threshold in 2000 and 15 additional areas that were envisioned to reach major center status by 2035.

- Regional parks—large parks of at least 250 acres that accommodate a variety of outdoor recreational activities—should be maintained and developed to meet the recreational needs of the regional population. The regional plan envisions 32 major parks in the Region in the year 2035. The plan also identifies seven major special-use outdoor recreation sites and recommends seven existing or proposed nature study sites.

Key recommendations for environmentally significant lands in the Region include the following:

- Primary environmental corridors—large elongated areas in the landscape containing concentrations of the most important remaining elements of the natural resource base—should be preserved in essentially natural, open use. They are located along major stream valleys, around major lakes, and along the Kettle Moraine and encompass almost all the best remaining woodlands, wetlands, and wildlife habitat areas in the Region (see Map 3.1). The plan recommends limiting development within the primary environmental corridor to essential transportation and utility facilities, compatible outdoor recreation facilities, and rural density residential development (a maximum of one housing unit per five acres) in upland corridor areas, with building sites avoiding steep slopes.

- Secondary environmental corridors and isolated natural resource areas should also be considered for preservation. Secondary environmental corridors are smaller than primary environmental corridors. They contain a variety of resource elements, often remnant from primary environmental corridors that have been partially developed for

[24] As defined in the 2035 regional land use plan, urban residential densities are as follows: low-density—0.7 to 2.2 housing units per net residential acre; medium-density—2.3 to 6.9 housing units per net residential acre; and high-density—at least 7.0 housing units per net residential acre. These density ranges as shown on the regional plan map (Map 3.1) are recommended overall densities that may be achieved within developing and redeveloping areas through various combinations of lot sizes and structure types over entire neighborhoods.

intensive urban or agricultural purposes. Isolated natural resource areas consist of smaller pockets of wetlands, woodlands, surface water, and wildlife habitat that are isolated from the environmental corridors by urban development or agricultural use. Existing secondary environmental corridors and isolated natural resource areas are shown on Map 2.22 in Chapter 2 this volume.

Key recommendations for agricultural and other rural lands in the Region include the following:

- The most productive soils for agricultural purposes—agricultural capability Class I and Class II soils as classified by the U.S. Natural Resources Conservation Service—should be preserved for agricultural use insofar as practicable. Existing agricultural lands covered by Class I and II soils in the Region are shown on Map 2.23 in Chapter 2. The regional plan recommends that counties in the Region update and extend their farmland preservation plans, incorporating as appropriate the generalized farmland preservation recommendations of the regional plan.

- Other areas located beyond planned urban service areas should be retained in rural use. The plan encourages continued agricultural activity in such areas. Development in such areas should be limited to rural density residential development, with a maximum of one housing unit per five acres. The use of cluster subdivision designs to accommodate rural density residential development is encouraged.

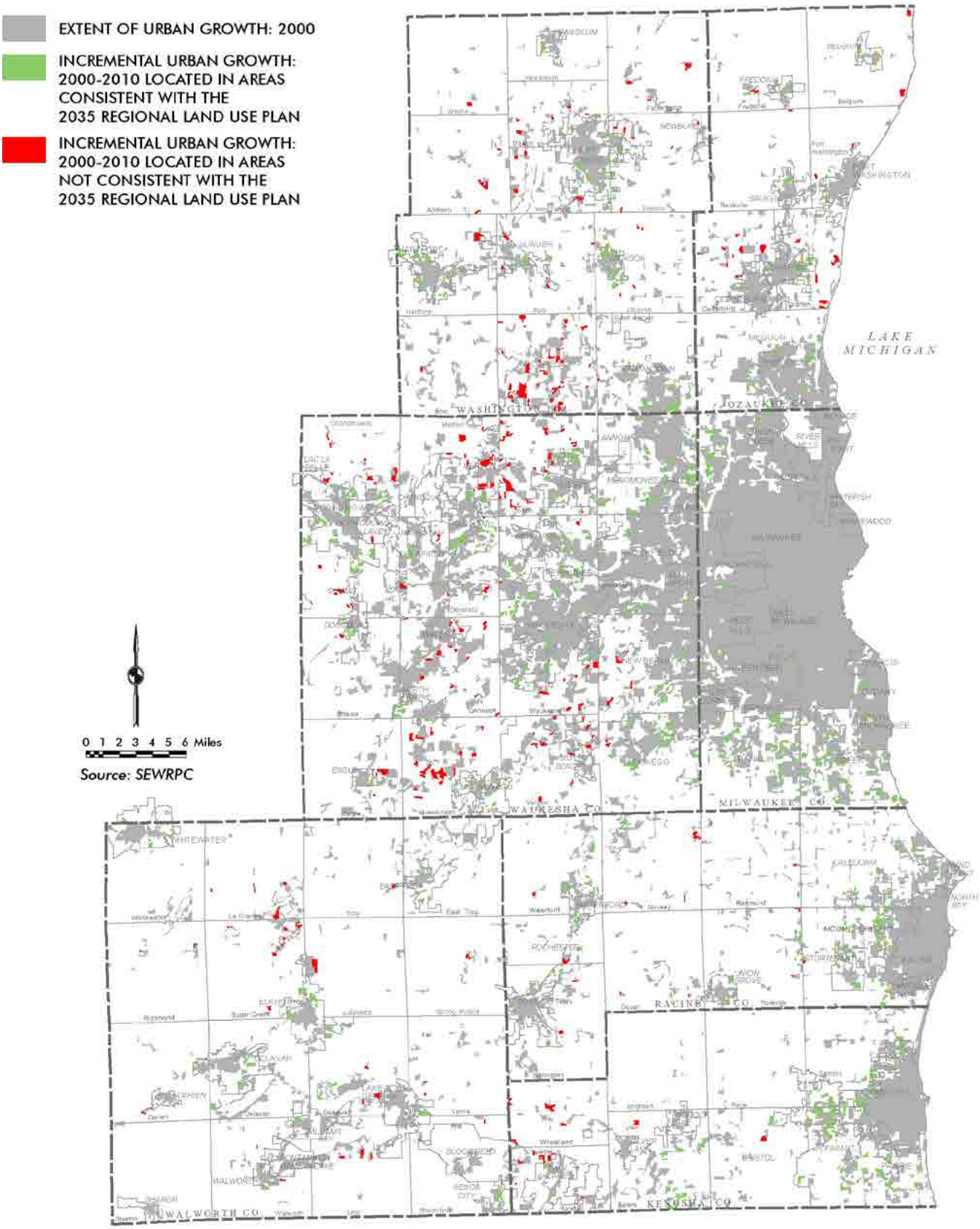
Implementation Status of the Plan
This section describes the implementation status of the year 2035 regional land use plan, focusing on the key plan recommendations described above.

Land Development Activity
Location of New Urban Development
The regional plan recommends that urban development primarily occur in existing urban centers as infill development and redevelopment and within defined urban growth areas adjoining these centers. In order to help assess how well this recommendation has been implemented, an analysis was made of the incremental urban development that took place in the Region between 2000 and 2010, as indicated by the Commission urban growth inventory described in Chapter 2 of this volume. The urban areas that developed between 2000 and 2010, shown on Map 2.11 in Chapter 2, were reviewed and classified as to whether they are in a location that is consistent with the regional plan. The results are shown on Map 3.2. Urban growth in accordance with the regional plan is shown in green on Map 3.2. Urban growth not in accordance is shown in red.

Between 2000 and 2010, 74% of new urban development was in accordance with the regional plan, while the remaining 26% was lower-density growth outside planned urban service areas.

The analysis indicated that 40 of the 54 square miles of incremental urban development that took place between 2000 and 2010, or 74 percent, were located in accordance with the regional plan. Most of these areas are located within planned sewer service areas, where urban development is recommended to occur under the regional plan. The balance—14 square miles, or 26 percent of the incremental urban growth—consists for the most part of sub-urban and low-density residential development located beyond planned urban service areas.

Map 3.2
Incremental Urban Growth in the Region: 2000-2010



In reviewing Map 3.2, it should be noted that rural density residential development (no more than one housing unit per five acres) is not included in the delineated urban growth areas. It should also be noted that the identified urban growth areas consist of areas converted from agricultural and other open space uses to intensive urban use. They do not reflect redevelopment efforts that have taken place in the older urban centers of the Region.

Residential Development

The regional land use plan identifies three urban residential categories: high-density—at least 7.0 housing units per net acre; medium-density—2.3 to 6.9 housing units per net acre; and low-density—0.7 to 2.2 housing units per net acre. These are overall densities that may be achieved within developing and redeveloping areas through various combinations of lot sizes and structure types over entire neighborhoods. A medium-density neighborhood could, for example, be achieved through a combination of single-family lots averaging one-quarter of an acre, along with multifamily residential development averaging about 10 housing units per acre. It should be noted that the regional plan density ranges were broadly defined to provide flexibility to local units of government so they can prepare comprehensive plans and administer land use regulations within the framework of the regional plan. The community can determine at which point in the recommended density range development should occur.

The regional plan recommends additional urban residential development and redevelopment in the Region commensurate with the anticipated increase in population and households through the year 2035. The plan recommends that much of the needed urban residential land be developed at the medium-density range. Development at a medium—or higher—residential density facilitates the economical and efficient provision of urban services and facilities; facilitates the development of neighborhoods with schools, parks, and other neighborhood facilities; and serves to moderate the amount of land needed to be converted to urban use in order to accommodate growth in population and households.

Table 3.5 compares the actual increase in residential land use by density category during the 2000s with the increase anticipated under the regional plan. About 23 square miles of land were planned to be converted to urban residential use during the 2000s. Commission land use inventories show the actual increase was about 26 square miles. Less new medium-density residential development and more new low-density residential development occurred than recommended in the plan. The plan envisioned an increase of 18 square miles in medium-density residential land and the actual increase was about 10 square miles. The plan envisioned an increase of about four square miles of low-density residential land and the actual increase was about 13 square miles.

While less medium-density residential development occurred than envisioned in the plan during the 2000s, it should be noted that more high-density residential development occurred than envisioned in the plan. The plan envisioned an increase of about one square mile in high-density residential land; the actual increase was just under three square miles. It should also be noted that pockets of residential redevelopment activity have occurred in older urban areas of the Region during the 2000s that are not reflected in the increases in urban residential land. These residential redevelopment efforts likely occurred at medium or high densities.

While less medium-density development occurred in the 2000s than envisioned, more high-density development occurred than envisioned.

Table 3.5
Actual and Planned Residential Land Use in the Region: 2000-2010

	Actual Residential Land				Planned Residential Land		
	2000	2010	Change: 2000-2010		2010	Change: 2000-2010	
Density Category[a]	(square miles)	(square miles)	Square Miles	Percent	(square miles)	Square Miles	Percent
Urban							
High Density	47.6	50.3	2.7	5.7	48.9	1.3	2.7
Medium Density	93.6	103.3	9.7	10.4	111.6	18.0	19.2
Low Density	156.3	169.5	13.2	8.4	160.4	4.1	2.6
Urban Subtotal	297.5	323.1	25.6	8.6	320.9	23.4	7.9
Sub-urban	19.1	25.5	6.4	33.5	22.2	3.1	16.2
Rural	45.0	52.2	7.2	16.0	47.0	2.0	4.4
Total	361.6	400.8	39.2	10.8	390.1	28.5	7.9

[a] *Density categories are as follows:*
High Density—at least 7.0 housing units per net acre;
Medium Density—2.3 to 6.9 housing units per net acre;
Low Density—0.7 to 2.2 housing units per net acre;
Sub-urban Density—0.2 to 0.6 housing housing units per net acre;
Rural—fewer than 0.2 housing units per net acre.

Source: SEWRPC

As previously noted, the plan recognized commitments to sub-urban density residential development (defined as 0.2 to 0.6 housing units per net acre, and characterized by two to three acre lots). About three square miles of undeveloped land were committed to sub-urban density residential development when the plan was prepared. The land use inventory shows that over six square miles were converted to sub-urban density residential development during the 2000s.

The regional plan also anticipates a continued demand for homes in an open space setting. The plan accommodates this demand on a limited basis through rural residential development at a density of no more than one housing unit per five acres, outside prime agricultural lands. The plan recommends clustering homes at these densities using cluster subdivision design principles. The regional plan envisioned an increase of two square miles of rural density residential land; the actual increase was about seven square miles.

Commercial and Industrial Development

The regional plan envisions a range of commercial areas, including neighborhood, community, and regional commercial centers. These include mixed-use areas with a residential component and areas devoted more exclusively to commercial uses. Likewise, the plan envisions both community and regional level industrial centers and a continuation of the trend toward mixing industrial and commercial activities in the same area.

There were 30.3 square miles of commercial land in the Region in the plan base year of 2000 and 32.9 square miles of industrial land. The plan envisioned an increase of 12.8 square miles of commercial land by 2035 and an increase of 5.3 square miles of industrial land. This increase is based on the 2035 employment projections for the Region, including the projected continuing shift from a manufacturing-based to a service-based economy and anticipated reductions in employment densities for industrial and retail activities. The plan also considered recommendations of community land use plans that were in effect when the regional plan was prepared.

The 2010 land use inventory indicates that 5.4 square miles of land were converted to commercial uses during the 2000s, which is about 42 percent of the increment envisioned by the plan between 2000 and 2035. The 2010 land use inventory also indicates that 2.3 square miles of land were converted to industrial uses during the 2000s, which is about 43 percent of the increment envisioned by the plan through the year 2035.

About 42% of commercial development and 43% of industrial development envisioned for the Region between 2000 and 2035 occurred by 2010.

The largest commercial and industrial areas anticipated under the plan are identified as major economic activity centers. The regional land use plan envisions a total of 60 major economic activity centers in the Region in the year 2035. To qualify as a major economic activity center as defined in the plan, a site must accommodate at least 3,500 total jobs or 2,000 retail jobs.[25]

There were 45 major economic activity centers in the Region in 2000. The regional land use plan envisioned that all 45 sites would be retained as major centers through the year 2035. The plan envisioned 15 additional major economic activity centers in the Region in 2035. All of the proposed economic activity centers, except for a proposed site in the Village of Caledonia, were under some stage of development when the regional plan was adopted in 2006.

The Region gained six additional major employment centers between 2000 and 2010, and lost one (Northridge).

The current status of the 60 major economic activity centers recommended in the year 2035 regional land use plan is summarized on Map 3.3.

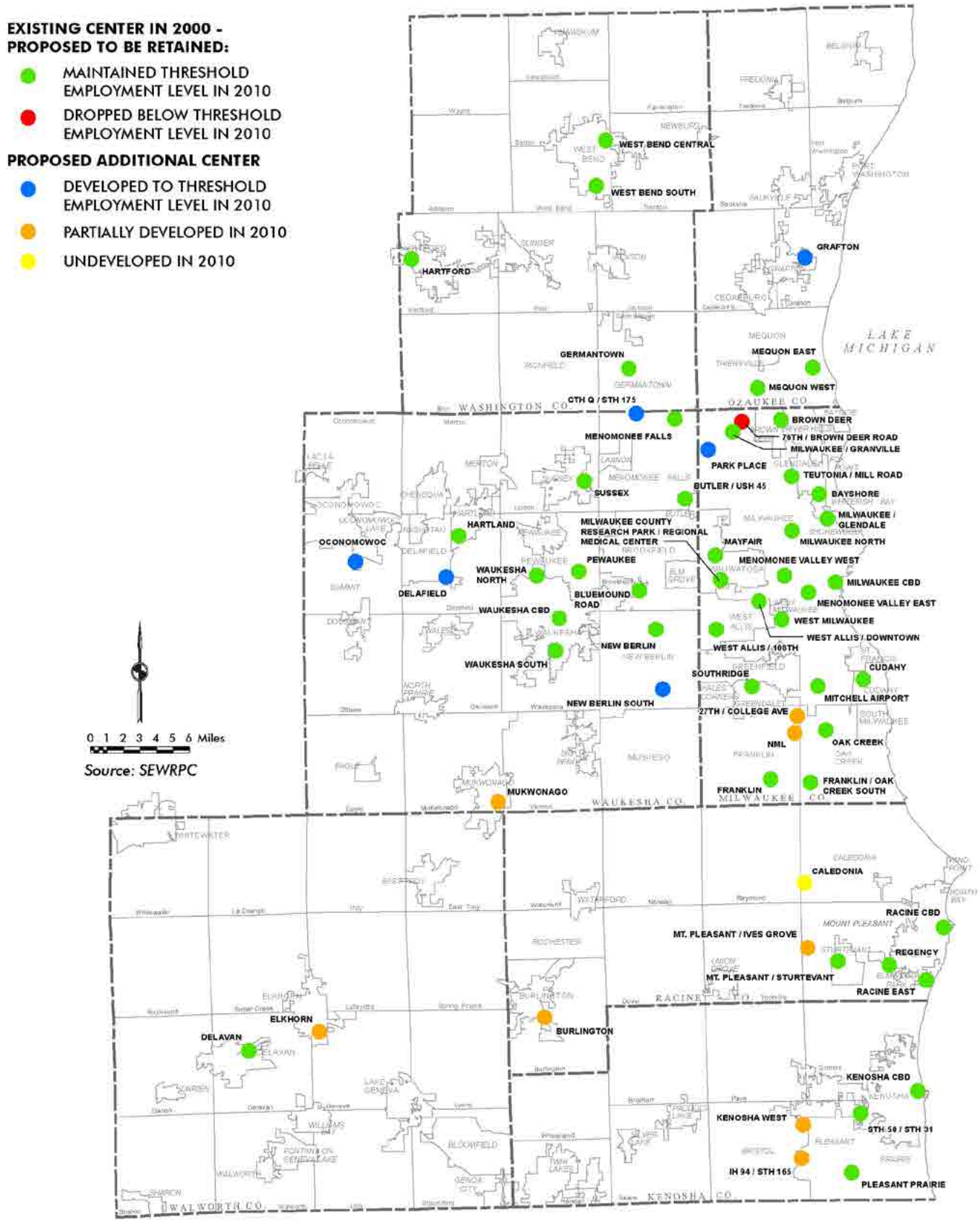
- Of the 15 additional economic activity centers proposed in the plan, six sites—Park Place, Oconomowoc, New Berlin South, Grafton, Delafield, and CTH Q/STH 175—met the major economic activity center employment level criteria in 2010.

- Of the 45 major centers that existed in 2000, 44 retained their major center status in 2010. However, many of these sites lost employment between 2000 and 2010, owing in part to the recession of the late 2000s.

- One of the major centers that existed in 2000 did not meet the major center employment criteria in 2010—the area identified as the 76th/Brown Deer center (formerly known as Northridge). The 76th and Brown Deer area was accorded regional major center status as of 2000, since retail employment at the Northridge shopping center, combined with retail employment in nearby stores on the adjacent arterial streets, met the major retail center employment standard at that time. However, all four of the "anchor" stores once located within the Northridge shopping center closed between 2000 and 2003, and total employment in the area dropped below the major center threshold. Demolition of part of the shopping center began in 2004, creating space for construction of a large grocery store and home improvement store. Alternative uses for the remainder of the former shopping center are under consideration.

[25] *Under the year 2035 plan, major economic activity centers were further classified as industrial, office, retail, and general purpose sites based upon standards for various jobs categories. This evaluation of the status of major economic activity centers in 2010 considers only the most basic of standards—at least 3,500 total jobs and/or 2,000 retail jobs.*

Map 3.3
Status of Major Economic Activity Centers Recommended Under the 2035 Regional Land Use Plan



Provision of Sanitary Sewer and Water Supply Services

The regional land use plan recommends that most new urban development occur in areas that can be served by essential municipal facilities, including public sanitary sewer and water supply services. Data regarding the area and population served by public sanitary sewer and water systems was obtained as part of the Commission's regional public utility inventory, which is described in Chapter 2 of this volume. There was a significant increase in the area and population served by public sanitary sewerage systems between 2000 and 2010. The area served by public sewer increased by 48 square miles, or 10 percent. The population served increased by 84,000 people, or 5 percent. The percent of the regional population served remained steady at about 89 percent in 2000 and 2010.

About 89% of the Region's population is served by public sewer systems.

There was also a significant increase in the area and population served by public water supply utilities between 2000 and 2010. The area served by public water utilities increased by 54 square miles, or about 14 percent. The population served increased by 99,000 people, or about 6 percent. The percent of the regional population served increased slightly between 2000 and 2010 from 82 to 83 percent.

About 83% of the Region's population is served by a public water utility.

In addition to the public utility inventories described in Chapter 2, the Commission collected information regarding the number of sanitary permits issued for the installation of private onsite wastewater treatment systems (POWTS) in the Region during the 2000s. Information was obtained from each of the six counties in the Region responsible for the regulation of POWTS. Information was also obtained from the Cities of Franklin and Oak Creek, which account for most of the permits issued for POWTS in Milwaukee County. About 12,000 permits were issued for POWTS in support of new residential development in the Region during the 2000s. This excludes permits issued for replacement systems. The issuance of a permit does not mean that a system was actually installed, but it is believed that a high percentage of permits were acted upon and the number of permits is a good estimate of the number of POWTS installed.

Some of the POWTS permits issued during the 2000s were for housing developed at a rural density in accordance with the regional land use plan. In addition, some of the permits were issued for housing developed in accordance with the regional plan in the Village of Eagle and certain other areas that have public water supply service but no sanitary sewer service. However, the majority of POWTS permits issued were intended to serve residential development at low and sub-urban densities in areas not recommended for such development in the regional plan.

An estimated 84,100 new housing units were built in the Region during the 2000s.[26] It can be concluded that about 12,000 of these units were served by POWTS, with the balance of 72,100 units served by public sanitary sewerage systems.[27] Thus the vast majority of housing built during the 2000s, about 86 percent, was provided with public sanitary sewer service in accordance with the regional plan.

The vast majority (86%) of housing built in the 2000s was provided with public sanitary sewer service in accordance with the regional plan.

[26] The estimated number of housing units built in the Region between 2000 and 2010 was developed by adding the number of estimated housing unit demolitions during the 2000s (about 8,000) to the net increase of 76,100 housing units in the Region between 2000 and 2010 reported by the U.S. Bureau of the Census.

[27] This assumes that each permit issued resulted in a private onsite wastewater treatment system serving one housing unit.

Major Outdoor Recreation Centers

The year 2035 regional land use plan envisions a total of 32 major parks of regional size and significance to serve the needs of the Region through the year 2035. By definition, such parks have an area of at least 250 acres and provide opportunities for a variety of resource-oriented outdoor recreational activities.

The plan recommends expanding from 24 to 32 major parks. The eight additional parks all experienced at least some development during the 2000s.

Of the 32 major parks identified in the plan, 24 sites had been substantially acquired and developed for park purposes by 2000, the base year of the plan, and were recommended to be retained. The plan envisioned further development of six sites that had been substantially acquired for park purposes by 2000 but that were undeveloped or only partially developed at that time. These include Prairie Spring Park in Kenosha County, Bender Park in Milwaukee County, Case Eagle Park in Racine County, Price Conservancy in Walworth County, and Fox Brook Park and Monches Park in Waukesha County. The plan also reflected the acquisition and proposed development of two entirely new sites, located in western Kenosha County and northwestern Waukesha County.

The current status of the 32 major parks recommended in the regional land use plan is summarized on Map 3.4. As shown on that map, each of the afore-mentioned sites that were recommended for additional facility development under the plan experienced at least some development during the 2000s in accordance with the plan. In addition, significant portions of the recommended new sites—KD Park in western Kenosha County and Ashippun River Park in northwestern Waukesha County—were acquired for park purposes in the 2000s.

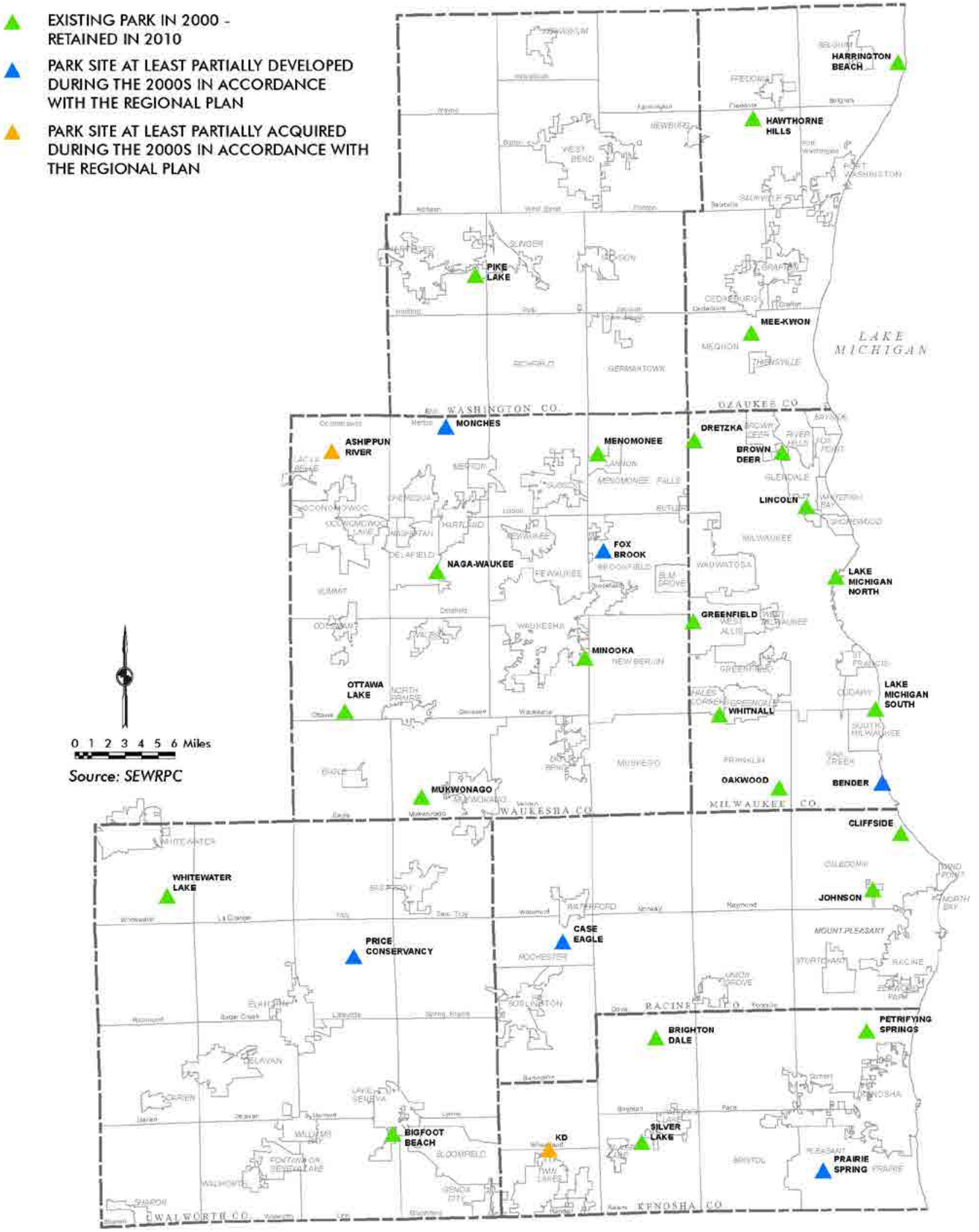
In addition to the major park sites described above, a number of major special-use recreation sites and major nature study sites continue to serve the Region, as anticipated in the regional plan. The major special use sites include the Bong Recreation Area in Kenosha County; Old World Wisconsin in Waukesha County; and Maier Festival Park, Miller Park, the Mitchell Park Horticultural Conservatory, the Milwaukee County Zoo, and Wisconsin State Fair Park in Milwaukee County. The major nature study sites include Havenwoods State Forest and the Schlitz Audubon Center in Milwaukee County; the Mequon Nature Preserve and Riveredge Nature Center in Ozaukee County; Glacier Hills Park and Lac Lawrann Conservancy in Washington County; and the Retzer Nature Center in Waukesha County.[28]

Primary Environmental Corridors

The year 2035 regional land use plan recommends the preservation of the Region's primary environmental corridors in essentially natural, open use, forming an integrated system of open space lands in the Region. Located along major stream valleys, around major lakes, and along the Kettle Moraine, these corridors encompass almost all of the best remaining woodlands, wetlands, and wildlife habitat areas in the Region. These corridors were identified in generalized fashion in the initial year 1990 regional land use plan, and they have been refined and updated in each subsequent plan, including the year 2035 plan (see Map 3.1). The regional plan recommends that development within the primary environmental corridors be limited to essential transportation and utility facilities, compatible outdoor recreation facilities, and rural-density residential development (a maximum of one housing unit per five acres) in upland corridor areas not encompassing steep slopes.

[28] Major nature study 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.

Map 3.4
Status of Major Parks Recommended Under the 2035 Regional Land Use Plan



About 94% of primary environmental corridors are substantially protected, but urban encroachment could destroy the remaining unprotected corridors.

A number of important measures that help to ensure the preservation of environmentally significant areas had already been put in place by 2000 and remain in effect today. Existing measures that help ensure the preservation of primary environmental corridors in the Region include: public ownership; other public interest ownership, including lands owned by conservancy organizations and other privately held lands that are in compatible outdoor recreational use; joint state-local floodplain and shoreland-wetland zoning; State administrative rules governing sanitary sewer extensions within planned sanitary sewer service areas; and local land use regulations. The latter includes protection through local conservancy zoning[29] and, in the case of Waukesha County, through its review of proposed land divisions.[30] Commission analyses indicate that about 456 square miles (including surface water), representing 94 percent of the primary environmental corridors in the Region, were substantially protected from incompatible urban development through one or more of these measures in 2010 (see Map 3.5).

Primary environmental corridor lands that were not protected from urban development encompassed about 31 square miles, or about 6 percent of the remaining primary environmental corridors in the Region, in 2010. These unprotected corridors consist largely of upland areas comprised of woodlands, significant wildlife habitat, and steeply sloped areas. Destruction of these areas may occur as a result of urban residential development projects supported by private onsite sewage disposal systems and other urban encroachment not served by sanitary sewers.

Agricultural Land

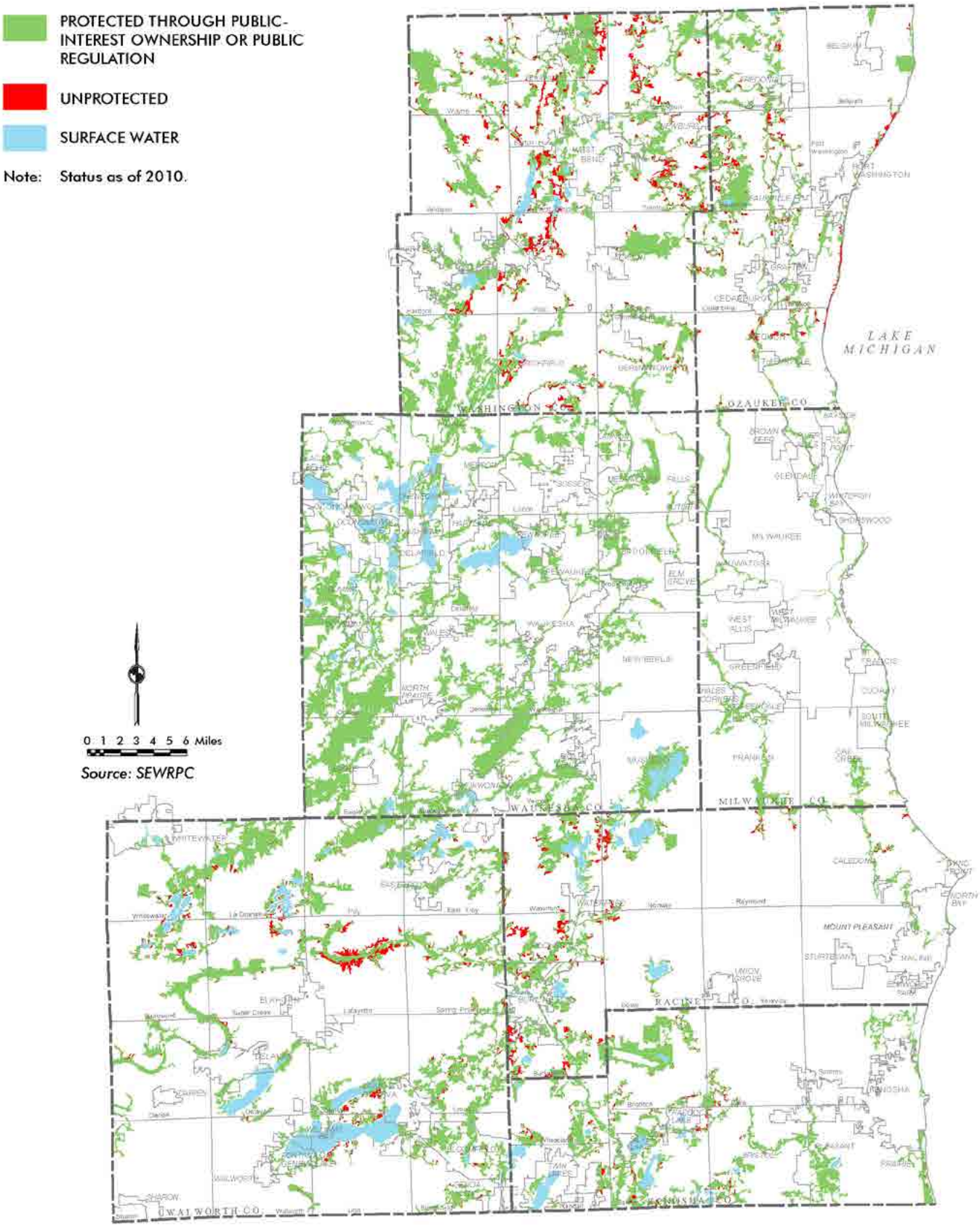
One of the basic objectives of the adopted regional land use plan is preserving productive agricultural land. The plan recommends that the most productive soils for agricultural purposes—agricultural capability Class I and Class II soils as classified by the U.S. Natural Resources Conservation Service—be preserved for agricultural use insofar as practicable. Under the plan, the conversion of Class I and Class II agricultural land to urban use would be limited to lands within planned urban service areas, as well as to lands located beyond planned urban service areas that had been committed to urban development in approved residential subdivision plats.

Map 3.6 identifies Class I and Class II agricultural lands that were converted to urban use between 2000 and 2010 as indicated by the Commission's urban growth inventory. The urban growth inventory identifies concentrations of new urban development that occurred between 2000 and 2010 (see description of the urban growth inventory in Chapter 2). Map 3.6 distinguishes between Class I/Class II agricultural land conversions in locations that are consistent with the regional plan from those in locations that are inconsistent with the plan. The analysis indicates that, during the 2000s, about 15.5 square miles of Class I and Class II agricultural lands were converted to urban use in locations consistent with the plan, with most of this occurring within planned urban service areas. The analysis further indicates that about five square

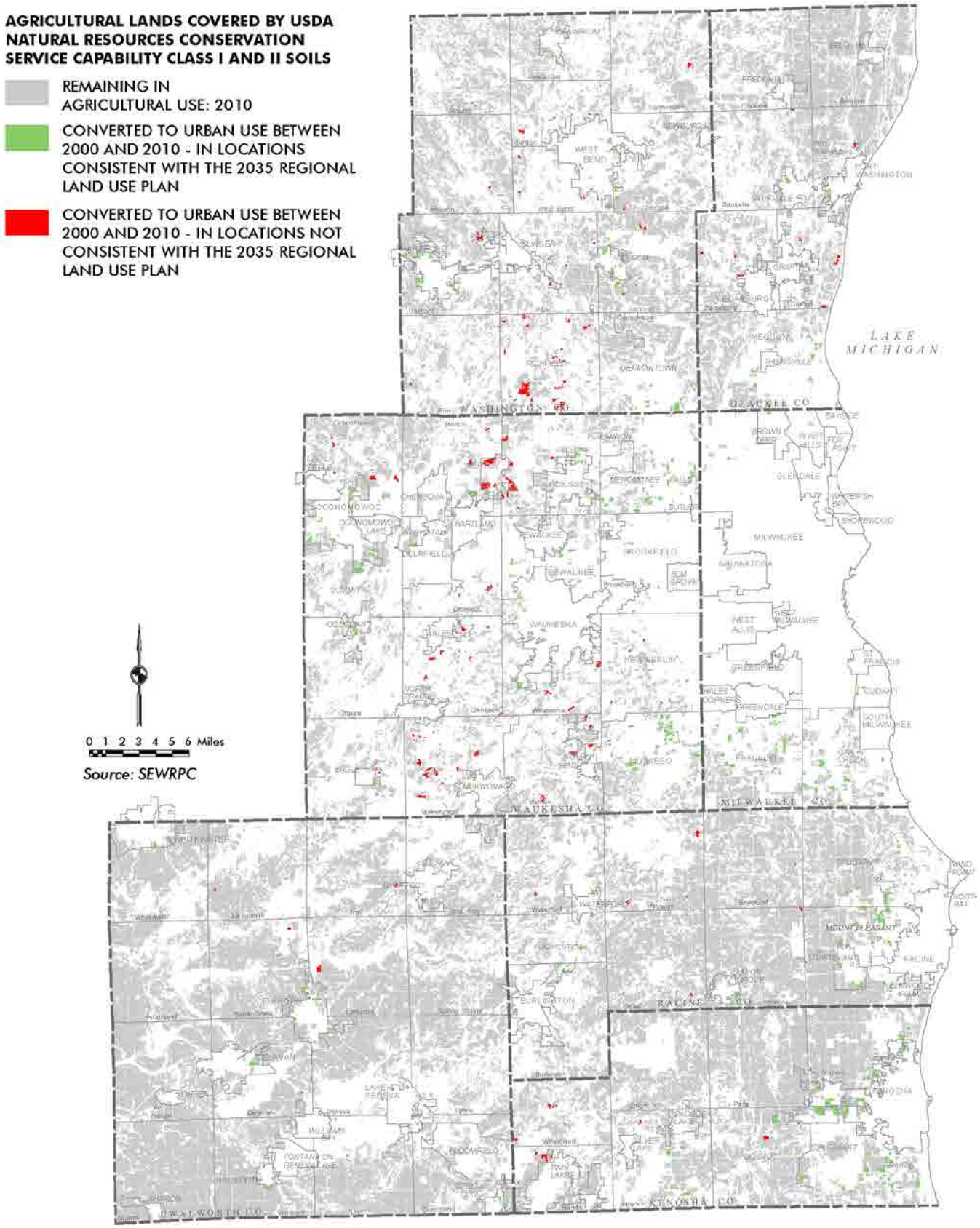
[29] The portion of the Milwaukee River encompassed by primary environmental corridor in the City of Milwaukee between North Avenue and Hampton Avenue is covered by the Milwaukee River Greenway Overlay Zone. This overlay zone allows protection of the primary environmental corridor and sustainable development that is compatible with the City's comprehensive plan.

[30] Waukesha County utilizes its land division approval-objection authority to help ensure the preservation of environmental corridors in accordance with the Waukesha County development plan. Waukesha County reviews all proposed subdivision plats and some, but not all, proposed certified survey maps in Waukesha County.

Map 3.5
Protection of Primary Environmental Corridors in the Region



Map 3.6
Agricultural Lands Covered by Highly Productive Soils Converted to Urban Use in the Region: 2000-2010



miles of Class I and Class II agricultural land were converted to urban use in locations not consistent with the plan.

The regional plan recognizes that, under the Wisconsin Farmland Preservation law (Chapter 91 of the *Wisconsin Statutes*), counties in the State are responsible for preparing farmland preservation plans. The six counties with substantial amounts of agricultural land—Kenosha, Ozaukee, Racine, Walworth, Washington, and Waukesha—initially prepared farmland preservation plans in the late 1970s and early 1980s. The year 2035 regional land use plan recommended that those counties, in cooperation with the concerned communities, update and extend those plans. The regional plan recommended that such planning place an emphasis on preserving Class I and Class II soils. The regional plan recognized that counties may also consider other agricultural soil classes as well as 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—in identifying farmland preservation areas.

Subsequent changes to the Wisconsin Farmland Preservation law, enacted by the State Legislature in 2009, effectively required that counties update their farmland preservation plans as one of the conditions for continued landowner participation in the Farmland Preservation tax credit program. By the end of 2013, Kenosha, Ozaukee, Racine, Walworth, Washington, and Waukesha Counties had prepared and adopted new farmland preservation plans. Each plan has been certified by the Wisconsin Department of Agriculture, Trade, and Consumer Protection as meeting the farmland preservation planning standards set forth in Chapter 91.

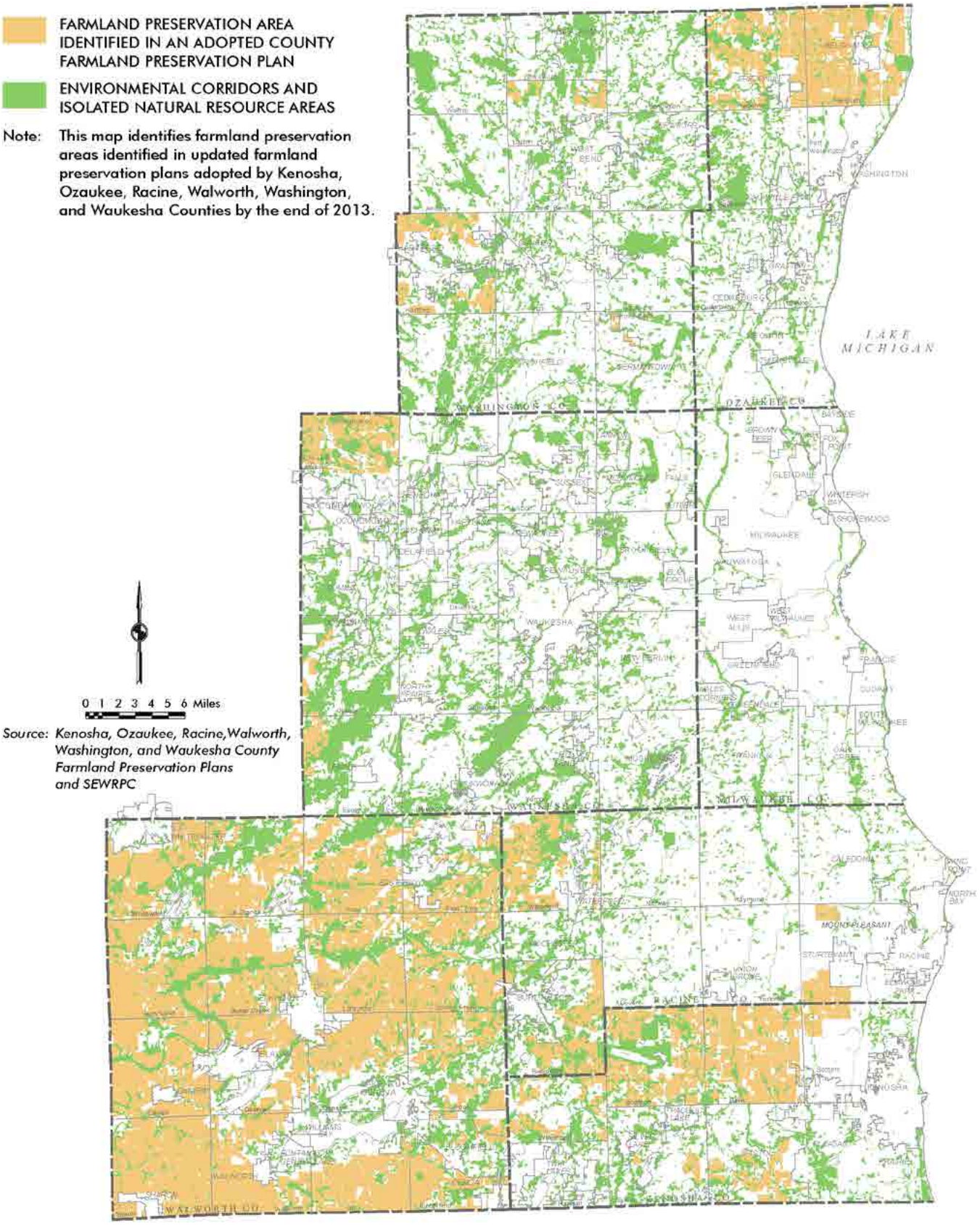
The farmland preservation areas identified in the updated county farmland preservation plans are shown on Map 3.7.[31] These areas are intended to be reserved for agriculture and agricultural-related uses. The specific soil standards and other criteria used to identify farmland preservation areas vary from county to county. Local government support for identifying farmland preservation areas was a key consideration in the county plans, as discussed below. As shown on Map 3.7, the largest concentration of farmland identified for preservation in county farmland preservation plans is located in the southwest and south-central areas of the Region—including Walworth County, Kenosha County west of IH 94, and the far westerly portion of Racine County. A relatively large farmland preservation area has also been identified in northern Ozaukee County. Other, smaller farmland preservation areas have been identified in Washington and Waukesha Counties.

Farmland preservation areas cover large blocks of Class I and II agricultural land, but many such blocks are excluded and may not be preserved.

A comparison of Map 3.7 and Map 2.23 in Chapter 2 indicates that, while large blocks of Class I and Class II agricultural land have been included in the farmland preservation areas identified in county farmland preservation plans, many farming areas with concentrations of Class I and Class II soils have been excluded. Some Class I and Class II areas were excluded from the farmland preservation area on the basis of non-soil factors, such as minimum farm "block" size. However, the exclusion of much Class I and Class II farmland is attributable to local government reluctance to specifically identify exclusive-use farming areas. In general, the county farmland preservation plans identify farmland preservation areas only where local government support has been demonstrated.

[31] *In the mapping of farmland preservation areas, some of the county farmland preservation plans included entire parcels, including the portions comprised of environmental corridors and isolated natural resource areas, while others did not. For consistency in presentation, Map 3.7 shows existing (2010) environmental corridors and isolated natural resource areas throughout the Region.*

Map 3.7
Farmland Preservation Areas Identified in County Farmland Preservation Plans in the Region: 2013



In their local comprehensive plans, many communities have opted for less restrictive agricultural planning districts, often relying on agricultural-rural residential districts, which accommodate more residential development than would be allowed in an exclusive farmland preservation area. While such planning districts serve to maintain rural densities and rural character, they are not as effective as exclusive farmland preservation districts in preserving farmland.

Summary and Conclusions for Section 3.3

Section 3.3 of this chapter has provided an overview of the year 2035 regional land use plan and assessment of how well that plan has been implemented, focusing on the key plan recommendations. That assessment indicated the following:

Substantially Implemented Recommendations

- The regional plan recommends that urban development primarily occur in existing urban centers as infill development and redevelopment and within defined urban growth areas adjoining these centers. About 74 percent, or 40 square miles, of the 54 square miles of urban incremental development that occurred in the Region between 2000 and 2010 was consistent with regional plan recommendations.

- The vast majority of housing units constructed in the Region between 2000 and 2010—an estimated 72,100 housing units, or about 86 percent of the estimated total of 84,100 housing units built in the Region during the 2000s—was provided with public sanitary sewer service consistent with regional plan recommendations.

- The regional plan envisions a total of 60 major economic activity centers in the Region in the year 2035. By definition, these sites accommodate at least 3,500 total jobs or 2,000 retail jobs. Forty-five such sites existed in the Region in 2000. The regional plan recommended that these sites continue to serve as major centers and recommended an additional 15 major centers, all but one of which were at some stage of development when the regional plan was adopted. Six of these additional recommended sites had reached major economic activity center status by 2010. Of the 45 existing major centers in 2000, 44 retained their major center status in 2010.

- The regional plan recommends 32 major parks to serve the Region. Such parks have an area of at least 250 acres and provide opportunities for a variety of resource-oriented outdoor recreation activities. Of the 32 major parks identified in the plan, 24 sites had been substantially acquired and developed for park purposes by 2000. Six other sites experienced significant additional facility development in accordance with the plan during the 2000s, and land was acquired for two new sites recommended in the plan.

- The regional plan recommends preserving primary environmental corridors in essentially natural, open use. About 456 square miles, representing 94 percent of the total of 487 square miles of primary environmental corridors in the Region, were substantially protected from incompatible urban development in 2010.

Partially Implemented Recommendations

- The regional land use plan recommends an increase in residential land consistent with the forecast growth in the Region's population

and households. Under the plan, about 23 square miles of land were anticipated to be converted to urban (high-, medium-, and low-density) residential use during the 2000s. The actual increase was about 26 square miles. Less new medium-density residential development and more new low-density residential development occurred than recommended in the plan. The plan envisioned an increase of 18 square miles in medium-density residential land during the 2000s; the actual increase was about 10 square miles. The plan envisioned an increase of about four square miles of low-density residential land; the actual increase was about 13 square miles. The plan also envisioned an increase of about one square mile of high-density residential land; the actual increase was just under three square miles.

- The regional plan would accommodate additional residential development in rural areas on a limited basis, recommending that such development occur at a density of no more than one housing unit per five acres, and be located outside prime agricultural lands. The plan recommends clustering homes at these densities using cluster subdivision design principles. An increase of two square miles of rural density residential land was envisioned during the 2000s; the actual increase was about seven square miles.

- The regional plan recommends that the most productive soils for agricultural purposes—agricultural capability Class I and Class II soil as classified by the U.S. Natural Resources Conservation Service—be preserved for agricultural use insofar as practicable. Under the plan, the conversion of Class I and Class II agricultural land to urban use would be confined, for the most part, to locations within planned urban service areas. Monitoring data indicate that about 15.5 square miles of Class I and Class II agricultural land were converted to urban use during the 2000s in locations consistent with the regional plan, with most of this occurring within planned urban service areas. The data further indicate that about five square miles of Class I and Class II agricultural land were converted to urban use in locations not consistent with the plan.

- Recently, the six counties in the Region that have substantial amounts of agricultural land (Kenosha, Ozaukee, Racine, Walworth, Washington, and Waukesha Counties) updated and extended their farmland preservation plans, identifying farmland preservation areas that are intended to be reserved for agriculture and agricultural-related uses. While large blocks of Class I and Class II agricultural land have been included in these farmland preservation areas, many farming areas with concentrations of Class I and Class II soils have been excluded. In general, the county farmland preservation plans identify farmland preservation areas only where local government support for preservation has been demonstrated. In their local comprehensive plans, many communities have opted for less restrictive agricultural planning districts, often relying on agricultural-rural residential districts, which accommodate more residential development than would be allowed in an exclusive farmland preservation area. While such planning districts serve to maintain rural densities and rural character, they are not as effective as exclusive farmland preservation districts in preserving farmland.

Unimplemented Recommendation

- The regional plan recommends that new sub-urban density residential development, characterized by single-family homes on lots of two to three acres, should be limited to development that is already committed in subdivision plats and certified surveys. About three square miles of undeveloped land were committed to sub-urban density residential development when the plan was prepared. Over six square miles were converted to sub-urban density residential development during the 2000s.

Conclusions

Implementation of the year 2035 regional land use plan would benefit the Region in several ways. Development would occur in a compact and efficient pattern that is readily served by basic urban services and facilities and maximizes the use of existing urban service and facility systems. Mixed-use development would be accommodated in urban areas to provide for convenience and efficiency in day-to-day activities, including ease and efficiency in travel. The land development needs of the Region would be met while preserving the best remaining elements of the natural resource base and preserving productive farmland.

Several of the key regional plan recommendations were substantially implemented between 2000 and 2010. Almost all of the Region's primary environmental corridors, which contain most of the best remaining woodlands, wetlands, and wildlife habitat areas in the Region, were substantially protected from incompatible urban development in 2010. In addition, most of the new housing units built in the Region between 2000 and 2010 were provided with public sanitary sewer service in accordance with the regional plan and major economic activity centers and regional parks experienced continued development.

Other key recommendations were only partially implemented or not implemented. Much of the new urban development that occurred in the Region between 2000 and 2010 was located in accordance with regional plan recommendations; however, more residential development occurred at lower densities than recommended. New urban development in areas not in accordance with the regional plan was typically low-density and sub-urban density residential development. Over-development of lower-density housing has several negative consequences, including:

- Urban development that cannot be efficiently served by urban services such as public sanitary sewer, water supply, and transit

- Sub-urban residential density development that is neither truly urban nor rural in character that would not generally occur in planned neighborhood units; would not be provided with public sanitary sewerage and water supply facilities; and would receive only minimal public services, such as public safety services

- Higher conversion of agricultural and open land to urban development

- Housing that may not be affordable to area workers because multifamily housing, two-family housing, and smaller single-family homes on smaller lots tend to be more affordable to a wide range of households than larger single-family homes on larger lots

3.4 REVIEW OF THE 2035 REGIONAL TRANSPORTATION SYSTEM PLAN

This section provides a description of the recommendations of the year 2035 regional transportation plan, an assessment of how well it has been implemented, and a review of the plan's transportation forecasts in comparison to actual trends to date.

The year 2035 regional transportation plan for the seven-county Southeastern Wisconsin Region was completed and adopted by the Southeastern Wisconsin Regional Planning Commission (SEWRPC) in June 2006. The plan was developed under the guidance of the Advisory Committee on Regional Transportation System Planning, which unanimously approved the plan in May 2006. The Advisory Committee was established on a population-proportional basis, and included representatives of the seven counties and 147 municipalities of the Region and from the Wisconsin Departments of Transportation and Natural Resources. In addition, representatives from the U.S. Department of Transportation and the U.S. Environmental Protection Agency served on the Committee as non-voting members. The Advisory Committee was responsible for proposing to the Commission, after careful study and evaluation, a recommended regional transportation system plan. The Advisory Committee structure was intended to promote intergovernmental and inter-agency coordination, and the members were to serve as direct liaisons between the Commission planning effort and the local and State governments responsible for implementing the recommended plan. Since its adoption in 2006, the year 2035 regional transportation plan was amended on six occasions:

- In June 2007, the plan was amended at the request of the Southeastern Wisconsin Regional Transit Authority and an Intergovernmental Partnership of the Cities and Counties of Kenosha, Milwaukee, and Racine, the Wisconsin Department of Transportation (WisDOT), and the Commission to add the Kenosha-Racine-Milwaukee commuter rail line following the completion of a transit alternative analysis corridor study/draft environmental impact statement.

- In June 2010, the Commission completed SEWRPC Memorandum Report No. 197, *Review, Update, and Reaffirmation of the Year 2035 Regional Transportation Plan*, which included amendments to the regional transportation plan. These amendments included the addition to the plan of the Milwaukee downtown streetcar line, the high-speed rail line, and amendments attendant to completed Washington and Walworth County jurisdictional highway system plans. This interim review, update, and reaffirmation also included an assessment of the implementation to date of the regional transportation plan, a review of the forecasts underlying the plan, and a monitoring of transportation system performance. The review also examined whether it remained reasonable for the recommendations in the year 2035 plan to be accomplished over the subsequent 25 years, given implementation of the plan to date and available and anticipated funding.

- In September 2011, the plan was amended at the request of WisDOT to incorporate the improvement from six to eight traffic lanes of STH 100 (N. 108th Street/N. Mayfair Road) between IH 94 and Watertown Plank Road based on the conclusions of the preliminary engineering and environmental impact analysis for the reconstruction of the Zoo Interchange.

- In September 2012, two amendments to the plan were approved by the Commission. The first amendment involved adding the widening of STH 50 from two to four traffic lanes between CTH F (south) and STH 67, as requested by WisDOT and the Town of Delavan based on conclusions of the preliminary engineering and environmental impact analysis for the reconstruction of STH 50 between IH 43 and STH 67. The second amendment involved the addition of Mound Road between STH 11 and STH 67 to the planned Walworth County arterial street and highway system.

- In December 2012, two amendments to the plan were approved by the Commission. The first amendment involved the addition of an extension of the Lake Parkway (STH 794) as a four-lane surface arterial facility from its current terminus at Edgerton Avenue to STH 100 in Milwaukee County. This amendment was requested by the Milwaukee County Board of Supervisors and the County Executive based on the results of the Lake Parkway extension study conducted by the Commission staff. This study was guided by an advisory committee composed primarily of elected officials that was responsible for making final study recommendations. The second amendment involved the addition of the widening of USH 45/STH 100 from four to six traffic lanes between Drexel Avenue and Rawson Avenue in Milwaukee County, as requested by WisDOT, based on conclusions of the preliminary engineering and environmental impact analysis for the reconstruction of USH 45/STH 100 between St. Martins Road and College Avenue.

- In June 2014, the Commission completed a second interim review, update, and reaffirmation of the year 2035 regional transportation system plan, as documented in SEWRPC Memorandum Report No. 215, *Review and Update of the Year 2035 Regional Transportation Plan*. Only one amendment to the regional transportation plan was made as part of the plan review. This amendment involved the addition to the plan of the conversion of the County Line Road interchange on IH 43 from a half to a full interchange, which was a result of the preliminary engineering completed for the reconstruction of IH 43 between Silver Spring Drive and STH 60. This interim review, update, and reaffirmation also included an assessment of the implementation to date of the regional transportation plan, a review of the forecasts underlying the plan, and a monitoring of transportation system performance. The review as well examined whether it remained reasonable for the recommendations in the year 2035 plan to be accomplished over the subsequent 20 years, given implementation of the plan to date and available and anticipated funding. In 2014, existing funding, and the outlook for future funding, was far more constrained than it was in 2005 during development of the year 2035 regional transportation plan and in 2010 during its first update. As a result, it was no longer possible to conclude that the plan could be implemented by the year 2035 in light of existing and reasonably expected future revenues. Specifically, it was concluded that 164 miles of freeway reconstruction and the Lake Parkway extension between Edgerton Avenue and STH 100 in Milwaukee County could not be expected to be implemented by the year 2035. With respect to transit, it was concluded that the constraints of existing and reasonably expected available revenues would result in a lack of implementation of any of the improvement and expansion of transit recommended in the plan.

Summary Description of the Year 2035 Regional Transportation System Plan

The development of the year 2035 regional transportation system plan for Southeastern Wisconsin was guided by the following vision for the transportation system of Southeastern Wisconsin:

> *A multimodal transportation system with high quality public transit, bicycle and pedestrian, and arterial street and highway elements which add to the quality of life of Region residents and support and promote expansion of the Region's economy, by providing for convenient, efficient, and safe travel by each mode, while protecting the quality of the Region's natural environment, minimizing disruption of both the natural and manmade environment, and serving to support implementation of the regional land use plan, while minimizing the capital and annual operating costs of the transportation system.*

The development of each plan element of the recommended regional transportation system plan for the year 2035—public transit, bicycle and pedestrian, travel demand management, transportation system management, and arterial streets and highways—built upon the previous regional transportation plan, which had a design year of 2020, recognizing the successful implementation of approximately 15 to 20 percent of each element of the year 2020 plan since the adoption of that plan in 1997.

The 2035 regional transportation plan was designed to serve, and to be consistent with, the 2035 regional land use plan.

The recommended year 2035 regional transportation system plan was designed to serve, and to be consistent with, the year 2035 regional land use plan. Future needs for public transit, street and highway, and other transportation improvements considered in the regional transportation planning process were derived from the projected travel based upon the regional land use plan. In addition, the consistency of the regional transportation and land use plans was evaluated by comparing the accessibility provided under the recommended transportation plan and the location of improvements proposed under the recommended transportation plan to the location of land use development and redevelopment proposed under the land use plan.

The process for the development of the recommended year 2035 regional transportation plan began with consideration and development of the travel demand management, transportation systems management, bicycle and pedestrian, and public transit elements of the plan. Arterial street and highway improvement and expansion was then considered only to address the residual highway traffic volumes and associated traffic congestion that could not be expected to be alleviated by travel demand management, transportation systems management, bicycle and pedestrian facilities, and public transit.

Discussed in the remainder of this section are the public transit, bicycle and pedestrian facilities, transportation systems management, travel demand management, and arterial street and highway elements of the year 2035 regional transportation plan as amended. In addition, safety and security elements were created in 2011, under the guidance of the Advisory Committee on Regional Transportation System Planning, as refinements to the year 2035 regional transportation plan.

Table 3.6
Public Transit Element of the 2035 Regional Transportation Plan

Average Weekday Transit Service Characteristics	Existing 2005[a]	Recommended Plan 2035	Planned Increment	
			Number	Percent Change
Revenue Vehicle-Miles				
Commuter				
Bus	7,900[b]	21,100	13,200	167.1
Rail	--	2,200	2,200	--
Subtotal	7,900[b]	23,300	15,400	194.9
Express	--	17,000	17,000	--
Local	61,100	97,000	35,900	58.8
Total	69,000	137,300	68,300	99.0
Revenue Vehicle-Hours				
Commuter				
Bus	350[b]	1,000	650	177.8
Rail	--	100	100	--
Subtotal	350[b]	1,100	750	214.3
Express	--	1,100	1,100	--
Local	4,750	8,900	4,150	87.4
Total	5,100	11,100	6,000	117.6

[a] *Estimated.*

[b] *Includes the existing commuter bus route operated in the Kenosha-Milwaukee-Racine corridor. While portions of this route operate with express stop spacing, the long trips served by, and average operating speeds of, this route are typical of those for rapid service.*

Source: SEWRPC

Public Transit Element

The public transit element of the 2035 plan envisioned significant improvement and expansion—a near doubling of transit service over 2005 levels.

The public transit element of the year 2035 regional transportation system plan envisioned significant improvement and expansion of public transit in Southeastern Wisconsin, including development within the Region of a high-speed rail line, commuter transit and express transit system, improvement of existing local bus service, and the integration of local bus service with the recommended commuter and express transit services. Altogether, service on the regional transit system would be nearly doubled from service levels existing in 2005 measured in terms of revenue transit vehicle-miles of service provided—specifically, from about 69,000 vehicle-miles of service on an average weekday in the year 2005 to 137,300 vehicle-miles of service in the year 2035 (see Table 3.6). The transit recommendations are shown on Map 3.8 and discussed below by service type.

High-Speed Rail Service

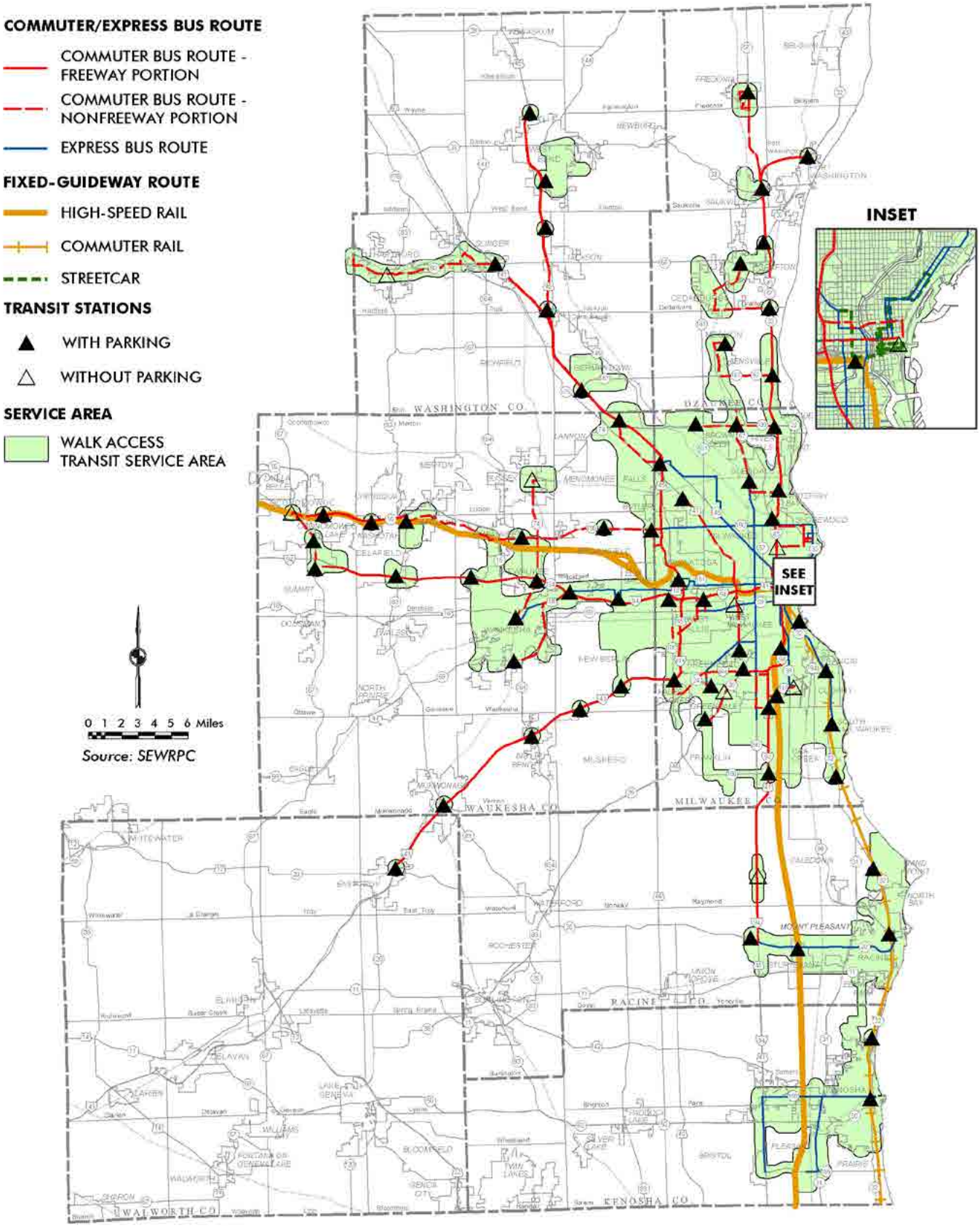
The planned high-speed rail line between Chicago, Milwaukee, and Madison would be developed and overseen by WisDOT, which received Federal funding for the project in January 2010. The planned high-speed rail line is intended to be part of an initial phase in the development of a Midwest high-speed rail network, developed in partnership with other Midwest states and Amtrak. Implementation of the planned Chicago-Milwaukee-Madison high-speed rail service would include improvements to Amtrak's existing Hiawatha Service operating between Chicago and Milwaukee and infrastructure improvements to allow service to continue to Madison, with trains reaching maximum speeds of 110 miles per hour between Milwaukee and Madison.

The 2035 plan recommended developing an integrated transit system that would include high-speed rail, a system of commuter and express routes, and significantly improved local bus service.

Commuter Transit Service

The recommended commuter transit service (formerly referred to as "rapid" transit service) principally consisted of buses operating over freeways connecting the Milwaukee central business district, the urbanized areas of the Region, and the urban centers and outlying counties of the Region.

Map 3.8
Public Transit Element of the 2035 Regional Transportation Plan



Commuter transit bus service would be provided south to Racine, southwest to Mukwonago and East Troy, west to Waukesha and Oconomowoc, northwest to West Bend and Hartford, and north to Cedarburg, Grafton, Saukville, and Port Washington. The proposed commuter transit system would have the following characteristics:

- The commuter transit service would be provided by buses with commuter seating and amenities. It would operate in both directions during all time periods of the day and evening, providing both traditional commuter and reverse-commute service.

- The commuter transit service would operate with some intermediate stops spaced about three to five miles apart to increase accessibility to employment centers and to increase accessibility for reverse-commute travel from residential areas within central Milwaukee County. The stops would provide connections with express transit service, local transit service, or shuttle bus or van service to nearby employment centers.

- The service would operate throughout the day. The frequency of service provided would be every 10 to 30 minutes in weekday peak travel periods, and every 30 to 60 minutes in weekday off-peak periods and on weekends.

The recommended commuter transit service also included a commuter rail line connecting Milwaukee, Racine, and Kenosha, as well as the Chicago area through existing Chicago-Kenosha Metra commuter rail. The commuter rail would operate similar to the commuter bus service, providing service at convenient frequencies in both directions throughout the day and evening with stops spaced about three to five miles apart.

An approximate tripling in commuter transit service was recommended as measured by daily vehicle-miles of bus service from the 7,900 vehicle-miles of such service provided on an average weekday in the year 2005 to 23,300 vehicle-miles in the plan design year 2035 (Table 3.6).

Express Transit

The recommended express transit service consisted of a grid of limited-stop, higher-speed routes located largely within Milwaukee County connecting major employment centers and shopping areas, other major activity centers such as General Mitchell International Airport, tourist attractions and entertainment centers, and residential areas. The express routes would replace existing major local bus routes. Stops would typically be spaced about one-quarter mile to one-half mile apart. It was envisioned that this system of limited-stop express service routes would initially consist of buses operating over arterial streets in mixed traffic, and would be upgraded over time to buses operating on reserved street lanes with priority treatment at traffic signals. The planned express routes are shown in blue on Map 3.8.

As envisioned under the plan:

- The express service would operate in both directions during all periods of the day and evening, providing both traditional and reverse-commute service.

- The service would generally operate with a stop spacing of about one-quarter mile to one-half mile.

- The frequency of service provided would be about every 10 minutes during weekday peak periods, and about every 20 to 30 minutes during weekday off-peak periods and on weekends.

- The overall travel speed provided would be about 16 to 18 miles per hour, a significant improvement over the average 12 miles per hour speed provided by the existing local bus transit service.

- No express transit service existed in the Region in 2005. As proposed, about 17,000 vehicle-miles of express transit service would be provided on an average weekday in the Region in the year 2035 (Table 3.6).

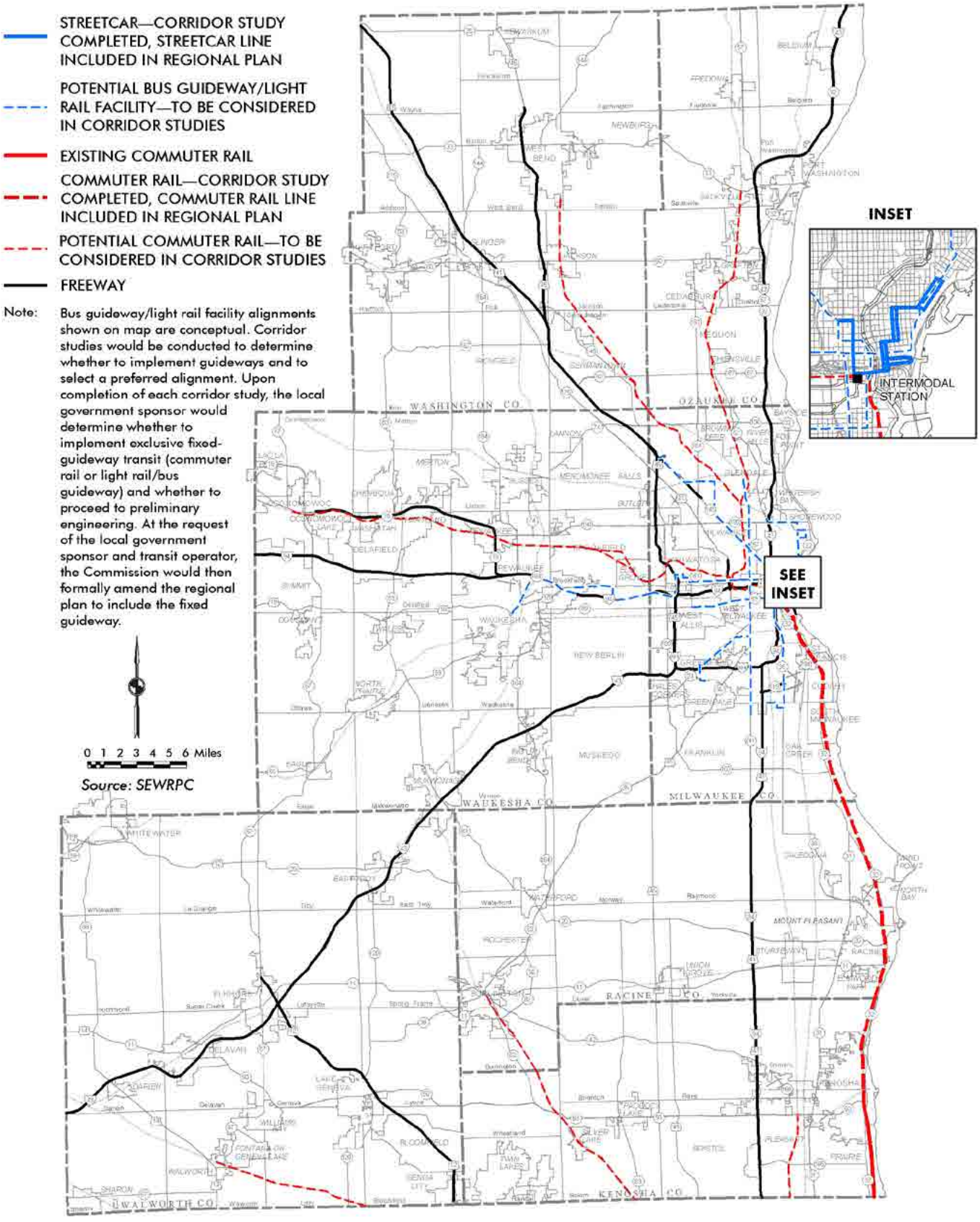
- The recommended express service also includes the City of Milwaukee downtown streetcar line.

Local Transit Service
The improvement and expansion of local bus transit service over arterial and collector streets, with frequent stops throughout the Kenosha, Milwaukee, and Racine urbanized areas, was also recommended. Service would be provided on weekdays, and during weekday evenings, Saturdays, and Sundays. An approximately 60 percent increase in local bus service was recommended from about 61,100 vehicle-miles of local bus service provided in 2005 on an average weekday to 97,000 vehicle-miles in the plan design year 2035 (Table 3.6). The recommendations included expansion of service area and hours, and significant improvements in the frequency of local transit service provided, particularly on major local routes.

Paratransit Service
Paratransit service was recommended to be provided consistent with the Federal Americans with Disabilities Act (ADA) of 1990. Under the provisions of this Act, 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 also continue to provide paratransit service to people with disabilities within local transit service areas who are unable to use fixed-route transit services consistent with federally specified eligibility and service requirements. The complementary paratransit services must serve any person with a permanent or temporary disability who is unable independently to 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 planned paratransit service must be available during the same hours and on the same days as the fixed-route transit service, be provided to eligible people on a "next-day" trip-reservations basis, not limit service to eligible people based on restrictions or priorities to trip purpose, and not be operated under capacity constraints which might limit the ability of eligible people to receive service for a particular trip. The paratransit service fares must be no more than twice the applicable public transit fare per one-way trip for curb-to-curb service.

Upgrading to Rail Transit or Bus Guideways
Commuter and express transit service was recommended to initially be provided with buses. This bus service would ultimately be upgraded to commuter rail in six corridors for commuter transit service and to bus guideway or light rail in six corridors for express transit service, as shown on Map 3.9. Public transit cannot offer convenient accessibility or provide an attractive

Map 3.9
Potential Commuter Rail and Express Transit Bus Guideway/ Light Rail Lines Under the 2035 Regional Transportation Plan



alternative to the automobile in heavily traveled corridors and dense urban activity centers if it is caught in traffic congestion and its travel times are not comparable to those of automobile travel. Upgrading to exclusive guideway transit may also be expected to promote higher-density land development and redevelopment at and around the stations of the exclusive guideway transit facilities, promoting implementation of the regional land use plan. The plan recommends that corridor studies be conducted for each potential commuter and express transit guideway corridor. The corridor studies would be conducted by the transit operator concerned, or jointly by the multiple transit operators concerned, to determine whether to implement a fixed-guideway transit alternative in each corridor, and to refine the conceptual guideway alignments shown in the regional plan. At the conclusion of each corridor study, the transit operator would determine whether to implement fixed-guideway transit, and identify the preferred alignment within the corridor that should proceed into preliminary engineering. The Commission would then, at the request of the transit operator(s), revise and amend the regional plan to include the fixed-guideway.

Two studies considering upgrading transit to fixed-guideway transit were underway in Southeastern Wisconsin at the time of regional plan adoption. Milwaukee County, the City of Milwaukee, and the Wisconsin Center District were conducting the Milwaukee downtown connector study, which was evaluating a streetcar line in the central portion of the City of Milwaukee and an express bus transit line in Milwaukee County. Also being studied was a commuter rail line connecting the Kenosha, Racine, and Milwaukee areas. These corridor-level studies for the streetcar and commuter rail line were completed, and the regional plan was amended to include the streetcar line and the commuter rail line.

The plan recommended accommodating bicycles as arterials are resurfaced and reconstructed, and providing a system of off-street paths connecting the Region's cities and villages.

Bicycle and Pedestrian Element

The bicycle and pedestrian facilities element of the plan was designed to provide for safe accommodation of bicycle and pedestrian travel, encourage bicycle and pedestrian travel, and to provide modal choice. The plan included improvements on, or adjacent to, arterial streets, and off-street networks of bicycle and pedestrian facilities. The plan recommended that as the existing surface arterial street system of about 3,300 miles is resurfaced and reconstructed segment-by-segment, bicycle accommodation should be considered and implemented, if feasible, through bicycle lanes, widened outside travel lanes, widened shoulders, and separate bicycle paths. 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 improvements such as extra-wide outside travel lanes, paved shoulders, bicycle lanes, or a separate bicycle path, in order to safely accommodate bicycle travel. Land access and collector streets, because of low traffic volumes and speeds, are capable of accommodating bicycle travel with no special accommodation for bicycle travel.

The level and unit of government responsible for constructing and maintaining the surface arterial street or highway should have responsibility for constructing, maintaining, and funding the associated bicycle facility. A detailed evaluation of the alternatives for accommodation of bicycles on surface arterial streets or highways should be conducted by the responsible level and unit of government as part of the engineering for the resurfacing, reconstruction, and new construction of each segment of surface arterial.

The plan also recommended that a system of off-street bicycle paths be provided between the Kenosha, Milwaukee, and Racine urbanized areas and the cities and villages within the Region with a population of 5,000 or more located outside these three urbanized areas. This system of off-street bicycle paths was initially proposed in the adopted park and open space plans prepared by the Commission for each of the seven counties of the Region. 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. 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 would include some type of bicycle accommodation—paved shoulders, extra-wide outside travel lanes, bicycle lanes, or separate parallel bicycle paths—or if provided over a nonarterial collector or land access street would require no special accommodation. The proposed system of on- and off-street bicycle facilities is shown on Map 3.10, and includes 548 miles of off-street bicycle and pedestrian paths intended for seasonal use, along with 168 miles of surface arterial and 89 miles of nonarterial connections. Approximately 203 miles of the planned 548 miles of off-street bicycle paths were in existence in 2005 during preparation of the plan. Also shown on Map 3.10 is the surface arterial street and highway system within the Region proposed to be provided with bicycle accommodation.

Pedestrian Facilities

The pedestrian facilities portion of the recommended bicycle and pedestrian facilities plan element was a policy plan, rather than a system plan. It recommended that the various units and agencies of government responsible for the construction and maintenance of pedestrian facilities in Southeastern Wisconsin adopt and follow a series of recommended standards and guidelines with regard to the development of those facilities, particularly within planned neighborhood units. These standards include the provision of sidewalks in the urban portions of the Region.

Community Bicycle and Pedestrian Plans

The plan also recommended 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. It also recommended that local units of government consider the preparation and implementation of land use plans that encourage more compact and dense development patterns, in order to facilitate pedestrian and bicycle travel.

Transportation Systems Management Element

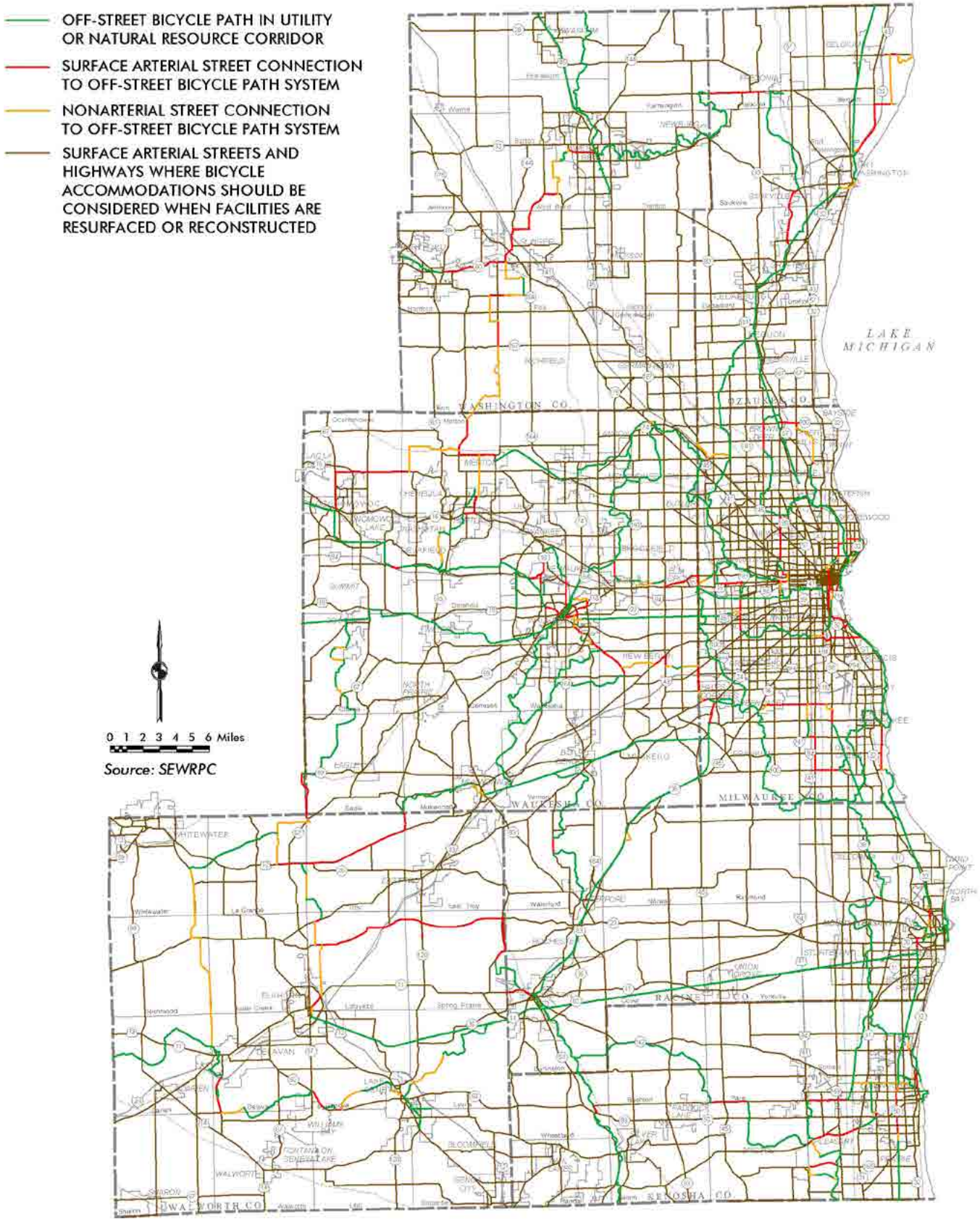
The transportation systems management (TSM) element of the plan included measures intended to manage and operate existing transportation facilities to their maximum carrying capacity and travel efficiency, including: freeway traffic management, surface arterial street and highway traffic management, major activity center parking management and guidance, and the preparation of a regional transportation operations plan.

Transportation systems management measures were recommended to maximize the transportation system's carrying capacity and travel efficiency.

Freeway Traffic Management

Recommended measures to improve the operation and management of the regional freeway system included operational control, advisory information, and incident management measures, as well as a traffic operations center

Map 3.10
Off-Street Bicycle Paths and Surface Arterial Street and Highway System Bicycle Accommodation Under the 2035 Regional Transportation Plan



supporting these measures. Essential to achieving freeway operational control, advisory information, and incident management is the WisDOT traffic operations center (TOC) in the City of Milwaukee. At the TOC, 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. The TOC is important to the safe and efficient operation of the regional freeway system and is in operation 365 days a year, 24 hours a day.

Operational Control

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 entering freeway traffic were envisioned to include traffic detectors, freeway on-ramp-meters, and ramp-meter control strategy. Traffic detectors measure the speed, volume, and density of freeway traffic, and are used for operational control, advisory information, and incident management. Existing freeway system traffic detectors in 2006 consisted of detectors embedded in the pavement at 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 traffic detectors were monitored by WisDOT at the TOC for the purposes of detecting 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 were 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. It was recommended that existing freeway system traffic detectors be maintained, and that traffic detectors be installed on the freeway system throughout the Region at one-half mile intervals as the freeway system was reconstructed. The only exceptions for installing detectors on freeway segments were identified as those segments with current and expected future traffic volumes which 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, USH 41 north of STH 60 in Washington County, and IH 43 and USH 12 in Walworth County.

Ramp-meters are traffic signals located on freeway entrance ramps or, in some cases, freeway-to-freeway entrance ramps, and are used to control the rate of entry of vehicles onto a freeway segment to achieve 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 is provided at ramp-meter locations to allow the high-occupancy vehicles to bypass traffic waiting at a ramp-metering signal. In 2006, there were 120 freeway on-ramps in the Milwaukee area equipped with ramp-meters. Buses and high-occupancy vehicles received preferential access at 62 of the 120 on-ramp-meter locations. It was recommended that as the freeway system is reconstructed, ramp-meters be installed on all freeway on-ramps within the Region, with high-occupancy vehicle preferential access provided at these metered ramps, particularly those that would be used by existing and planned public transit. The only exception for ramp-meter installation would be those freeway segments identified above which would be expected to carry current and future traffic volumes below their design capacity.

Another element of freeway operational control was the strategy used in the operational control of ramp-meters. The existing ramp-meters on the Southeastern Wisconsin freeway system were controlled in two ways. Some were controlled in a "pre-timed" mode, operating during specified peak traffic hours of the weekday at specified release rates of vehicles. Others were controlled as well during specified peak traffic hours of the weekday, but the vehicle release rates were based upon adjacent freeway system traffic volume and congestion. It was recommended that the strategy of controlling ramp-meters through consideration of adjacent congestion be expanded throughout the freeway system. It was also recommended that an operational control strategy be implemented that would consider downstream freeway traffic congestion and seek to minimize total travel delay on the freeway system while providing for equitable average and maximum delays at each ramp-meter and avoiding the extension of vehicle queues onto surface streets. Finally, it was recommended that the need for expanded vehicle storage on freeway on-ramps be considered, and addressed, during the reconstruction of the regional freeway system.

Advisory Information Measures

Providing advisory information to motorists was envisioned as an integral part of providing an efficient street and highway system. By providing information on current travel conditions, motorists could choose travel routes that were more efficient for their travel, resulting in a more efficient transportation system. Advisory information measures included permanent variable message signs (VMS), the WisDOT website, and provision of information to the media. WisDOT used the permanent VMS to provide real-time information to travelers about downstream freeway traffic conditions, such as current travel times to selected areas, information about lane and ramp closures, and where travel delays begin and end. In 2006, there were 23 permanent VMS located on the freeway system, primarily in the Milwaukee area, and 13 on surface arterials that connected with the freeway system primarily located in western Milwaukee County. It was recommended that variable message signs be provided on the entire freeway system as the freeway system is reconstructed, and on surface arterials leading to the most heavily used freeway system on-ramps.

WisDOT also provided substantial information about current freeway system traffic conditions on a website using data collected from freeway system traffic detectors. The information included maps depicting the current level of freeway traffic congestion and the locations of confirmed incidents, views of freeway system traffic available from the freeway system closed-circuit television camera network, and current travel times and delays on the major freeway segments in the Milwaukee area. The data on the website were also available to the media and used in daily radio and television broadcasts. It was recommended that WisDOT continue to enhance and expand the information provided on its website and to the media, and consider deployment of a regional 511 traveler information system, which would allow the public to dial "511" and receive automated messages about current travel conditions along their desired route through a series of predetermined automated menus.

Incident Management Measures

Incident management measures have as their objective the timely detection, confirmation, and removal of freeway incidents. As noted earlier, the WisDOT freeway system TOC and freeway system traffic volume detectors were identified as essential to incident management, as well as freeway operational control and advisory information. Other incident management

measures recommended were closed-circuit television, enhanced freeway location reference markers, freeway service patrols, crash investigation sites, the Traffic Incident Management Enhancement Program, ramp closure devices, and alternate route designations.

Closed-circuit television (CCTV) cameras provide live video images to WisDOT and the Milwaukee County Sheriff's Department, allowing for the rapid confirmation of congested areas and the presence of an incident, and immediate determination of the appropriate response to the incident and direction of the proper equipment to be deployed in response to the incident. In 2006 there were 83 closed-circuit television cameras on the Southeastern Wisconsin freeway system covering Milwaukee County freeways, IH 94 and USH 41/45 in eastern Waukesha County, and IH 94 in Kenosha and Racine Counties. It was recommended that the CCTV camera network be provided on the entire regional freeway system as the freeway system is reconstructed, with the possible exception of the freeway segments identified earlier that carry existing and future traffic volumes well below their design capacity.

Enhanced reference markers assist motorists in identifying specific locations along a freeway segment when reporting incidents. These markers typically are small signs provided at one-tenth mile intervals along the freeway system that display the highway shield and mile marker. Enhanced reference markers were provided in 2006 in Milwaukee County in the freeway median at each one-tenth mile on USH 45 from the Zoo Interchange to the Milwaukee-Waukesha County line, and on IH 94 from the Mitchell Interchange to the Illinois-Wisconsin State line, including the freeway segments of IH 94 in Kenosha and Racine Counties. It was recommended that enhanced reference markers be provided on the entire regional freeway system as the freeway system is reconstructed.

Freeway service patrols provide for rapid removal of disabled vehicles and initial response to clearing incidents. 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. In 2006, freeway service patrols operated in a limited role on the Milwaukee County freeway system and on IH 94 in Kenosha, Racine, and Waukesha Counties. In each of these four counties, service patrols operated during weekday peak traffic periods. In Milwaukee County, service patrols also operated all day during weekdays, and in Kenosha and Racine Counties, service patrols also operated all day during weekends. In Kenosha, Racine, and Waukesha Counties, one service patrol vehicle served 12 to 15 miles of freeways, and in Milwaukee County, one service patrol vehicle served 70 miles of freeways. Expansion of the freeway service patrol was recommended to serve the entire regional freeway system, and to provide greater coverage including all day weekday and weekend service, evening service, and increased vehicle coverage of one vehicle per 12 to 15 miles of freeway.

Crash investigation sites are designated safe zones for distressed motorists to relocate to if they are involved in a crash or an incident on the freeway. In 2006, there were 35 crash investigation sites on the southeastern Wisconsin freeway system, with the largest concentration—24 of the 35, or about 69 percent—located on the system in Milwaukee County. It was recommended that as the freeway system is reconstructed, WisDOT evaluate the extent of use and attendant benefits of existing crash investigation sites, and consider expansion as needed to serve the entire regional freeway system.

The Traffic Incident Management Enhancement (TIME) Program, sponsored by WisDOT, has served to bring together and coordinate the transportation engineering, law enforcement, media, emergency responders, transit, tow and recovery, and other freeway system operational interests at monthly meetings. The goals of the TIME program are to improve and enhance freeway incident management, improve freeway safety, and enhance the quality and efficiency of freeway travel. It was recommended that the TIME program continue to be operated and sponsored by WisDOT.

Ramp closure devices were deployed in 2006 on IH 94 in Kenosha, Racine, and Waukesha Counties. The ramp closure devices were either Type III barricades or swing arm gates. These ramp closure devices allow for the closure of freeway on-ramps during planned and unplanned major incidents, such as special events and severe inclement weather. It was recommended that WisDOT evaluate the use and attendant benefits of existing ramp closure devices, and consider their application throughout the Region.

Alternate routes are designated, clearly marked, and signed surface arterial street and highway routes which generally parallel freeway segments. These routes would be intended to be used by motorists during major freeway incidents and ramp closures and during particularly extreme congestion. Motorists would be directed through advisory information to these routes during major incidents and periods of particularly extreme congestion. It was recommended that WisDOT and the Regional Planning Commission, together with the concerned and affected local governments, examine the potential for the designation of alternative routes, and consider implementation of a pilot effort in a designated corridor.

Surface Arterial Street and Highway Traffic Management
This group of recommended transportation system management measures would attempt to improve the operation and management of the regional surface arterial street and highway network, and include improved traffic signal coordination, intersection traffic engineering improvements, curb lane parking restrictions, access management, and advisory information.

Coordinated traffic signal systems provide for the efficient progression of traffic along arterial streets and highways, allowing motorists to travel through multiple signalized intersections along an arterial route at the speed limit and minimizing or eliminating the number of stops at signalized intersections. In the Region, coordinated traffic signal systems generally ranged from systems comprising two traffic signals to systems comprising about 100 traffic signals. Approximately 1,100 of the 1,700 traffic signals in the Region, or about 65 percent, were part of a coordinated signal system in 2006. It was recommended that Commission staff work with State and local government to document existing and planned arterial street and highway system traffic signals and traffic signal systems, and develop recommendations for improvement and expansion of coordinated signal systems.

It was also recommended that State and local governments aggressively consider and implement needed individual arterial street and highway intersection improvements, such as adding right- and/or left-turn lanes; improvements in the type of traffic control deployed at the intersection, including two- or four-way stop control, roundabouts, or signalization; or improvements in signal timing at individual signalized intersections. This measure proposed that State, county, and municipal governments each prepare a prioritized short-range (two- to six-year) program of arterial street and highway intersection improvements under their jurisdiction, pursue

aggressive implementation of the programs, and review and update the programs every two to five years.

It was also recommended that local governments consider implementation of curb-lane parking restrictions during peak traffic periods in the peak traffic direction as traffic volumes and congestion increase. These parking restrictions would be implemented instead of widening arterial streets with additional lanes or constructing of new arterial streets.

Access management was also recommended to improve transportation systems operations and provide for full use of roadway capacity. Access management involves applying standards for the location, spacing, and operation of driveways, median openings, and street connections. It was proposed that State, county, and municipal governmental units with arterial streets and highways under their jurisdiction adopt access management standards, consider and implement these standards as development takes place along arterials under their jurisdiction, and prepare and implement access management plans along arterials that currently are developed and have access that violates these standards.

Advisory information should also be provided to motorists concerning the surface arterial street and highway network in the Region. It was recommended that WisDOT improve and expand the data provided on its website (travel times, congestion maps, and camera images) concerning freeway travel to include surface arterial street and highway travel, beginning with the pilot route designated as an alternative route to a segment of the freeway system.

Major Activity Center Parking Management and Guidance
Another recommended transportation system management measure would attempt to improve traffic operation conditions by reducing the traffic circulation of motorists seeking parking in major activity centers. The City of Milwaukee in 2006 had an initiative to construct a SummerFest shuttle bus parking management and guidance system. This initiative would provide static and dynamic signing indicating the location of parking structures and the availability of parking in those structures for a number of parking structures in the central business district (CBD) that are near SummerFest shuttle bus routes. This recommended measure supported the City of Milwaukee initiative and proposed expansion of parking management and guidance systems to incorporate all of the Milwaukee CBD at all times of the year.

Regional Transportation Operations Plan
The regional transportation plan also recommended the preparation of a regional transportation operation plan (RTOP). The RTOP would program high priority short-range (three- to five-year) operational improvement projects for implementation, in part based upon the TSM recommendations in the regional transportation plan.

Travel Demand Management
The travel demand management (TDM) measures included in the recommended year 2035 regional transportation plan were 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. These measures were in addition to the public transit and pedestrian and bicycle plan elements previously described.

Travel demand management measures were recommended to make efficient use of the existing capacity of the transportation system by reducing personal and vehicular travel or shifting it to alternative times and routes.

Seven categories of TDM measures were recommended in the year 2035 plan: high-occupancy vehicle preferential treatment, park-ride lots, transit pricing, personal vehicle pricing, TDM promotion, transit information and marketing, and detailed site-specific neighborhood and major activity center land use plans.

High-Occupancy Vehicle Preferential Treatment
This group of recommended TDM measures would attempt to provide preferential treatment for transit vehicles, vanpools, and carpools on the existing arterial street and highway system. The recommended preferential treatment category consisted of four specific TDM measures: the provision of high-occupancy vehicle (HOV) queue bypass lanes at metered freeway on-ramps, reserved bus lanes along congested surface arterial streets and highways, transit priority signal systems, and preferential carpool and vanpool parking.

The provision of HOV queue bypass lanes at metered freeway on-ramps existed at 62 of the 120 metered freeway on-ramp locations within the Milwaukee area. The TDM measure recommended that consideration be given during freeway system reconstruction to providing HOV bypass lanes at all metered freeway on-ramps within the Region, dependent upon right-of-ways and on-ramp geometric design constraints. For this measure to be truly effective, strict enforcement of HOV bypass lanes would be required.

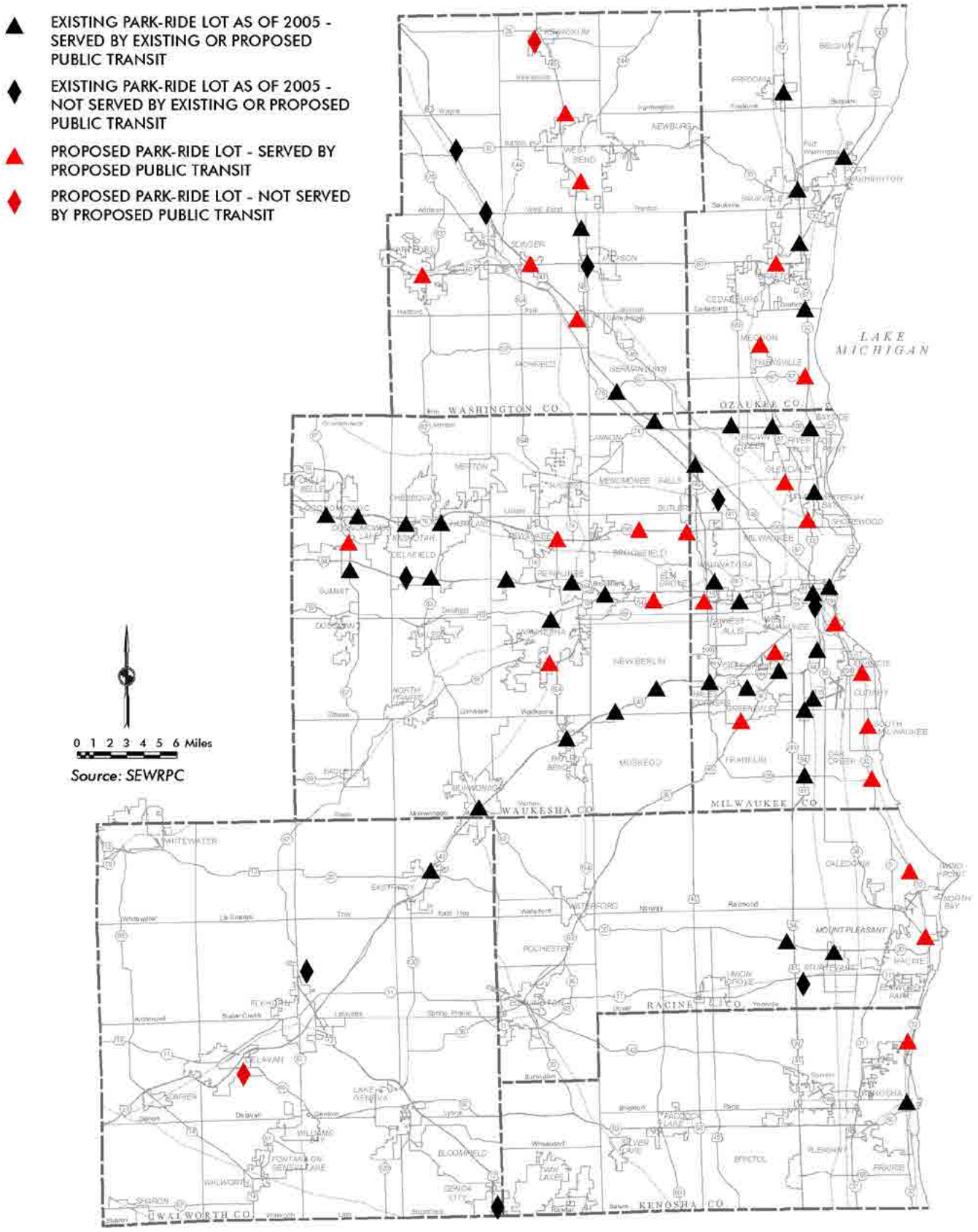
Reserved bus lanes similar to those along Blue Mound Road in Waukesha County allow transit vehicles to bypass vehicle queues attendant to traffic signals on congested arterial streets and highways. These reserved lanes may be expected to reduce transit travel times and improve transit travel time reliability during peak travel periods. This recommended TDM measure would expand the use of reserved bus lanes throughout the Region on the congested surface arterial streets and highways that currently accommodate, or may be expected to accommodate, express and major local transit routes, and on the surface arterial portion of commuter transit routes.

The third recommended TDM measure within the high-occupancy vehicle preferential treatment category was transit priority signal systems. This recommended measure would allow transit vehicles to extend the end of the green phase of traffic signals as they approach a signalized intersection. This recommended measure would include transit priority signal systems along all express and major local transit routes, and the surface arterial portion of commuter transit routes within the Region.

The fourth recommended TDM measure within the high-occupancy vehicle preferential treatment category was preferential carpool and vanpool parking. This recommended measure was voluntary and proposed that employers providing free/subsidized parking for their employees consider providing and enforcing preferential parking for those employees who carpool or vanpool to the employment site. This recommended measure may reduce vehicle trips by encouraging ridesharing.

Park-Ride Lots
To promote carpooling and the resultant more efficient use of the Region's transportation system, a network of park-ride lots was recommended to facilitate carpooling. Map 3.11 shows the recommended system of park-ride lots, including existing park-ride lots and those recommended to be served by transit. Park-ride lots were recommended along all major routes at their major intersections and interchanges where sufficient demand may be expected to warrant provision of an off-street parking facility.

Map 3.11
Recommended Park-Ride Lots Under the 2035 Regional Transportation Plan



Transit Pricing

This group of recommended TDM measures would build upon existing transit pricing programs conducted by the transit operators in the Region. The recommended transit pricing category consisted of three TDM measures: annual transit pass programs, monthly or weekly pass programs, and vanpool programs.

The Milwaukee County Transit System (MCTS) had implemented a pass system at four colleges and universities that provided for free transit use with a reduced fee included in student tuition and fees. This annual transit pass program was envisioned to be expanded to include the other local public transit operators in the Region and additional colleges and universities in the Region. This annual pass program would also be expanded to employers, with the Region's transit operators negotiating an annual fee with individual employers, which would allow those employers to provide each employee with an annual transit pass.

Monthly or weekly discount pass programs existed for three of the Region's public transit operators—MCTS, the Racine Belle Urban System, and the Waukesha Metro Transit System. This recommended monthly or weekly pass program allowed employers to offer their employees discounted monthly or weekly passes, where the employer and the transit operator have negotiated an agreement to each subsidize a portion of the monthly or weekly pass.

The third proposed TDM measure within the transit pricing category was expansion of vanpool programs, in which a group of employees who live in the same general area split the operation, maintenance, and a portion of the capital costs of a van. MCTS operated a vanpool program with about 20 vanpools, with vanpool users paying 20 percent of the capital costs of a van. The MCTS vanpool program required one end of the work trip to be in Kenosha, Milwaukee, Ozaukee, Racine, Washington, or Waukesha Counties, and that one end of the work trip was outside the regular MCTS service area.

Personal Vehicle Pricing

The recommended personal vehicle pricing group of TDM measures proposed to allocate a larger percentage of the full costs of construction, maintenance, and operation of street and highway facilities and services directly on the users of the system. The proposed personal vehicle pricing category consisted of two specific TDM measures—cash-out of employer-paid parking and auto pricing.

The cash-out of employer-paid parking recommendation encouraged employers currently providing free/subsidized parking to employees to voluntarily 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 recommended measure would potentially reduce vehicle-trips and vehicle-miles of travel through the increased use of transit, ridesharing, walking, and bicycling, as some employees may "pocket" the cash payment and use other modes of travel.

The second recommended TDM measure within the personal vehicle pricing category encouraged the continued and expanded use of user fees to pay the costs of construction, maintenance, and operation of street and highway facilities and services. Currently, user fees primarily include the Federal and State motor fuel tax and vehicle registration fees. These user fees fund nearly all of the costs associated with State highways and about 20 to 25 percent of the costs associated with county and municipal streets and highways. There is substantial and growing opposition to increases in motor fuel taxes.

In addition, there is the potential in the future for technological advances, such as increased fuel efficiency and alternative fuels, to render the current motor fuel tax obsolete. However, there is merit in having the users of the transportation system pay the actual costs of constructing, maintaining, and operating the transportation system. Travel behavior is affected by the cost of travel, and user fees can encourage more efficient travel.

Travel Demand Management Promotion
A regionwide program to aggressively promote transit use, bicycle use, ridesharing, pedestrian travel, telecommuting, and work-time rescheduling, including compressed work weeks, was recommended to encourage alternatives to drive-alone personal vehicle travel. The program would include education, marketing, and promotion elements.

Transit Information and Marketing
Recommended transit information and marketing measures would include the continuation and expansion of the joint marketing efforts of the transit operators within Southeastern Wisconsin. It was also recommended that a single website be developed in which transit users could access all necessary information for each transit system in Southeastern Wisconsin. This recommended website would allow a potential transit user to enter such information as beginning and ending addresses of a desired trip within the Region, and then would display the most feasible transit routing of the desired trip including all fares, transfers, and schedules.

The third recommended transit information and marketing measure was real-time travel information. This recommended measure would utilize global positioning system (GPS) data to provide real-time transit information to transit riders at transit centers and transit stops, including transit vehicle arrival times and real-time maps showing where on the route a transit vehicle is currently located.

Detailed Site-Specific Neighborhood and
Major Activity Center Land Use Plans
The preparation and implementation by local governmental units of detailed, site-specific neighborhood and major activity center plans to facilitate travel by transit, bicycle, and pedestrian movement and reduce dependence on automobile travel was recommended, and was also recommended in the 2035 regional land use plan.

Arterial Street and Highway System
The arterial street and highway element of the recommended year 2035 regional transportation plan as amended totaled 3,662 route-miles. Approximately 88 percent, or 3,209 of these route-miles, were recommended to be resurfaced and reconstructed to their same capacity. Approximately 360 route-miles, or 10 percent of the total recommended year 2035 arterial street and highway system, were recommended for widening upon reconstruction to provide additional through traffic lanes, including 127 miles of freeways. The remaining 93 route-miles, or about 2 percent of the total arterial street mileage, were proposed new arterial facilities. Thus, the plan recommendations envisioned over the next 30 years (following adoption of the plan) capacity expansion of 12 percent of the total arterial system, and viewed in terms of added lane-miles of arterials about a 10 percent expansion over that 30-year period.

Highway improvements were recommended only to address residual traffic congestion not addressed by other measures, with 10% of the arterial system including additional lanes and 2% made up of new facilities.

Table 3.7 and Maps 3.12 through 3.18 display the recommended year 2035 regional transportation plan arterial street preservation, improvement,

Table 3.7
Arterial Street and Highway System Preservation, Improvement, and Expansion by Arterial Facility Type by County: 2035 Regional Transportation Plan as Amended

County	System Preservation (miles)	System Improvement (miles)	System Expansion (miles)	Total Miles
Kenosha				
Freeway	0.0	12.0	0.0	12.0
Surface Arterial	312.3	33.7	3.3	349.3
Subtotal	312.3	45.7	3.3	361.3
Milwaukee				
Freeway	11.6	54.8	0.0	66.4
Surface Arterial	700.6	32.3	8.0	740.9
Subtotal	712.2	87.1	8.0	807.3
Ozaukee				
Freeway	12.1	15.3	0.0	27.4
Surface Arterial	260.1	20.8	3.0	283.9
Subtotal	272.2	36.1	3.0	311.3
Racine				
Freeway	0.0	12.0	0.0	12.0
Surface Arterial	392.2	19.5	21.6	433.3
Subtotal	392.2	31.5	21.6	445.3
Walworth				
Freeway	50.4	4.5[a]	12.7	67.6[a]
Surface Arterial	404.0	5.5	12.0	421.5
Subtotal	454.4	10.0	24.7	489.1
Washington				
Freeway	36.2	6.5	0.0	42.7
Surface Arterial	378.8	17.0	22.1	417.9
Subtotal	415.0	23.5	22.1	460.6
Waukesha				
Freeway	32.2	26.5	0.0	58.7
Surface Arterial	618.6	99.6	10.4	728.6
Subtotal	650.8	126.1	10.4	787.3
Region				
Freeway	142.5	131.6	12.7	286.8[b]
Surface Arterial	3,066.6	228.4	80.4	3,375.4
Total	3,209.1	360.0	93.1	3,662.2

[a] *Includes the planned conversion of approximately 4.5 miles of the USH 12 Whitewater bypass, currently a two traffic lane surface arterial to a four traffic lane freeway.*

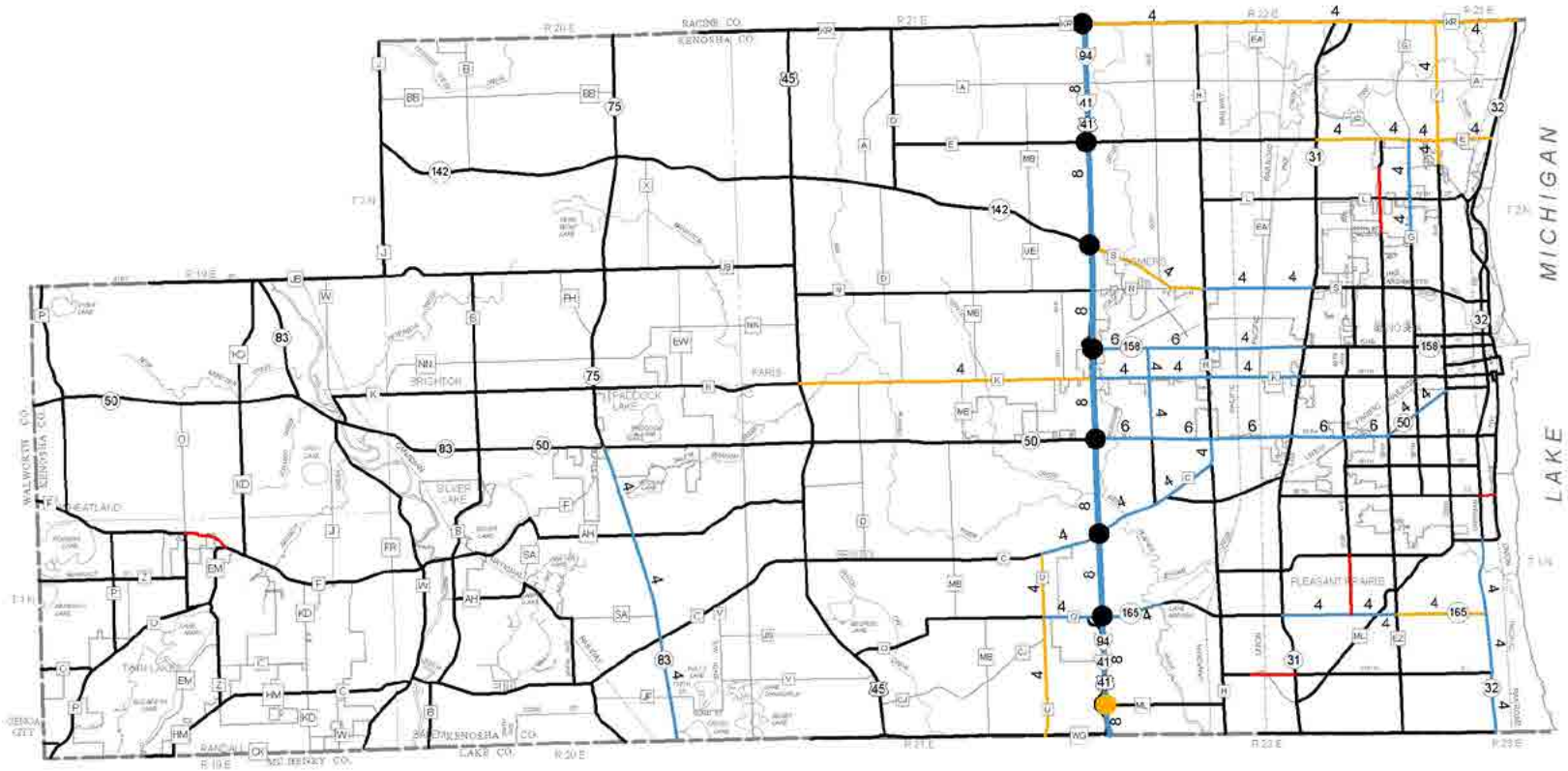
[b] *Includes the planned widening of approximately 127.0 miles of the existing 2005 regional freeway system, and the planned conversion of about 4.5 miles of the USH 12 Whitewater bypass, currently a two traffic lane surface arterial to a four traffic lane freeway.*

Source: SEWRPC

and expansion by county. Highway improvements were recommended to address the residual congestion that may not be expected to be alleviated by recommended land use, TSM, TDM, bicycle and pedestrian facilities, and public transit measures in the recommended plan. 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 government prior to implementation. The preliminary engineering and environmental studies would consider alternatives and impacts, and final decisions as to whether and how a planned project will proceed to implementation would be made by the responsible State, county, or municipal government at the conclusion of preliminary engineering.

The 127 miles of freeway widening proposed in the plan, and, in particular, the 19 miles of widening in the City of Milwaukee (IH 94 between the Zoo and Marquette Interchanges and IH 43 between the Mitchell and Silver Spring Interchanges), would undergo preliminary engineering and environmental

Map 3.12
Functional Improvements to the Arterial Street and Highway System in Kenosha County: 2035 Recommended Regional Transportation Plan as Amended



ARTERIAL STREET OR HIGHWAY

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

FREEWAY INTERCHANGE

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

0 1 2 3 Miles

Source: SEWRPC

THE FOLLOWING NOTES SUPPLEMENT THE RECOMMENDATIONS PORTRAYED ON THIS MAP:

1. Each proposed arterial street and highway improvement, expansion, or preservation project would need to undergo preliminary engineering and environmental studies by the responsible State, county, or municipal government prior to implementation. The preliminary engineering and environmental studies will consider alternatives and impacts, and final decisions as to whether and how a plan and project will proceed to implementation will be made by the responsible State, county, or municipal government (State for state highways, County for county highways, and municipal for municipal arterial streets) at the conclusion of preliminary engineering.

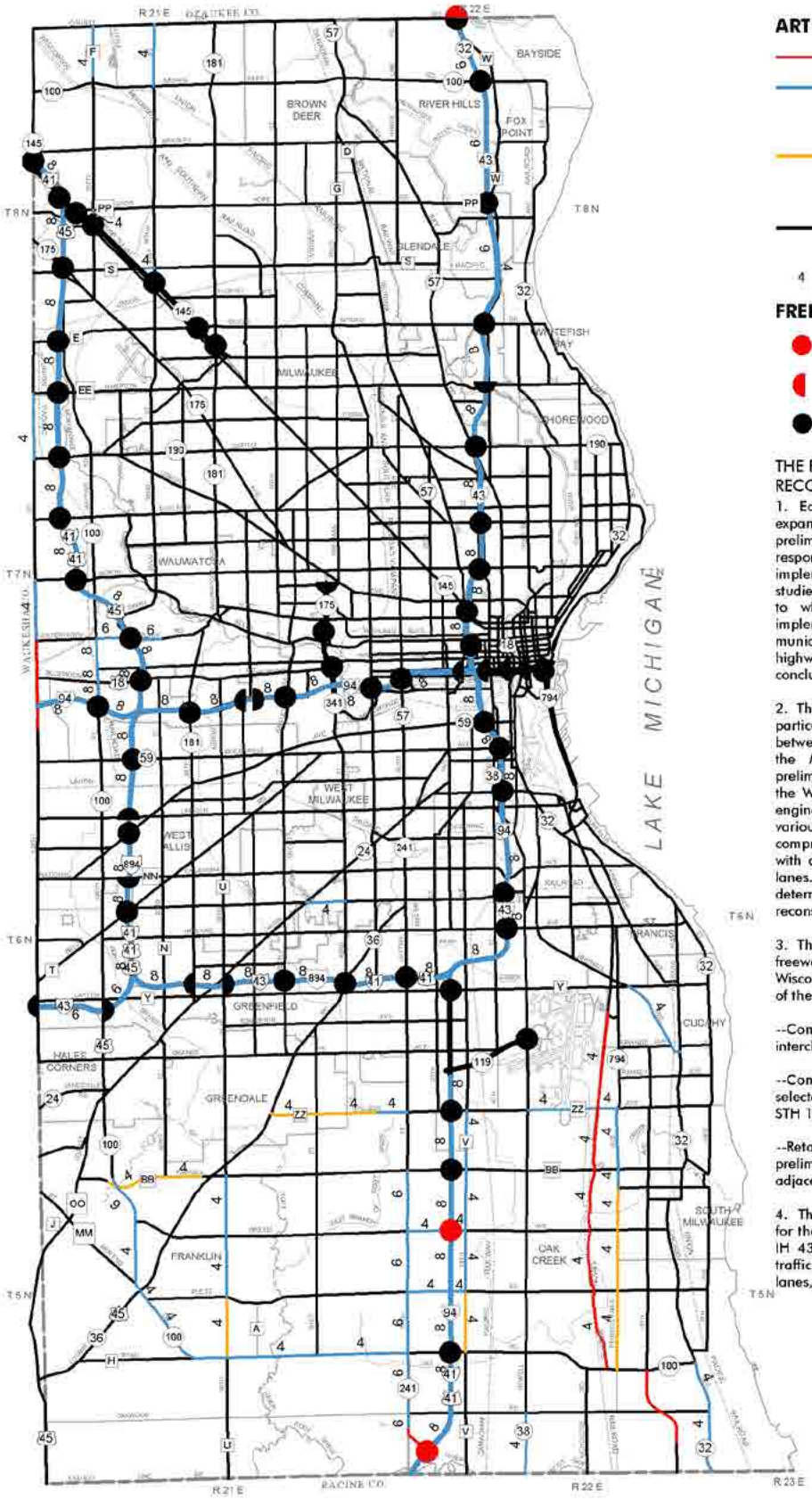
2. The 127 miles of freeway widening proposed in the plan, and in particular the 19 miles of widening in the City of Milwaukee (IH 94 between the Zoo and Marquette interchanges and IH 43 between the Mitchell and Silver Spring interchanges), will undergo preliminary engineering and environmental impact statement by the Wisconsin Department of Transportation. During preliminary engineering, alternatives will be considered, including rebuild as-is, various options of rebuild 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 the freeway would be reconstructed.

3. The plan recommends that the Wisconsin Department of Transportation during its preliminary engineering for IH 94 consider the provision of an interchange with CTH K in Kenosha County, including the alternative of collector-distributor roadways connecting CTH K, STH 50, and STH 158, and an additional potential new future freeway interchange at CTH ML with IH 94. Should the preliminary engineering study conclude with a recommendation to construct one or both of the interchanges, the Regional Planning Commission, upon request of the concerned local governments and the Wisconsin Department of Transportation, would take action to amend the regional plan to recommend the construction of the interchange.

4. Sufficient right-of-way should be reserved along STH 158 from CTH H to STH 31 to accommodate its ultimate improvement to six travel lanes.

5. Sufficient right-of-way should be reserved along CTH K from IH 94 to STH 31 to accommodate its ultimate improvement to six travel lanes.

Map 3.13
Functional Improvements to the Arterial Street and Highway System in Milwaukee County: 2035 Recommended Regional Transportation Plan as Amended



ARTERIAL STREET OR HIGHWAY

- NEW
- WIDENING AND/OR OTHER IMPROVEMENT TO PROVIDE SIGNIFICANT ADDITIONAL CAPACITY
- RESERVE RIGHT-OF-WAY TO ACCOMMODATE FUTURE IMPROVEMENT (ADDITIONAL LANES OR NEW FACILITY)
- RESURFACING OR RECONSTRUCTION TO PROVIDE ESSENTIALLY THE SAME CAPACITY
- 4 NUMBER OF LANES (2 WHERE UNNUMBERED)

FREEWAY INTERCHANGE

- NEW
- HALF NEW
- EXISTING

THE FOLLOWING NOTES SUPPLEMENT THE RECOMMENDATIONS PORTRAYED ON THIS MAP:

1. Each proposed arterial street and highway improvement, expansion, or preservation project would need to undergo preliminary engineering and environmental studies by the responsible State, county, or municipal government prior to implementation. The preliminary engineering and environmental studies will consider alternatives and impacts, and final decisions as to whether and how a plan and project will proceed to implementation will be made by the responsible State, county, or municipal government (State for state highways, County for county highways, and municipal for municipal arterial streets) at the conclusion of preliminary engineering.

2. The 127 miles of freeway widening proposed in the plan, and in particular the 19 miles of widening in the City of Milwaukee (IH 94 between the Zoo and Marquette interchanges and IH 43 between the Mitchell and Silver Spring interchanges), will undergo preliminary engineering and environmental impact statement by the Wisconsin Department of Transportation. During preliminary engineering, alternatives will be considered, including rebuild as-is, various options of rebuild 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 the freeway would be reconstructed.

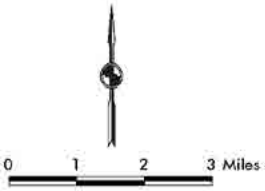
3. The plan also provides further recommendations with respect to freeway half-interchanges. The plan recommends that the Wisconsin Department of Transportation, during the reconstruction of the freeway system:

--Convert the S. 27th Street with IH 94 interchange to a full interchange;

--Consider as an alternative (where conditions permit) combining selected half-interchanges into one full interchange (for example, STH 100 and S. 124th Street with IH 43); and

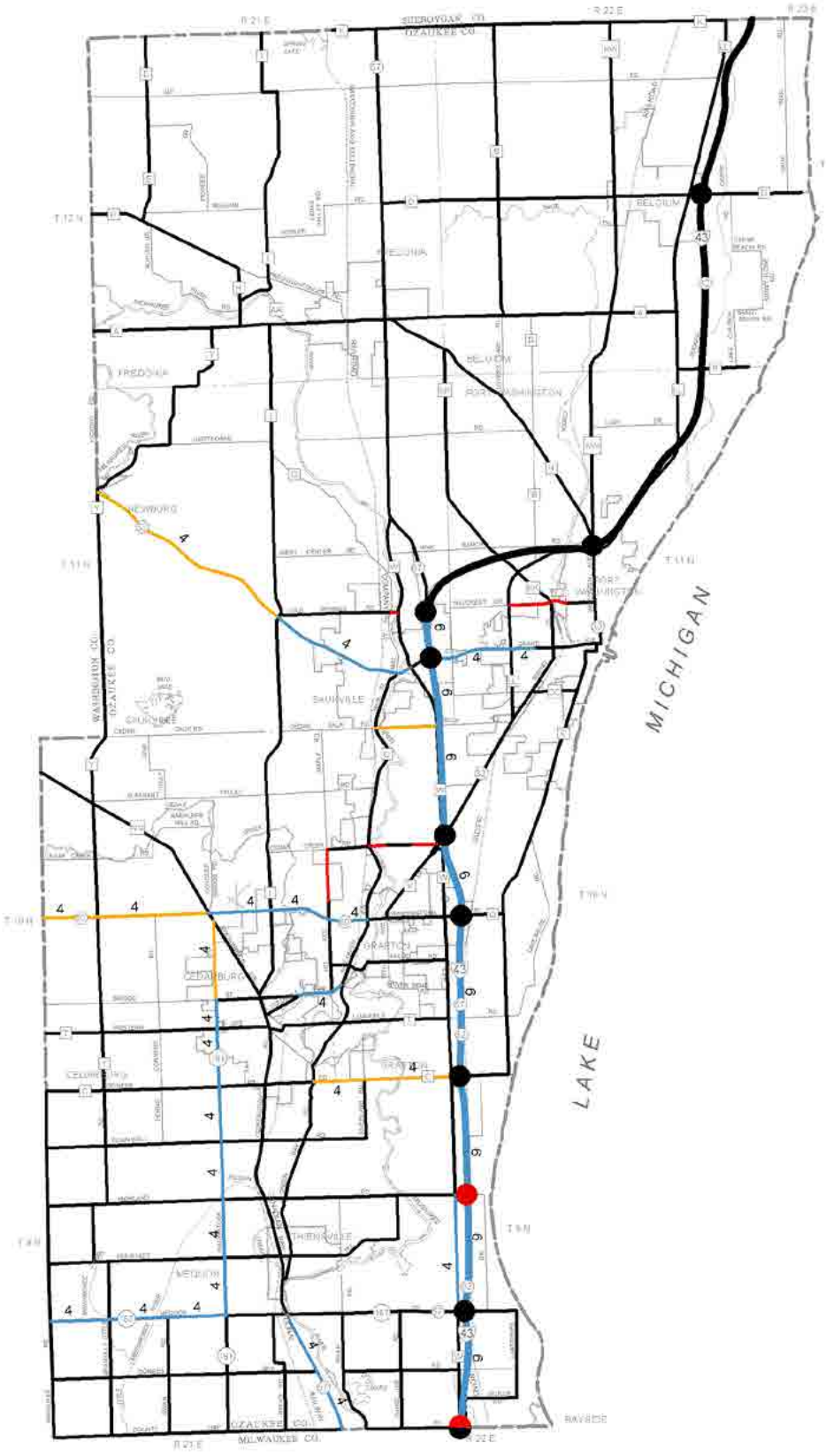
--Retain all other existing half-interchanges and examine during preliminary engineering the improvement of connection between adjacent interchanges.

4. The plan also recommends that during preliminary engineering for the reconstruction of STH 100 from W. Forest Home Avenue to IH 43, consideration be given to alternatives without additional traffic lanes, alternatives with additional traffic lanes or auxiliary lanes, and alternatives with frontage roads.



Source: SEWRPC

Map 3.14
Functional Improvements to the Arterial Street and Highway System in Ozaukee County: 2035 Recommended Regional Transportation Plan as Amended



ARTERIAL STREET OR HIGHWAY

- NEW
- WIDENING AND/OR OTHER IMPROVEMENT TO PROVIDE SIGNIFICANT ADDITIONAL CAPACITY
- RESERVE RIGHT-OF-WAY TO ACCOMMODATE FUTURE IMPROVEMENT (ADDITIONAL LANES OR NEW FACILITY)
- RESURFACING OR RECONSTRUCTION TO PROVIDE ESSENTIALLY THE SAME CAPACITY
- 4 NUMBER OF LANES (2 WHERE UNNUMBERED)

FREEWAY INTERCHANGE

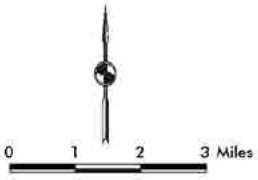
- NEW
- HALF NEW
- EXISTING

THE FOLLOWING NOTES SUPPLEMENT THE RECOMMENDATIONS PORTRAYED ON THIS MAP:

1. Each proposed arterial street and highway improvement, expansion, or preservation project would need to undergo preliminary engineering and environmental studies by the responsible State, county, or municipal government prior to implementation. The preliminary engineering and environmental studies will consider alternatives and impacts, and final decisions as to whether and how a plan and project will proceed to implementation will be made by the responsible State, county, or municipal government (State for state highways, County for county highways, and municipal for municipal arterial streets) at the conclusion of preliminary engineering.

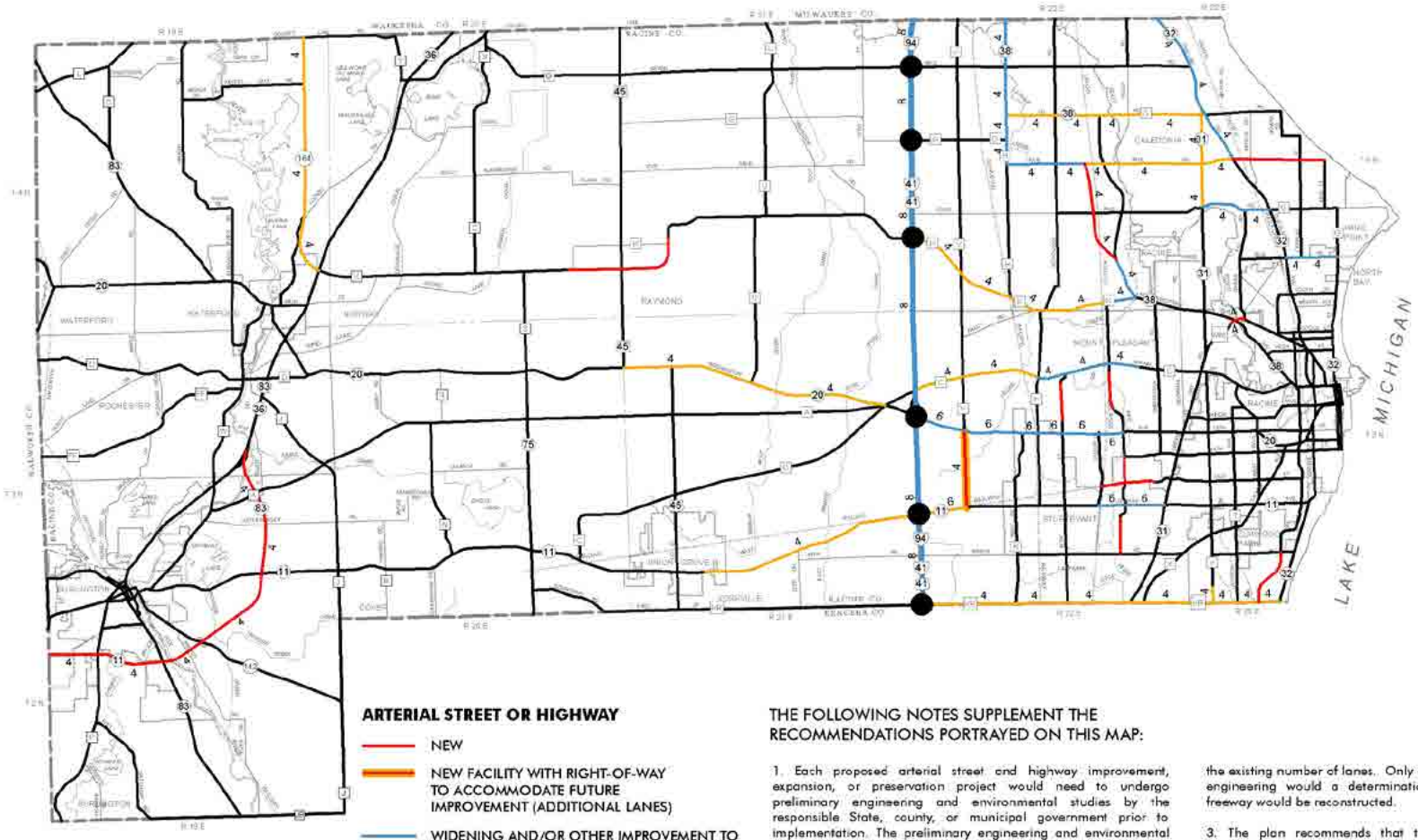
2. The 127 miles of freeway widening proposed in the plan, and in particular the 19 miles of widening in the City of Milwaukee (IH 94 between the Zoo and Marquette interchanges and IH 43 between the Mitchell and Silver Spring interchanges), will undergo preliminary engineering and environmental impact statement by the Wisconsin Department of Transportation. During preliminary engineering, alternatives will be considered, including rebuild as-is, various options of rebuild 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 the freeway would be reconstructed.

3. Subsequent to the completion of the regional transportation plan update and reevaluation, more detailed analyses will be conducted with the Ozaukee County jurisdictional highway system planning advisory committee addressing STH 33 in the Village of Saukville and potentially considering various alternatives including do-nothing, restrict parking, widen with additional lanes, construct bypass, and improve/construct parallel arterials.



Source: SEWRPC

Map 3.15
Functional Improvements to the Arterial Street and Highway System in Racine County: 2035 Recommended Regional Transportation Plan as Amended



ARTERIAL STREET OR HIGHWAY

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

FREEWAY INTERCHANGE

- EXISTING

THE FOLLOWING NOTES SUPPLEMENT THE RECOMMENDATIONS PORTRAYED ON THIS MAP:

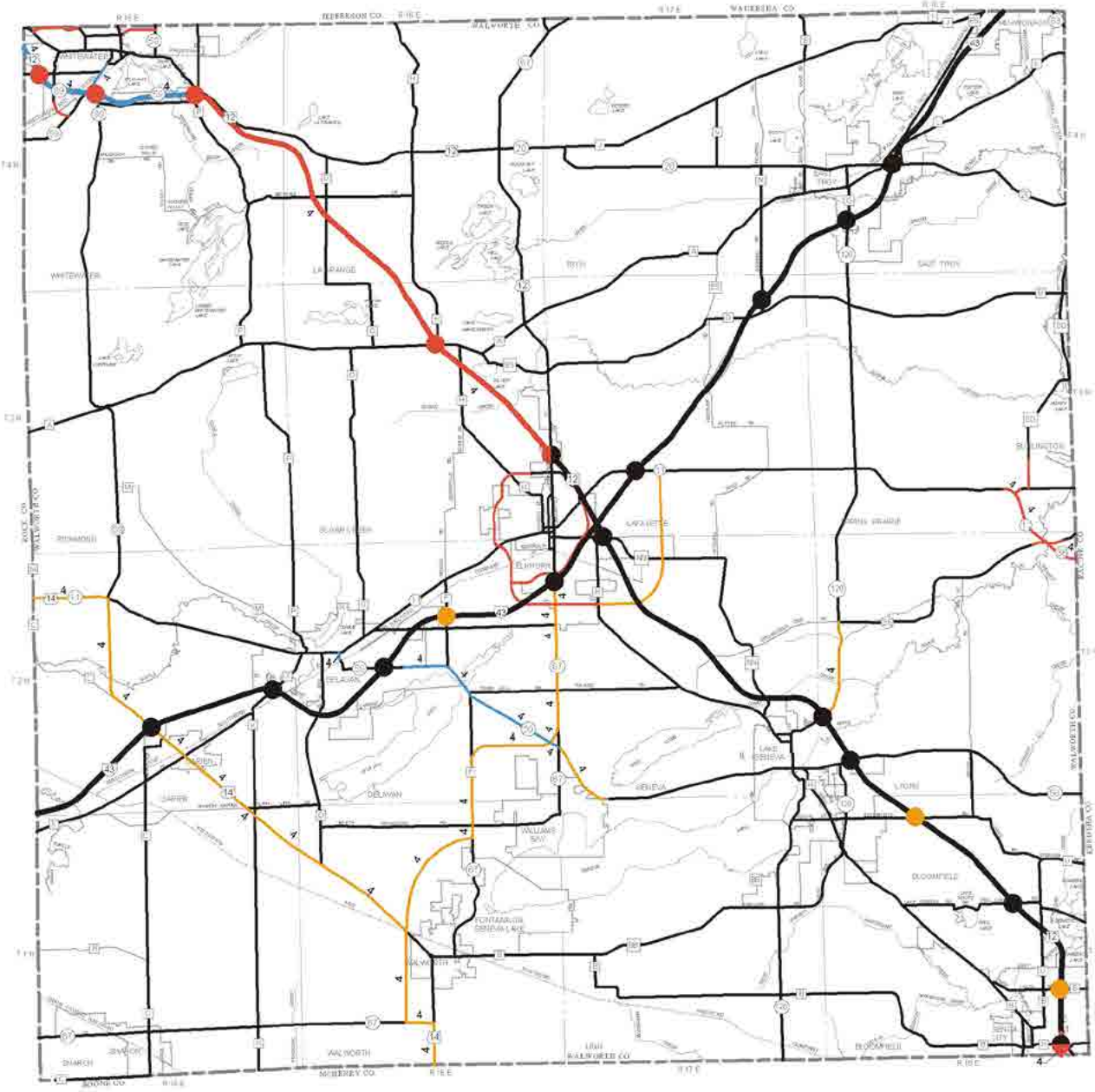
1. Each proposed arterial street and highway improvement, expansion, or preservation project would need to undergo preliminary engineering and environmental studies by the responsible State, county, or municipal government prior to implementation. The preliminary engineering and environmental studies will consider alternatives and impacts, and final decisions as to whether and how a plan and project will proceed to implementation will be made by the responsible State, county, or municipal government (State for state highways, County for county highways, and municipal for municipal arterial streets) at the conclusion of preliminary engineering.

2. The 127 miles of freeway widening proposed in the plan, and in particular the 19 miles of widening in the City of Milwaukee (IH 94 between the Zoo and Marquette interchanges and IH 43 between the Mitchell and Silver Spring interchanges), will undergo preliminary engineering and environmental impact statement by the Wisconsin Department of Transportation. During preliminary engineering, alternatives will be considered, including rebuild as-is, various options of rebuild 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 the freeway would be reconstructed.

3. The plan recommends that the Wisconsin Department of Transportation during its preliminary engineering for IH 94 consider the provision of an interchange with CTH C in Racine County, including an alternative of collector-distributor roadways connecting CTH C and STH 20.

4. Subsequent to the completion of the regional transportation plan update and reevaluation, more detailed analyses will be conducted with the Racine County jurisdictional highway system planning advisory committee addressing STH 20/83 in the Village of Waterford and CTH K in Franksville and potentially considering various alternatives, including do-nothing, restrict parking, widen with additional lanes, construct bypass, and improve/construct

Map 3.16
Functional Improvements to the Arterial Street and Highway System in Walworth County: 2035 Recommended Regional Transportation Plan as Amended



ARTERIAL STREET OR HIGHWAY

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

FREEWAY INTERCHANGE

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

0 1 2 3 Miles

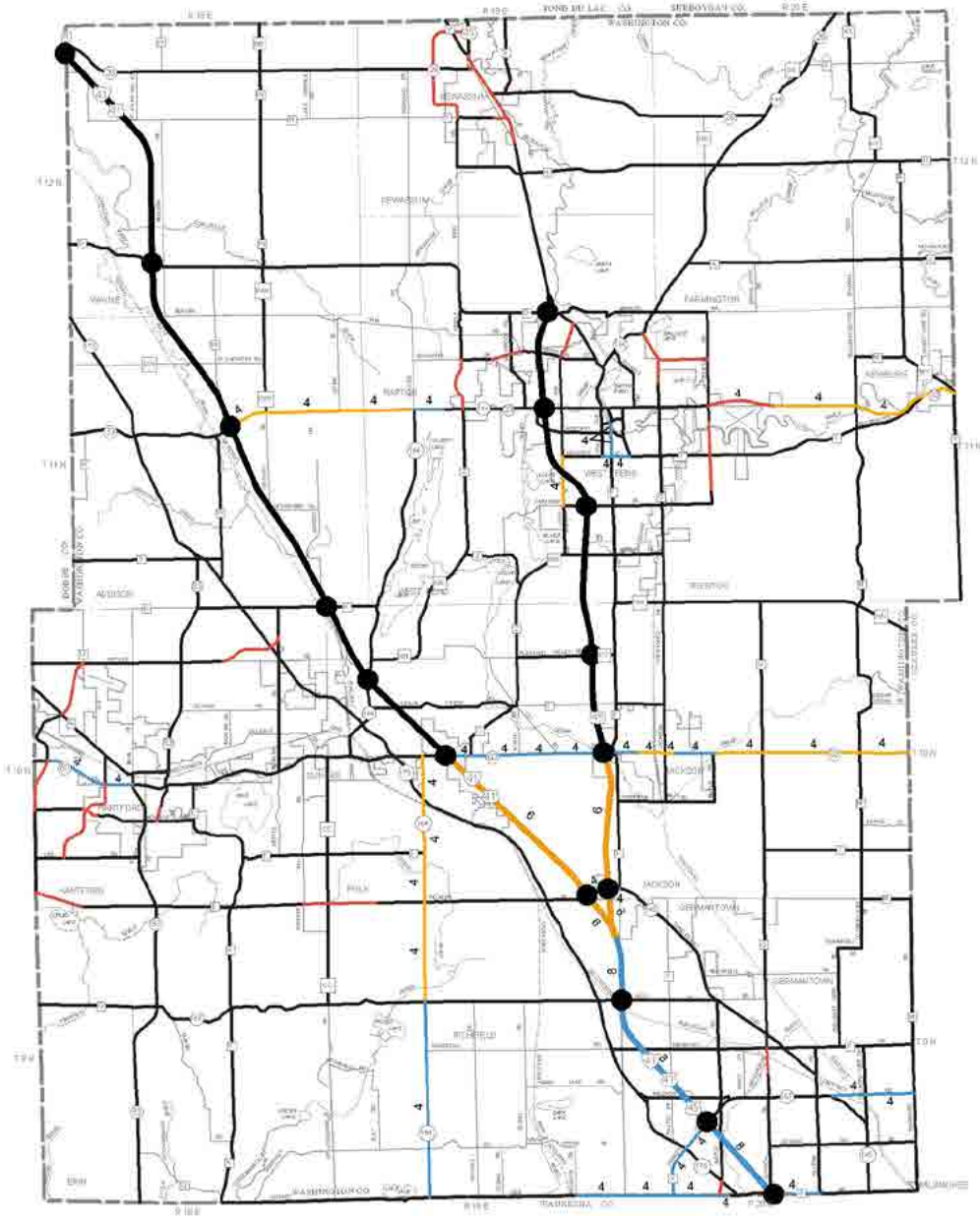
Source: SEWRPC

THE FOLLOWING NOTES SUPPLEMENT THE RECOMMENDATIONS PORTRAYED ON THIS MAP:

1. Each proposed arterial street and highway improvement, expansion, or preservation project would need to undergo preliminary engineering and environmental studies by the responsible State, county, or municipal government prior to implementation. The preliminary engineering and environmental studies will consider alternatives and impacts, and final decisions as to whether and how a plan and project will proceed to implementation will be made by the responsible State, county, or municipal government (State for state highways, County for county highways, and municipal for municipal arterial streets) at the conclusion of preliminary engineering.

2. The 127 miles of freeway widening proposed in the plan, and in particular the 19 miles of widening in the City of Milwaukee (IH 94 between the Zoo and Marquette interchanges and IH 43 between the Mitchell and Silver Spring interchanges), will undergo preliminary engineering and environmental impact statement by the Wisconsin Department of Transportation. During preliminary engineering, alternatives will be considered, including rebuild as-is, various options of rebuild 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 the freeway would be reconstructed.

Map 3.17
Functional Improvements to the Arterial Street and Highway System in Washington County: 2035 Recommended Regional Transportation Plan as Amended



ARTERIAL STREET OR HIGHWAY

- NEW
- WIDENING AND/OR OTHER IMPROVEMENT TO PROVIDE SIGNIFICANT ADDITIONAL CAPACITY
- RESERVE RIGHT-OF-WAY TO ACCOMMODATE FUTURE IMPROVEMENT (ADDITIONAL LANES OR NEW FACILITY)
- RESURFACING OR RECONSTRUCTION TO PROVIDE ESSENTIALLY THE SAME CAPACITY
- 4 NUMBER OF LANES (2 WHERE UNNUMBERED)

FREEWAY INTERCHANGE

- EXISTING

THE FOLLOWING NOTES SUPPLEMENT THE RECOMMENDATIONS PORTRAYED ON THIS MAP:

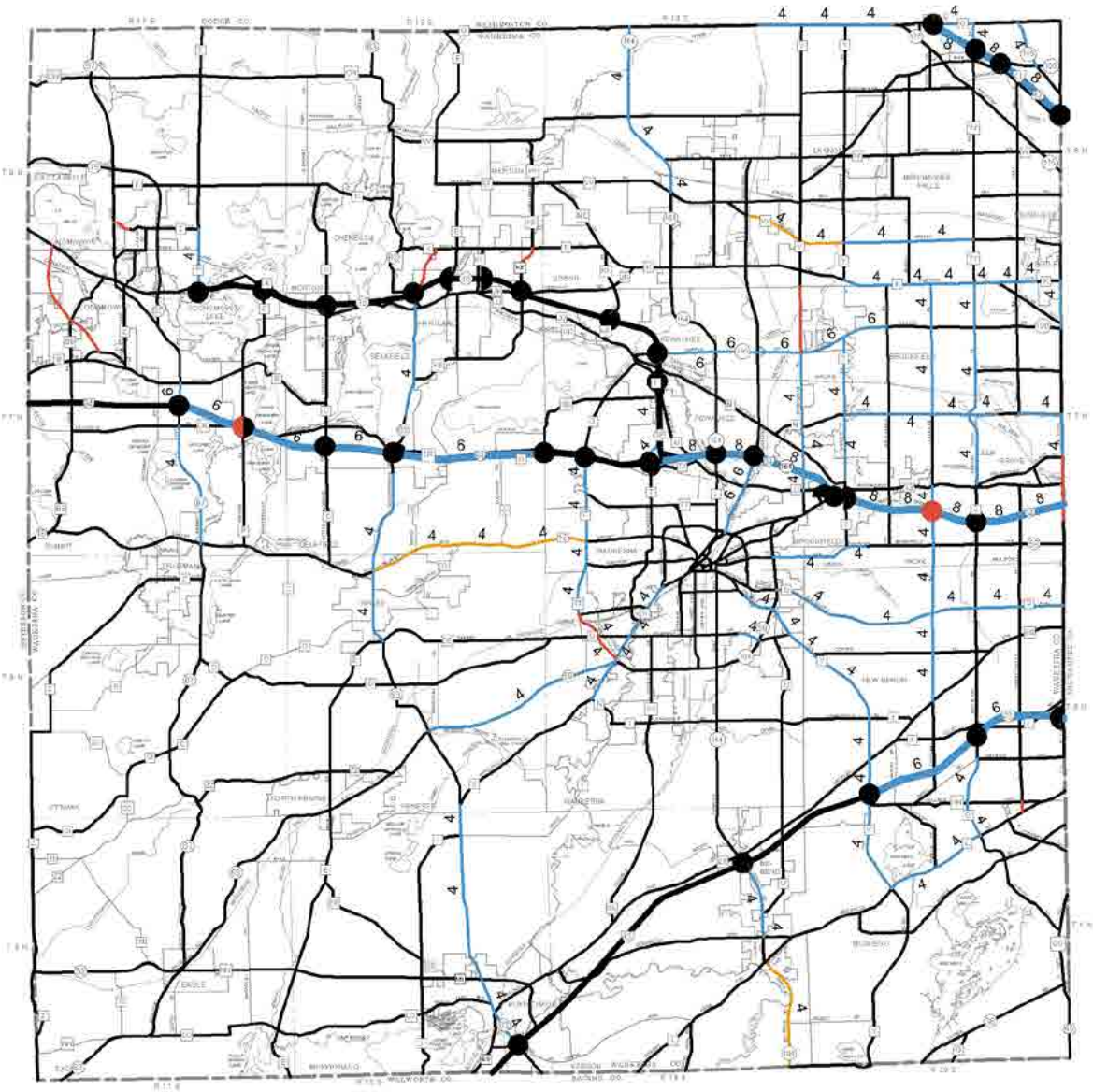
1. Each proposed arterial street and highway improvement, expansion, or preservation project would need to undergo preliminary engineering and environmental studies by the responsible State, county, or municipal government prior to implementation. The preliminary engineering and environmental studies will consider alternatives and impacts, and final decisions as to whether and how a plan and project will proceed to implementation will be made by the responsible State, county, or municipal government (State for state highways, County for county highways, and municipal for municipal arterial streets) at the conclusion of preliminary engineering.

2. The 127 miles of freeway widening proposed in the plan, and in particular the 19 miles of widening in the City of Milwaukee (IH 94 between the Zoo and Marquette interchanges and IH 43 between the Mitchell and Silver Spring interchanges), will undergo preliminary engineering and environmental impact statement by the Wisconsin Department of Transportation. During preliminary engineering, alternatives will be considered, including rebuild as-is, various options of rebuild 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 the freeway would be reconstructed.

0 1 2 3 Miles

Source: SEWRPC

Map 3.18
Functional Improvements to the Arterial Street and Highway System in Waukesha County: 2035 Recommended Regional Transportation Plan as Amended



ARTERIAL STREET OR HIGHWAY

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

FREEWAY INTERCHANGE

- NEW
- NEW HALF
- EXISTING

0 1 2 3 Miles

Source: SEWRPC

THE FOLLOWING NOTES SUPPLEMENT THE RECOMMENDATIONS PORTRAYED ON THIS MAP:

1. Each proposed arterial street and highway improvement, expansion, or preservation project would need to undergo preliminary engineering and environmental studies by the responsible State, county, or municipal government prior to implementation. The preliminary engineering and environmental studies will consider alternatives and impacts, and final decisions as to whether and how a plan and project will proceed to implementation will be made by the responsible State, county, or municipal government (State for state highways, County for county highways, and municipal for municipal arterial streets) at the conclusion of preliminary engineering.

2. The 127 miles of freeway widening proposed in the plan, and in particular the 19 miles of widening in the City of Milwaukee (IH 94 between the Zoo and Marquette interchanges and IH 43 between the Mitchell and Silver Spring interchanges), will undergo preliminary engineering and environmental impact statement by the Wisconsin Department of Transportation. During preliminary engineering, alternatives will be considered, including rebuild as-is, various options of rebuild 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 the freeway would be reconstructed.

3. The plan also provides further recommendations with respect to freeway half-interchanges. The plan recommends that the Wisconsin Department of Transportation during the reconstruction of the freeway system:

--Convert the CTH P with IH 94 interchange to a full interchange;

--Consider as an alternative (where conditions permit) the combination of selected half-interchanges into one full interchange; and

--Retain all other existing half-interchanges and examine during preliminary engineering the improvement of connection between adjacent interchanges.

4. Subsequent to the completion of the regional transportation plan update and reevaluation, more detailed analysis will be conducted with the Waukesha County jurisdictional highway system planning advisory committee addressing STH 164 in the Village of Big Bend and potentially considering various alternatives, including do-nothing, restrict parking, widen with additional lanes, construct bypass, and improve/construct parallel arterials.

impact statement by WisDOT. During preliminary engineering, alternatives would be considered, 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 the preliminary engineering would a determination be made as to how the freeway would be reconstructed.

Safety and Security Elements

In 2011, two additional elements of the plan were created under the guidance of the Advisory Committee on Regional Transportation Planning to specifically address transportation safety and security. These elements provide a refinement of the adopted plan, along with specific recommendations to enhance the safety and security of the Region's transportation system.

Safety

The safety element contained a review of the transportation safety objectives, principles, and standards documented in the year 2035 regional transportation plan adopted in 2006, along with presenting a proposed expanded set of transportation safety objectives, principles, and standards. The safety element also included a listing and discussion of the year 2035 regional transportation plan recommendations that advance transportation safety. In addition, the element included recommendations for improved traffic crash and safety data, and recommendations for further study and improvements on those roadway segments with the most severe safety problems.

Security

The security element provided an overview of transportation security and considered ongoing security-related issues and efforts to protect transportation networks and facilities at the Federal, State, and regional levels. The element specifically addressed security, which is distinguished from safety by being concerned with protecting against intentional attacks against people, facilities, modes of travel, and important transportation infrastructure. The element detailed the efforts being undertaken by various Federal, State, regional, and local agencies to enhance the security of the Region's transportation system. No specific projects were included, but the element provided affirmation of the Commission's role in regional coordination of transportation security-related projects, along with the incorporation of security considerations into future transportation system preservation, improvement, or expansion projects.

Implementation Status of the Year 2035 Regional Transportation System Plan

This section assesses the extent of regional transportation plan implementation between the adoption of the year 2035 regional transportation plan in 2006 and the beginning of the VISION 2050 planning process.

Public Transit

The regional plan proposed the significant expansion of public transit, a near doubling of transit service by the year 2035. The plan recognized that this expansion would require State legislation to create local dedicated transit funding and a renewal of adequate annual State financial assistance to transit, and would be significantly aided by the creation of a regional transit authority (RTA). As such action typically only occurs as part of a State biennial budget, the plan assumed no expansion would occur until 2008 upon passage of the State 2007-2009 biennial budget in mid-2007, the first budget following plan adoption.

Table 3.8
Public Transit Vehicle-Miles of Service in the Region: 2006-2012

Service Type	Annual Revenue Vehicle-Miles[a]	
	2006	2012
Fixed-Route (Bus)	21.07 million	19.62 million
Demand-Response (Shared-Ride Taxi)	2.41 million	2.82 million
Total	23.48 million	22.44 million

[a] *Service for the general public.*

Source: SEWRPC

In November 2008, an advisory referendum passed in Milwaukee County approving a one percent sales tax, including a half-percent sales tax for public transit. In the 2009-2011 State budget, then-Governor Doyle proposed an RTA with a half-percent sales tax local dedicated funding, but the State Legislature rejected his proposal, and it was not included in the adopted budget. The State Legislature did include a half-percent sales tax dedicated funding for the Milwaukee County Transit System, but then-Governor Doyle vetoed this dedicated funding. The adopted budget did create, however, a Kenosha-Racine-Milwaukee (KRM) commuter rail authority with vehicle rental fee dedicated funding. Another attempt was made to pass RTA legislation in April of 2010 during the regular session of the State Legislature. The legislation came very close to passing, but was not adopted into State law.

Between 2005 and 2011, State transit operating funding to Southeastern Wisconsin increased by about 4 percent annually; however, Federal transit operating funding—which has historically represented about 20 percent of total annual transit public operating funding—increased by less than 1 percent annually and local transit operating funding—which has also represented about 20 percent of total annual public operating funding—slightly decreased over the same period. The 2011-2013 State biennial budget eliminated the transit authority established to implement the KRM commuter rail line, and reduced State transit operating funding for the year 2012 by about 10 percent. Without legislation for dedicated local transit funding or more substantial increases in State funding, the expansion of public transit service recommended in the regional plan may not be expected to be implemented, and transit service is likely to continue to decline.

As shown in Table 3.8, the amount of transit service in Southeastern Wisconsin has declined from the time of plan adoption in 2006 to 2012, including a decrease of almost 7 percent in fixed-route bus service. However, demand-responsive service has increased over the period by 17 percent. Overall, the amount of transit service in Southeastern Wisconsin decreased by 4 percent over this time period. The amount of transit service increase envisioned by 2012 in the recommended plan was about 12 percent.

Rather than plan-recommended improvement and expansion of public transit, service levels actually decreased by 4% overall from 2006 to 2012 and fares increased faster than inflation due to inadequate funding.

The regional plan also recommended that public transit fare increases not exceed the rate of general price inflation. Table 3.9 shows the fares for the Region's transit systems for the years 2001 through 2012. Fare increases from 2006 to 2012 ranged from 15 to 60 percent, exceeding the general price inflation experienced over this period of about 16 percent.

Implementation of WisDOT's planned Chicago-Milwaukee-Madison high-speed rail line was indefinitely postponed following withdrawal of the majority of the Federal funding awarded to the project by the U.S. Department of Transportation (USDOT) in December 2010. This withdrawal of funding was

Table 3.9
Fares Charged on the Public Bus Systems in the Region: 2001-2012

Fare Category	Year					
	2001	2002	2003	2004	2005	2006
City of Kenosha Area Transit System						
Base Adult Cash Fare	$1.00	$1.00	$1.00	$1.00	$1.00	$1.00
Monthly Pass	$22.00	$22.00	$22.00	$28.00	$28.00	$28.00
Western Kenosha County Transit						
Base Adult Cash Fare	--	--	--	--	--	--
11-Ride Punch Card Monthly Pass	--	--	--	--	--	--
Kenosha-Racine-Milwaukee Commuter Bus						
Base Adult Cash Fare	$1.00-$4.00	$1.00-$4.00	$1.00-$4.00	$1.00-$4.00	$1.00-$4.00	$1.00-$4.00
Book of 10 Tickets	$9.00-$36.00	$9.00-$36.00	$9.00-$36.00	$9.00-$36.00	$9.00-$36.00	$9.00-$36.00
Milwaukee County Transit System						
Base Adult Cash Fare	$1.50	$1.50	$1.50	$1.75	$1.75	$1.75
Freeway Flyer Cash Fare	$1.80	$1.80	$1.80	$2.05	$2.05	$2.25
Weekly Pass	$11.00	$12.00	$12.00	$13.00	$13.00	$14.00
Upass	$33.00	$35.00	$35.00	$38.00	$38.00	$38.00
MCTS Commuter Value Pass (employee portion)	$16.00	$17.00	$17.00	$19.00	$19.00	$25.67
Ozaukee County Express Bus						
Base Adult Cash Fare	$2.00	$2.00	$2.25	$2.25	$2.25	$2.25
City of Racine Belle Urban System						
Base Adult Cash Fare	$1.00	$1.00	$1.25	$1.25	$1.25	$1.25
Monthly Pass	$30.00	$30.00	$40.00	$40.00	$40.00	$40.00
Washington County Commuter Express						
Base Adult Cash Fare	$2.50	$2.50	$2.50	$2.50	$2.50	$2.50
Book of 10 Tickets	$21.25	$21.25	$21.25	$21.25	$21.25	$21.25
City of Waukesha Metro Transit System						
Base Adult Cash Fare	$1.00	$1.25	$1.25	$1.25	$1.50	$1.50
Monthly Pass	$24.00	$38.00	$38.00	$38.00	$38.00	$38.00
Waukesha County Transit System						
Base Adult Cash Fare	$1.00-2.50	$1.00-2.50	$2.25-2.75	$2.25-2.75	$2.50-3.00	$2.50-3.00
Book of 10 Tickets	$9.00-$22.50	$9.00-$22.50	$20.25-24.75	$20.25-24.75	$22.50-27.00	$22.50-27.00

Table continued on next page.

a result of the newly elected Governor's opposition to using the funding for a high-speed rail line. Despite its postponement, this proposed service remains a part of WisDOT's long-range State rail plan completed in March 2014. WisDOT is also continuing efforts to increase service and improve travel times of Amtrak's existing Hiawatha Service operating between Chicago and Milwaukee.

Some progress has been made in implementing fixed-guideway transit. The Milwaukee downtown connector study was completed. The study evaluated a wide range of alternative routes and technologies including express buses, guided electric powered buses, and streetcars. The City of Milwaukee subsequently completed planning and preliminary engineering for a downtown streetcar line. In a March 2009 split of $91.5 million in Interstate Cost Estimate (ICE) funding, $54.9 million was provided to implement the streetcar line. The City of Milwaukee is proceeding to construction of the streetcar line.

Table 3.9 (Continued)

Fare Category	Year					
	2007	2008	2009	2010	2011	2012
City of Kenosha Area Transit System						
Base Adult Cash Fare	$1.00	$1.00	$1.25	$1.25	$1.50	$1.50
Monthly Pass	$28.00	$28.00	$34.00	$34.00	$40.00	$40.00
Western Kenosha County Transit						
Base Adult Cash Fare	$2.00-$3.00	$2.00-$3.00	$2.00-$3.00	$2.00-$3.00	$2.00-$3.00	$2.00-$3.00
11-Ride Punch Card	$20.00	$20.00	$20.00	$20.00	$20.00	$20.00
Monthly Pass	$10.00	$10.00	$10.00	$10.00	$20.00	$20.00
Kenosha-Racine-Milwaukee Commuter Bus						
Base Adult Cash Fare	$1.00-$4.00	$1.25-$4.25	$1.25-$4.25	$1.25-$4.25	$1.25-$4.25	$1.25-$4.25
Book of 10 Tickets	$9.00-$36.00	$11.25-38.25	$11.25-38.25	$11.25-38.25	$11.25-38.25	$11.25-$38.25
Milwaukee County Transit System						
Base Adult Cash Fare	$1.75	$2.00	$2.00	$2.25	$2.25	$2.25
Freeway Flyer Cash Fare	$2.25	$2.75	$3.00	$3.25	$3.25	$3.25
Weekly Pass	$16.00	$16.00	$16.50	$17.50	$17.50	$17.50
Upass	$41.00	$41.00	$42.00	$45.00	$45.00	$45.00
MCTS Commuter Value Pass (employee portion)	$29.50	$29.50	$30.50	$32.50	$32.50	$32.50
Ozaukee County Express Bus						
Base Adult Cash Fare	$2.25	$3.00	$3.00	$3.25	$3.25	$3.25
City of Racine Belle Urban System						
Base Adult Cash Fare	$1.50	$1.50	$1.50	$1.50	$1.50	$2.00
Monthly Pass	$50.00	$50.00	$50.00	$50.00	$50.00	$65.00
Washington County Commuter Express						
Base Adult Cash Fare	$3.25	$3.25	$3.25	$3.25	$3.25	$3.75
Book of 10 Tickets	$27.50	$27.50	$27.50	$27.50	$27.50	$32.50
City of Waukesha Metro Transit System						
Base Adult Cash Fare	$1.75	$1.75	$2.00	$2.00	$2.00	$2.00
Monthly Pass	$40.00	$40.00	$44.00	$44.00	$44.00	$44.00
Waukesha County Transit System						
Base Adult Cash Fare	$2.50-3.00	$2.75-$3.25	$3.25-$4.00	$3.25-$4.00	$3.25-$4.00	$3.25-$4.00
Book of 10 Tickets	$22.50-$27.00	$24.75-$29.25	$29.25-$36.00	$29.25-$36.00	$29.25-36.00	$29.25-$36.00

Source: SEWRPC

Bicycle and Pedestrian Facilities

Accommodation of Bicycles on the Arterial Street and Highway System

The regional plan envisioned that as each segment of the existing surface arterial street system of about 3,300 miles in the Region was constructed, resurfaced, and reconstructed, the provision of accommodation for bicycle travel would be considered and implemented as feasible through bicycle lanes, widened outside travel lanes, widened shoulders, or separate bicycle paths. Implementation was significantly impacted by *Wisconsin State Statutes* and Federal policy requiring bicycle accommodations to be provided in all new highway construction and reconstruction projects funded with State or Federal funds, unless demonstrated that such accommodation is prohibitive.

Bicycle facilities increased significantly, with the Region adding 249 miles of on-street accommodations and 52 miles of off-street paths.

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 10 feet of separation from the travel lanes. In addition, although not identified as an accommodation in the 2035 regional transportation plan because none existed in the Region when the plan was developed, enhanced bicycle facilities, such as protected bicycle lanes and buffered bicycle lanes, represent a newer type of bicycle accommodation.[32] The mileage of arterial streets and highways that provided bicycle accommodations increased from about 633 miles in 2004 to about 882 miles in 2014, or about a 39 percent increase. Data are not available to identify those urban arterials with outside lanes of 14 feet in width that also accommodate bicycles.

Off-Street Bicycle Path System
The plan also recommended that a system of off-street bicycle paths be provided between the Kenosha, Milwaukee, and Racine urbanized areas, and between all the cities and villages within the Region with a population of 5,000 or more. Some on-street bicycle connections would be required to connect segments of this system of off-street paths. Map 3.19 shows the proposed system of off-street bicycle facilities, which included 548 miles of off-street bicycle paths. Approximately 203 miles of the planned 548 miles of off-street bicycle paths existed in 2006, and another 52 miles of the planned paths have since been constructed as of 2014.

A number of local and county plans have been completed or are in development that will help to implement the recommendations of the regional plan's bicycle and pedestrian element. Examples include the Kenosha County Comprehensive Bike Plan completed in July 2013 and a bicycle plan for the City of Milwaukee that recommends a broad range of measures to improve conditions for bicycling in Milwaukee.

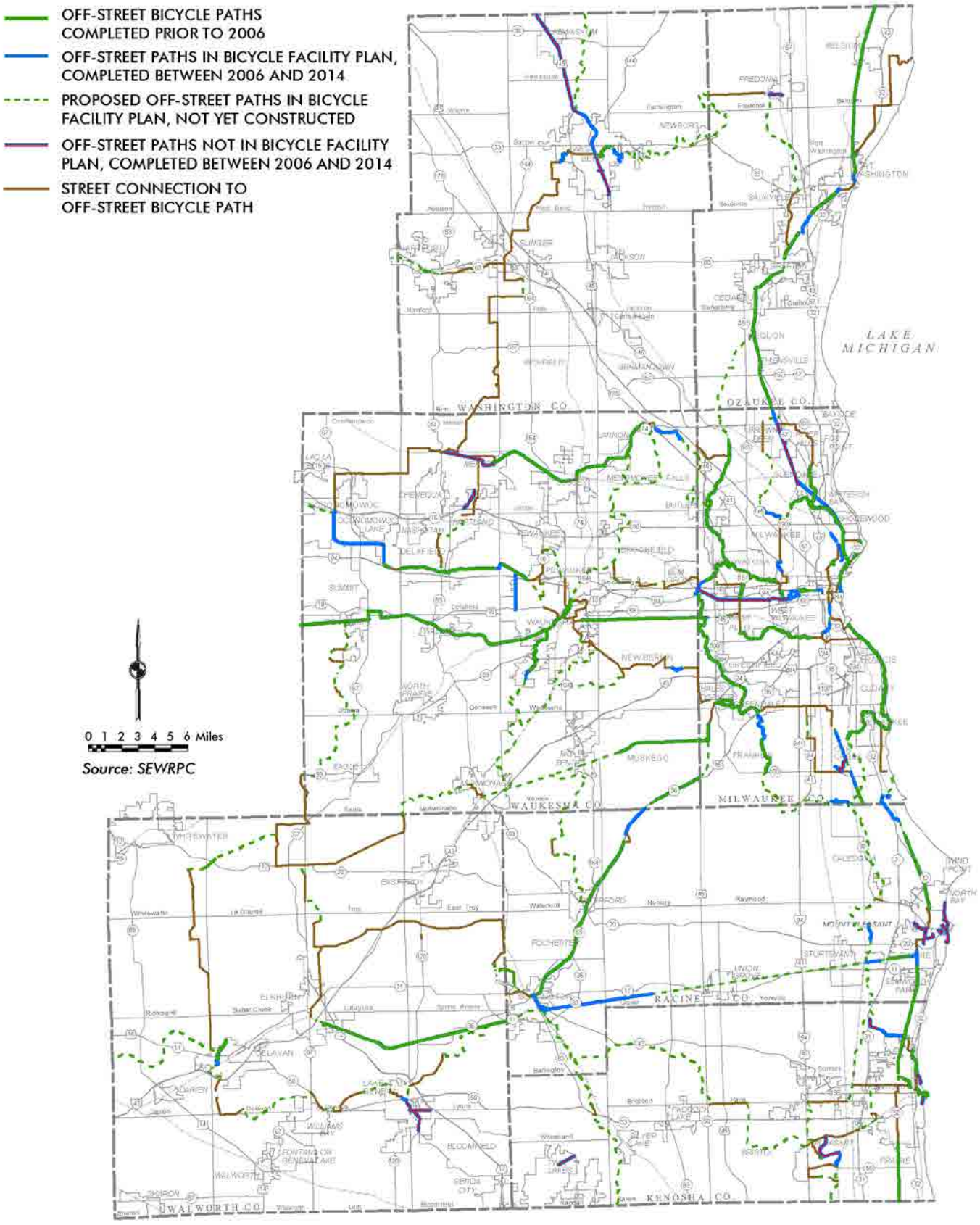
Transportation Systems Management
Recommended TSM measures include freeway traffic management, surface arterial management, and major activity center parking guidance.

Freeway Traffic Management
Expansion of freeway traffic management was envisioned as being implemented as the freeway system was reconstructed segment-by-segment. The following measures have been implemented since the regional transportation plan was adopted:

- Maintenance of Traffic Operations Center in operation on a 365 days a year, 24 hours per day basis.
- Expansion of ramp-meters from 120 locations in 2004 to 121 locations in 2013.
- Expansion of freeway variable message signs from 21 locations in 2004 to 31 locations in 2013.
- Implementation of 511 regional travel information system.
- Expansion of freeway closed-circuit television cameras from 83 locations in 2004 to 159 locations in 2013.

[32] In Volume II and Volume III of this report, the definition for enhanced bicycle facilities was expanded to include separate paths within the road right-of-way.

Map 3.19
Existing and Planned Off-Street Bicycle Facilities in the Region: 2014



- Continuation of Traffic Incident Management Enhancement Program (TIME).

- Expansion of deployment of ramp closure devices to Ozaukee, Walworth, Washington, and Waukesha Counties. In addition, ramp closure devices will be installed along IH 94 within Kenosha and Racine Counties as part of the project to reconstruct IH 94 between the Mitchell Interchange and the Wisconsin State line that is expected to be completed in 2021.

- Expansion of freeway service patrols in Milwaukee County to weekday evenings. However, the freeway service patrols are no longer provided in Kenosha, Racine, and Waukesha Counties due to budgetary reasons. Temporary service patrols were operated in 2013 in addition to the Milwaukee County patrol services along segments of freeway that were under construction at that time. Examples include the Hoan Bridge, portions of IH 94 in Kenosha County, and segments of IH 94 and USH 45 as part of the Zoo Interchange project.

Surface Arterial Street and Highway Traffic Management
Implementation includes the following:

- Expansion of variable message signs from 13 locations in 2004 to 19 locations in 2013.

- Expansion of closed-circuit television cameras from 13 locations in 2004 to 22 locations in 2013.

- Expansion of signal coordination and interconnection, as well as improvement through signal optimization, through 12 funded Federal Highway Administration (FHWA) Congestion Mitigation and Air Quality Improvement Program (CMAQ) projects.

Major Activity Center Parking Management and Guidance
The City of Milwaukee implemented and installed the envisioned central business district parking structure guidance system. The system provides motorists with real-time information about available parking in the downtown area through signs located throughout the central business district, freeway dynamic message signs, a website, and a telephone line. A data source was also made available to allow real-time parking information applications to be created for mobile devices or websites.

In addition to expansion of TSM measures, a regional transportation operations plan (RTOP) was completed, identifying and prioritizing TSM projects.

Regional Transportation Operations Plan
The regional transportation system plan also recommended that a regional transportation operation plan (RTOP) be prepared to program high priority short-range—three to five years—operational improvement projects for implementation, principally drawing these projects from the TSM recommendations in the regional transportation system plan. The RTOP was completed in 2012, identifying candidate corridor and intersection TSM projects prioritized for implementation and funding, particularly with respect to FHWA CMAQ funding.

Travel Demand Management
Implementation to date includes the following:

- Three park-ride lots of the 26 additional park-ride lots proposed under the 2035 plan have been provided to encourage transit use

and carpooling, and a fourth park-ride lot has been constructed that was not in the 2035 plan as adopted in 2006 (see Map 3.20). However, three park-ride lots that were built prior to 2006 have since been removed. Of the 9,220 spaces in park-ride lots served by transit planned for 2035, 6,635 have been provided as of 2012, an increase of 1,040 from the previous plan baseline of 2004.

- Internet trip planners are now provided by the Milwaukee County, Ozaukee County, Waukesha County, City of Kenosha, and City of Waukesha transit systems.

- Automatic vehicle location systems are now used by the Milwaukee County, City of Waukesha, City of Racine, Ozaukee County, Washington County, and Western Kenosha County transit systems. Milwaukee County Transit System completed implementation of real-time information technology in 2014, which allows passengers to know the arrival time of the next bus.

- The Milwaukee County, Ozaukee County, and City of Kenosha transit systems have equipped all of their buses with bike racks. While not a specific recommendation of the year 2035 regional transportation plan, the installation of the bike racks on buses in Milwaukee County would promote the use of transit and bicycle modes of transportation.

- Detailed site-specific neighborhood plans encouraging higher-density, mixed-use, transit-oriented development were prepared for the neighborhoods surrounding the nine KRM commuter rail stations. With the exception of one community, the plans have been endorsed by each community, with each community indicating that they will incorporate the plans into their comprehensive plans, should commuter rail proceed to implementation.

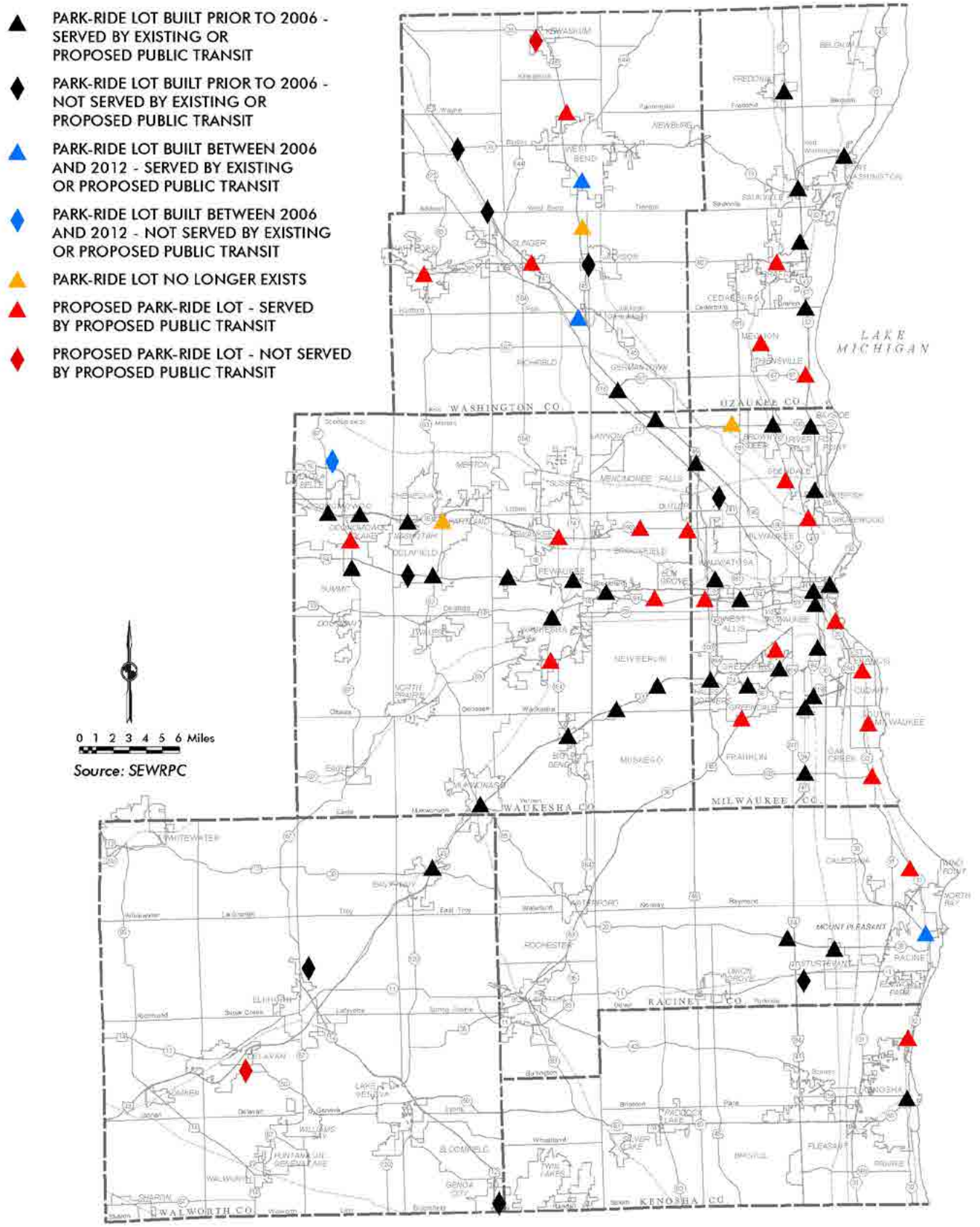
Arterial Streets and Highways

The arterial street and highway element of the recommended year 2035 regional transportation plan as amended totaled 3,662 route-miles. Approximately 88 percent, or 3,209 of these route-miles, were recommended to be resurfaced and reconstructed to their same capacity. Approximately 360 route-miles—about 10 percent of the total recommended year 2035 arterial street and highway system—were recommended for widening to provide additional through traffic lanes, including 127 miles of freeways. The remaining 93 route-miles—about 2 percent of the total arterial street mileage—were proposed new arterial facilities. Thus, the plan envisioned over its 30-year timeframe capacity expansion of about 12 percent of the total arterial system and about a 10 percent expansion in added lane miles of arterials.

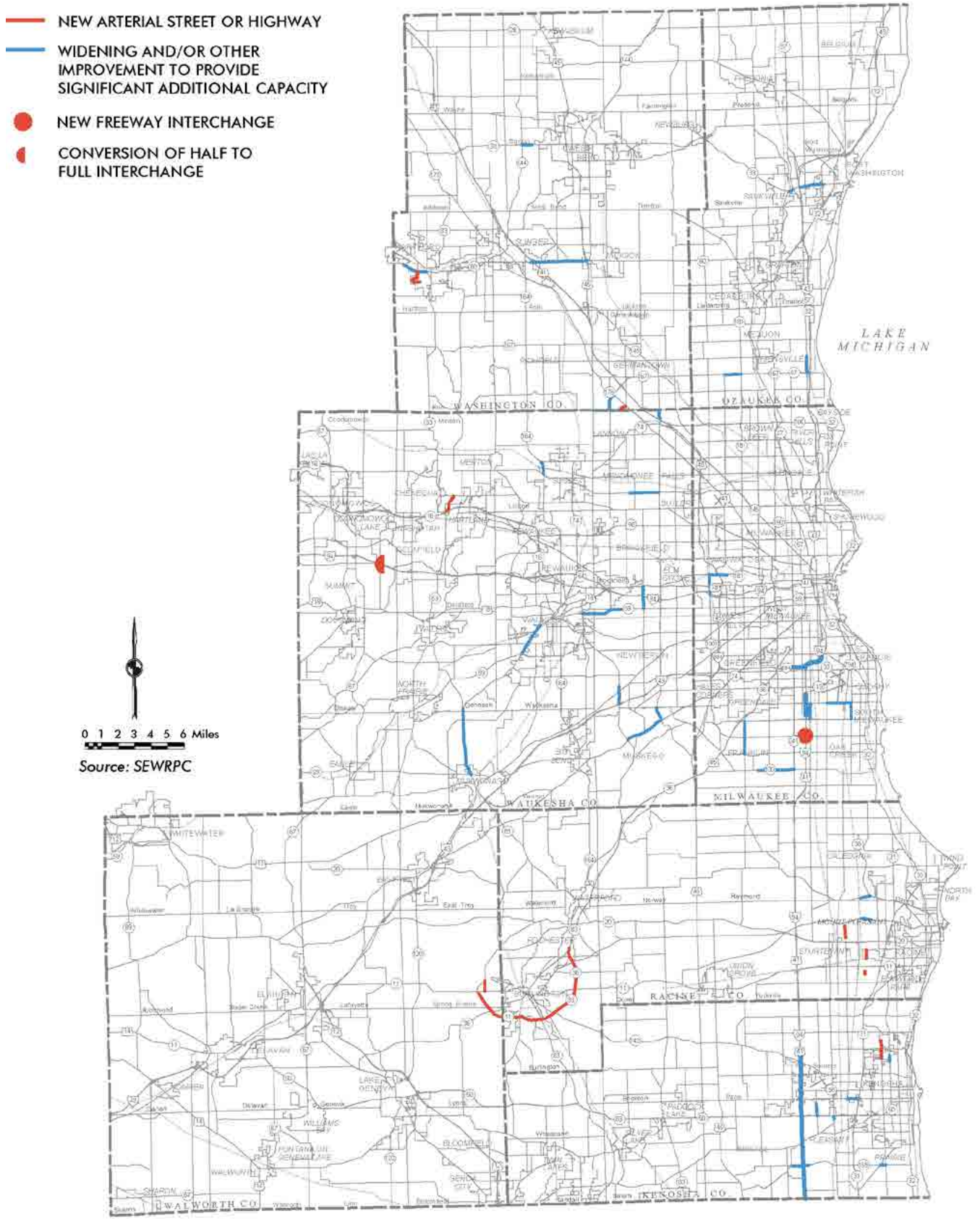
About 17% of the total arterial facilities planned to be added or widened have been constructed and are open to traffic.

Since the completion and adoption of the regional transportation plan in 2006, approximately 16.2 miles of planned new arterial facilities, and 59.5 miles of arterial facilities planned to be widened to carry additional traffic lanes have been constructed and are open to traffic (see Map 3.21 and Table 3.10). These 75.7 miles of arterial facilities represent about 17 percent of the total planned new and widened arterial facilities under the regional plan. Currently under construction are 30 miles of reconstruction of IH 94 with additional traffic lanes between the Mitchell Interchange in Milwaukee County and the Wisconsin-Illinois State line. Reconstruction of the Mitchell Interchange and the portion of IH 94 from the Wisconsin-Illinois State line to STH 50 in Kenosha County was completed in 2012. With respect to the

Map 3.20
Implementation Status of Park-Ride Lots and Transit Stations in the Region: 2012



Map 3.21
Arterial Street and Highway Capacity Improvement Projects Completed Since Adoption of the 2035 Regional Transportation Plan: 2014



Source: SEWRPC

Table 3.10
Implementation Status of Functional Improvements to the Arterial Street and Highway System as Set Forth in the 2035 Regional Transportation Plan as Amended: 2014

County	Year 2035 Planned Miles		Implemented Miles by 2014	
	Year 2035 System Improvement	Year 2035 System Expansion	Year 2035 System Improvement	Year 2035 System Expansion
Kenosha	45.7	3.3	12.0	1.1
Milwaukee	87.1	8.0	14.7	--
Ozaukee	36.1	3.0	4.0	--
Racine	31.5	21.6	1.2	9.4
Walworth	10.0	24.7	--	3.0
Washington	23.5	22.1	7.5	1.6
Waukesha	126.1	10.4	20.1	1.1
Region	360.0	93.1	59.5	16.2

[a] *Includes improvements and expansions implemented from 2006 to 2014 or those that were under construction in 2014.*

Source: SEWRPC

Table 3.11
Personal-Use Vehicle Availability in the Region

County	1963	1972	2001	2011	2012
Kenosha	37,240	51,100	102,210	120,050	120,110
Milwaukee	316,350	392,000	548,540	544,540	543,460
Ozaukee	16,780	28,030	60,830	70,280	70,390
Racine	52,040	73,350	131,310	146,840	147,010
Walworth	22,220	33,450	69,500	84,230	84,050
Washington	18,340	30,390	87,820	105,420	106,050
Waukesha	69,390	114,450	266,150	307,310	307,960
Region	532,360	722,770	1,266,270	1,378,670	1,379,030

Source: SEWRPC

other major freeway-to-freeway interchanges in Southeastern Wisconsin, reconstruction of the largest and most complicated interchange, the Marquette Interchange, was completed in 2008. Reconstruction of the Zoo Interchange began in 2013.

Review of Year 2035 Regional Transportation Plan Forecasts

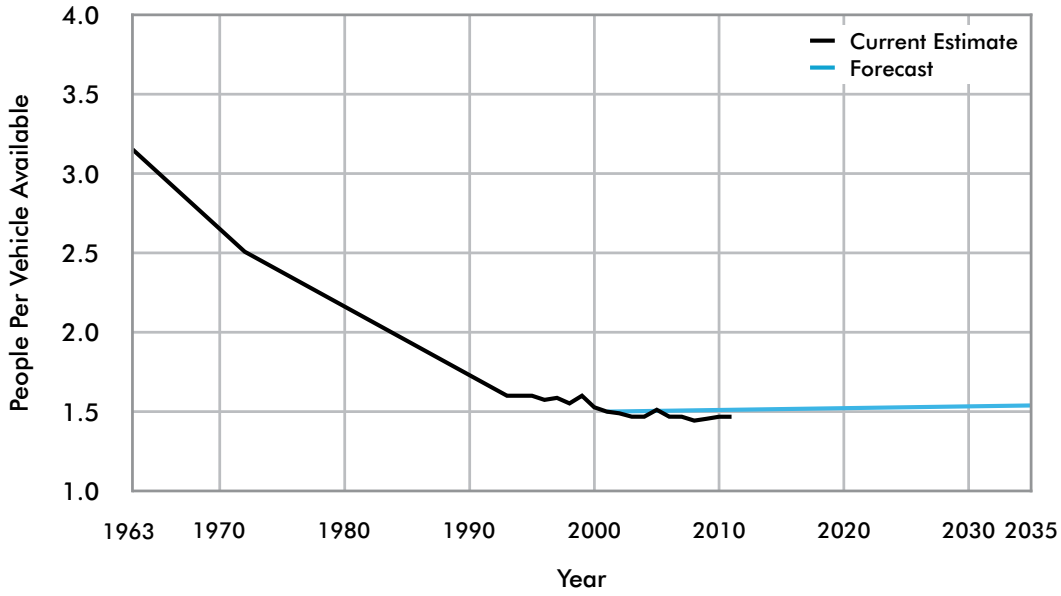
This section provides a review of the forecasts prepared under the year 2035 regional transportation plan for their continued validity, including travel, traffic, and related forecasts such as regional vehicle-miles of travel, transit system ridership, and personal vehicle availability.

Personal-Use Vehicle and Commercial Truck Availability Forecasts

The number of personal-use vehicles—that is, automobiles, trucks, and vans used by residents of the Region for personal transportation—in 2012 totaled about 1,379,030 (see Table 3.11). Over the past 50 years, there has been a generally steady, long-term trend of continued increase in the number of personal-use vehicles available to residents of the Region. The average annual rate of growth in personal-use vehicle availability within the Region from 1963 through 2012 was 2.0 percent.

The number of people per personal-use vehicle within the Region was estimated to be 1.47 in 2012, as shown in Figure 3.4. The number of people per personal-use vehicle has been relatively stable for over a decade, with minor fluctuations up and down annually. The forecast under the year 2035 plan of the number of people per personal-use vehicle expected long-term stability as well. The forecast of total personal-use vehicle availability

Figure 3.4
People Per Personal-Use Vehicle in the Region



Source: SEWRPC

developed under the 2035 plan is shown in Figure 3.5, along with historic annual personal-use vehicle availability. The 2012 forecast personal-use vehicle availability level was 1,337,840 under the 2035 plan. The estimated 2012 regional personal-use vehicle availability level of 1,379,030 was 41,190 vehicles, or about 3.0 percent, higher than the personal-use vehicle availability level envisioned under the 2035 plan.

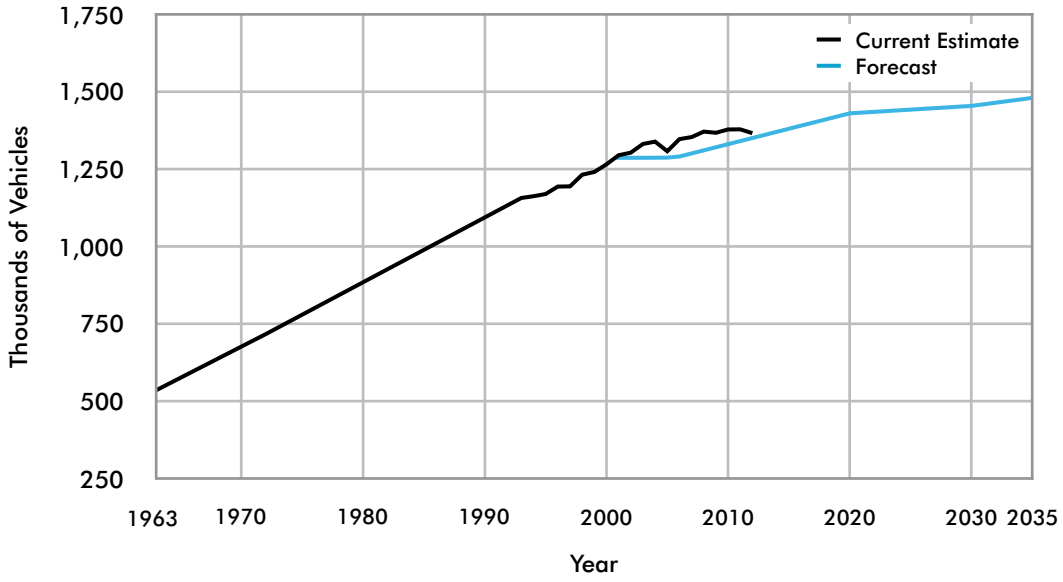
The number of commercial and municipal trucks available in the Region during 2012 totaled about 121,400, which is about 11,600, or 9.6 percent, less than the forecast level of 133,000 in 2012 envisioned under the 2035 plan (see Table 3.12 and Figure 3.6).

Public Transit Ridership Forecasts

Public transit service was provided in the Region in 2012 through 10 intracounty systems and five intercounty systems. Table 3.13 shows the total reported revenue ridership for each public transit system in the Region. Public transit ridership fell 13 percent between 2000 and 2004 as service was reduced over this time period, and, after remaining somewhat stable between 2004 and 2008, public transit ridership declined again by about 9 percent in 2009. Ridership has remained relatively stable following 2009. Ridership in 2012 was below year 2035 regional transportation plan forecasts for 2012, with estimated 2012 ridership of 34.5 million linked passenger trips per weekday, which was 10.8 million trips, or about 23 percent, less than the 2012 forecast of 45.3 million trips.[33] This difference is a result of the lack of implementation of fixed-route bus service, and the larger-than-recommended transit fare increases.

[33] *The revenue passengers shown in Table 3.13 differ from the linked passenger trips referenced in the text. Revenue passengers—provided annually by transit operators to WisDOT—count each transfer by a passenger using a pass as a separate trip, while counting passengers who paid cash and received a transfer slip to make a transfer(s) as a single trip. Linked trips—estimated by the Commission's travel demand models—consider any trip with a transfer(s) as a single trip.*

Figure 3.5
Personal-Use Vehicle Availability in the Region



Source: SEWRPC

Vehicle-Miles of Travel Forecasts

Table 3.14 presents the historic and forecast future (under the year 2035 plan) average annual growth rate in vehicle-miles of travel in the Southeastern Wisconsin Region. Table 3.15 presents historic and forecast future levels in vehicle-miles of travel in the Region. The average annual growth rate in vehicle-miles of travel in the Region has declined over the past 40 years, and was forecast under the year 2035 regional transportation plan to continue to decline significantly.

Forecast year 2011 vehicle-miles of travel totaled 43.5 million on an average weekday, about 6% more than the estimated 40.9 million.

The base year for the year 2035 plan forecasts of vehicle-miles of travel was 2001, the year of the regional travel and traffic inventories conducted as part of the 2035 plan. Estimates of regional vehicle-miles of travel are prepared approximately every three to five years using traffic counts conducted by WisDOT. WisDOT conducts traffic counts in about one-third of the Region's counties on an annual basis. The latest regional vehicle-miles of travel estimate is for the year 2011, using WisDOT traffic counts in the Region for the years 2010 through 2012. In 2011, it is estimated that there were 40.9 million vehicle-miles of travel on the Region's arterial street and highway system on an average weekday. Forecast year 2011 vehicle-miles of travel in the Region under the year 2035 regional transportation plan totaled 43.5 million arterial system vehicle-miles of travel on an average weekday, approximately 2.6 million vehicle-miles, or about 6.4 percent more than the estimated Region arterial vehicle-miles of travel on an average weekday in 2011.

Summary and Conclusions for Section 3.4

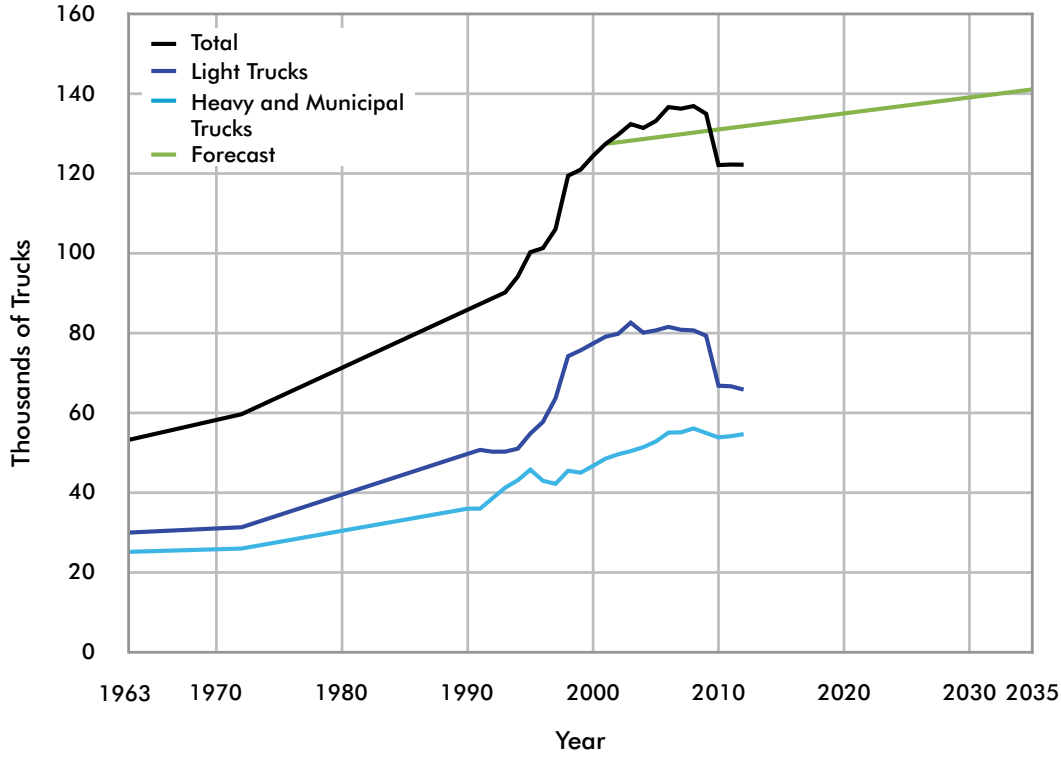
Section 3.4 of this chapter has provided an overview of the Commission's year 2035 regional transportation system plan and assessment of how well that plan has been implemented, focusing on the key plan recommendations. The 2035 plan was a fifth generation plan. It was originally adopted in 2006 and amended on six occasions, including a review and reaffirmation of the plan that was completed in 2010 and again in 2014.

Table 3.12
Commercial Truck Availability in the Region

County	1963	1972	2001	2011	2012
Kenosha	4,370	4,490	10,130	10,230	10,170
Milwaukee	25,910	26,710	46,070	42,230	42,330
Ozaukee	2,270	2,550	6,020	5,750	5,720
Racine	5,670	6,460	13,510	13,710	13,700
Walworth	4,190	4,840	9,150	10,130	10,090
Washington	3,210	4,080	9,270	10,090	10,060
Waukesha	7,780	10,280	30,240	29,480	29,330
Region	53,400	59,410	124,390	121,620	121,400

Source: SEWRPC

Figure 3.6
Commercial Truck Availability in the Region



Source: SEWRPC

The following are key concepts of the 2035 regional transportation system plan as amended:

- The regional transportation system plan was designed to serve the travel demand generated by the year 2035 regional land use plan. The year 2035 regional land use plan was developed to represent a desired pattern of regional land use and not a projection of current land use development trends toward further decentralization of population, employment, and urban land uses.

- There were five elements of the year 2035 regional transportation system plan adopted in 2006: bicycle and pedestrian facilities, public transit, transportation systems management, travel demand management, and arterial streets and highways. In addition, elements

Table 3.13
Reported Public Transit Revenue Ridership in the Region

Transit Services	Revenue Passengers[a] 1963	1972	1991	2001	2011	2012	Percent Change 2011-2012
Fixed-Route Bus Systems							
Intracounty							
City of Kenosha	1,876,000	503,000	1,128,000	1,805,200	1,427,900	1,374,400	-3.7
Milwaukee County	88,546,000	52,141,000	53,025,000	52,333,400	38,952,200	37,944,400	-2.6
City of Racine	2,907,000	526,000	1,829,000	1,437,200	1,248,500	1,093,100	-12.4
City of Waukesha	451,000	227,000	434,000	633,900	620,300	639,900	3.2
Subtotal	93,780,000	53,397,000	56,416,000	56,209,700	42,248,900	41,051,800	-2.8
Intercounty							
Kenosha-Racine-Milwaukee Counties	230,000[b]	153,000	82,000	81,400	82,900	83,000	0.1
Ozaukee-Milwaukee Counties	127,000	64,000	--	91,600	113,900	117,500	3.2
Washington-Milwaukee Counties	--	--	--	67,500	127,600	127,500	0.1
Waukesha-Milwaukee Counties	534,000[b]	240,000	290,000	667,700	500,200	496,200	-0.8
Western Kenosha County	--	--	--	--	15,000	18,100	20.7
Subtotal	891,000	457,000	372,000	908,200	839,600	842,300	0.3
Total Bus Systems	94,671,000	53,854,000	56,788,000	57,117,900	43,088,500	41,894,100	-2.8
Shared-Ride Taxi Systems							
City of Hartford	--	--	8,000	20,800	21,000	20,500	-2.4
Ozaukee County	--	--	--	57,300	79,900	90,800	13.6[b]
City of Port Washington	--	--	--	23,200	20,200	--[b]	--[b]
Washington County	--	--	--	52,300	99,600	92,900	-6.7
City of West Bend	--	--	--	134,400	123,000	119,800	-2.6
City of Whitewater	--	--	38,000	19,700	32,800	31,900	-2.7
Subtotal	--	--	46,000	307,700	376,500	355,900	-5.5
Region	94,671,000	53,854,000	56,834,000	57,425,600	43,465,000	42,250,000	-2.8

[a] *The ridership figures shown in this table reflect transit revenue passengers as reported to the Wisconsin Department of Transportation by each transit operator. Since 1978, the annual revenue ridership figures reported to the State by the urban bus systems have included transfer trips made by passengers using a transit pass instead of a transfer slip to transfer between bus routes. The bus ridership figures shown here are somewhat higher than the estimates of linked transit passenger trips reported in other published Commission documents and reports. Linked passenger trips approximate the number of one-way trips made on the transit system between specific origins and destinations with transit passengers being counted only once for each origin and destination. Transfers between bus routes are not counted as they are a continuation of a single trip. By way of comparison with the transit revenue passengers shown in this table, the Commission estimated the total annual linked transit passenger trips in the Region at about 34.5 million in 2012 and 2011 and about 48.4 million in 1991.*

[b] *The shared-ride taxi service operated by the City of Port Washington was merged with the Ozaukee County Taxi Service at the end of 2011.*

Source: SEWRPC

Table 3.14
Average Annual Growth Rate of Average Weekday Vehicle-Miles of Travel in the Region

	Time Period	Annual Growth Rate
Historic	1960s	4.9
	1970s	2.7
	1980s	2.6
	1990s	1.9
	2001-2005	1.5
	2005-2011	-0.5
Forecast	2000-2007	1.5
	2007-2020	1.0
	2020-2035	0.6

Source: SEWRPC

Table 3.15
Arterial Vehicle-Miles of Travel on an Average Weekday in the Region

	Year	Vehicle-Miles of Travel (millions)
Estimated Historic	1963	13.1
	1972	20.1
	1991	33.1
	2001	39.7
	2005	42.2
	2011	40.9
Forecast	2011	43.5
	2035	54.0

Source: SEWRPC

relating to transportation safety and transportation security were added in 2011 as refinements to the regional transportation system plan.

- Highway capacity additions were recommended in the regional transportation system plan to address the traffic congestion that may not be expected to be alleviated by land use, TSM, TDM, bicycle and pedestrian facilities, or public transit measures. The potential of transit, bicycle and pedestrian facilities, TSM, and TDM plan elements to alleviate congestion was first explicitly identified. Highway capacity additions were then recommended to be added to the regional transportation plan to resolve, to the extent considered practicable, the residual existing and probable future traffic congestion.

The year 2035 regional transportation system plan was based upon forecasts of personal vehicle availability, weekday person trips and vehicle trips, vehicle-miles of travel, and transit ridership. This chapter included a review of these forecasts and comparison to actual current estimates, which indicated that the forecasts underlying the plan remain valid for long-range planning.

Substantially Implemented Recommendations

- **Bicycle and pedestrian facilities:** The bicycle and pedestrian facilities element of the plan is designed to provide for safe accommodation of bicycle and pedestrian travel, encourage bicycle and pedestrian

travel, and to provide modal choice. The plan element recommended that as the surface arterial street system of approximately 3,300 miles is resurfaced and reconstructed segment-by-segment, bicycle accommodation should be considered and implemented, if feasible, through bicycle lanes, widened outside travel lanes, widened shoulders, and separate bicycle paths. Additionally, the plan element also recommended development of 548 miles of off-street bicycle and pedestrian paths, along with 168 miles of surface arterial and 89 miles of non-arterial connections.

Approximately 203 miles of the planned 548 miles of off-street paths existed in 2006, and another 52 miles of the planned paths have since been constructed as of 2014. *Wisconsin State Statutes* and FHWA policy requirements that bicycle and pedestrian accommodations be provided in all new highway construction and reconstruction projects funded with State or Federal funds, unless demonstrated that such accommodation is prohibitive, had a large impact on implementation.

- **Transportation systems management:** The TSM element of the plan included measures intended to manage and operate existing transportation facilities to their maximum carrying capacity and travel efficiency. The TSM element included the following four measures: freeway traffic management, surface arterial street and highway traffic management, major activity center parking management and guidance, and the preparation of a regional transportation operations plan.

  Implementation has included the expansion of freeway ramp-meters, variable message signs and closed-circuit television cameras, and installation of a 511 travel information system. Other implementation has included additional traffic signal interconnection and coordination.

- **Travel demand management:** The TDM measures recommended in the plan included measures 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. Seven categories of TDM measures were recommended in the plan: high-occupancy vehicle preferential treatment, park-ride lots, transit pricing, personal vehicle pricing, TDM promotion, transit information and marketing, and detailed site-specific neighborhood and major activity center land use plans.

  Implementation has included expansion of park-ride lots, transit system internet trip planners, and automatic bus location systems, and development of site specific transit-oriented development neighborhood plans for the nine potential KRM commuter rail station areas.

Partially Implemented Recommendations

- **Arterial street and highway system:** The regional transportation system plan as amended recommended three types of functional improvements to the arterial street and highway system: system preservation, consisting of the resurfacing and reconstruction necessary to properly maintain existing arterial roadways; system improvement, consisting of the widening of existing facilities to provide additional traffic lanes; and system expansion, consisting of the construction of new arterial facilities. About 3,209 miles, or 88 percent, of the total

arterial street and highway system would require only preservation; about 360 miles, or about 10 percent, would require improvement; and about 93 miles, or about 2 percent, would constitute new facilities. About 75.7 miles, or 17 percent, of the plan-recommended 453 miles of arterial capacity expansion were completed and open to traffic as of 2014. Also, a 30-mile segment of IH 94 between the Mitchell Interchange in Milwaukee County and the Wisconsin-Illinois State line is currently being reconstructed with additional traffic lanes. Reconstruction of the Mitchell Interchange and the portion of IH 94 from the Wisconsin-Illinois State line to STH 50 in Kenosha County was completed in 2012. With respect to the other major freeway-to-freeway interchanges in Southeastern Wisconsin, reconstruction of the Marquette Interchange—the largest and most complicated interchange—was completed in 2008. Reconstruction of the Zoo Interchange began in 2013.

- **Transportation safety:** The safety element contained a review of the transportation safety objectives, principles, and standards documented in the year 2035 regional transportation plan adopted in 2006, along with presenting a proposed expanded set of transportation safety objectives, principles, and standards. The safety element also included listing and discussion of the 2035 plan recommendations that advance transportation safety. In addition, the element included recommendations for improved traffic crash and safety data, and recommendations for further study and improvements on those roadway segments with the most severe safety problems. The safety element was recently added to the plan (in 2011), so there has not been enough time to track its implementation.

- **Transportation security:** The security element provided an overview of transportation security and considered security-related issues and efforts that are ongoing to protect transportation networks and facilities at the Federal, State, and regional levels. The element also provided affirmation of the Commission's role in regional coordination of transportation security-related projects, along with the incorporation of security considerations into future transportation system preservation, improvement, or expansion projects. The security element was recently added to the plan (in 2011), so there has not been enough time to track its implementation.

Unimplemented Recommendations

- **Public transit:** The public transit element of the 2035 plan envisioned significant improvement and expansion of public transit in Southeastern Wisconsin, including development within the Region of a high-speed rail line, rapid transit and express transit systems, improvement of existing local bus service, and the integration of local bus service with the recommended rapid and express transit services. Altogether, service on the regional transit system would be nearly doubled from service levels existing in 2005 measured in terms of revenue transit vehicle-miles of service provided, from about 69,000 vehicle-miles of service on an average weekday in the year 2005 to 137,300 vehicle-miles of service in the year 2035.

  Despite regional transportation plan recommendations for significantly improving and expanding public transit, the amount of transit service declined by about 4 percent since adoption of the plan in 2006 (7 percent decrease in fixed-route bus service and 17 percent increase

in shared-ride taxi service) and transit fares increased by amounts greater than general price inflation. The plan envisioned transit service increases beginning in 2008 at an annual rate of about 2 percent through the year 2035, and transit fare increases at the general rate of price inflation. It was recognized, however, that these plan recommendations may only occur upon achieving State legislation for dedicated funding and would be assisted by creation of a regional transit authority. State legislation was enacted in mid-2009 creating a commuter rail authority with dedicated local funding, and State legislation for a regional transit authority with dedicated local funding was considered but not adopted in 2009 and again in 2010. In 2011, the 2011-2013 State biennial budget eliminated the regional authority responsible for implementing the commuter rail line. In addition, implementation of the planned high-speed rail line was indefinitely postponed following withdrawal of Federal funding in December 2010, which occurred as a result of the newly elected Governor's opposition to using the funding for a high-speed rail line. Despite this project's postponement, high-speed rail remains a part of WisDOT's long-range State rail plan.

Conclusions

The year 2035 regional transportation system plan was guided by a vision for "a multimodal transportation system with high quality public transit, bicycle and pedestrian, and arterial street and highway elements." When implementation of any transportation plan element is not realized, this vision is not achieved, which can have significant negative consequences.

This chapter has indicated that several of the key regional transportation system plan recommendations have been substantially implemented. Significant progress on the bicycle and pedestrian element was made as new off-street paths were constructed and on-street accommodation on highway construction and reconstruction projects has been required. Numerous transportation systems management and travel demand management measures have been continued, implemented, or expanded in accordance with the plan. Planned improvement and expansion of the arterial street and highway system has progressed, although implementation has generally been slower than anticipated due to limited available funding. In contrast to the other transportation plan elements, the public transit element has not been implemented. Instead, transit service levels have been declining since the year 2000 due to inadequate funding.

Insufficient funding more severely affects public transit than highways because highway funding is largely capital funding for construction projects, while transit funding is largely operating funding for providing service. Lagging highway funding results in project deferral or delay, but lagging transit funding results in service elimination or passenger fare increases.

These funding-related reductions in transit service and increases in passenger fares have occurred for more than a decade in the Region, and may occur to an even greater extent in the future as Federal funding now in operating budgets may need to be used for capital projects, unused "banks" of Federal capital funding have been exhausted, and local funding through increases in property taxes is currently significantly constrained by State law. Not fully implementing the year 2035 regional transportation plan due to the limitations of current transportation revenues has significant negative consequences for Southeastern Wisconsin:

- Traffic congestion and travel delays may be expected to increase, and travel reliability may decrease, as highway capacity improvements are deferred and delayed and public transit is not improved and expanded in the Region's most heavily traveled corridors, urban areas, and activity centers.

- Transportation-related energy consumption and air pollutant emissions may be expected to be greater as a result of increased traffic congestion and a lack of improvement and expansion of public transit.

- Costly emergency repairs and inefficient pavement maintenance may be expected to be required on the freeway system as segments of freeway and freeway bridges reach the end of their service life and funding does not permit their reconstruction.

- For the estimated 10 percent of the Region's residents who are unable to use or cannot afford an automobile, mobility and access to the Region may be limited, including with respect to jobs, health care, education, grocery shopping, and other basic travel needs.

- Costs of public infrastructure and services, and the taxes necessary to support them, may be higher as improved and expanded public transit would not be available to support and promote more efficient higher-density development.

All of these consequences of not implementing the year 2035 regional transportation plan may negatively impact economic growth in Southeastern Wisconsin and the quality of life of its residents. Future projections indicate that soon the Region will no longer be able to support economic growth with internal growth of the Region's labor force. Rather, there will be a need for population and labor force to in-migrate, or choose to locate in Southeastern Wisconsin, if the Region is to experience even a modest growth in jobs. More severe traffic congestion, an inability to sustain and expand public transit service, and inefficient transportation and infrastructure expenditures will be obstacles to attracting labor force and business growth to Southeastern Wisconsin.

INVENTORY OF TRANSPORTATION FACILITIES AND SERVICES 4

Credit: Eppstein Uhen Architects

4.1 INTRODUCTION

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

4.2 STREETS AND HIGHWAYS

Classification of Streets and Highways

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

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

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

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

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

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

Arterial streets generally account for about 30% of the mileage of the total street and highway system, and carry about 90% of the total average weekday traffic in the Region.

Arterial streets generally account for about 30 percent of the mileage of the total street and highway system, and carry about 90 percent of the total average weekday traffic in the Region. Arterial streets are typically spaced at about one-half mile intervals in high-density areas, one-mile intervals in medium-density areas, two-mile intervals in low-density areas, and intervals of more than two miles in rural areas. To serve travel effectively, and to make efficient use of public resources, the arterial street system should be planned as an integrated system, irrespective of jurisdictional boundaries and jurisdictional responsibilities for streets and highways, with consideration of existing and future traffic volumes, and with traffic capacities fitted to serve those traffic volumes. The Commission's regional transportation planning addresses only the arterial street and highway element of the total street and highway system. Arterial streets and highways are the only element of the total street and highway system for which existing and future traffic volume, and the need for additional traffic lanes or for a new arterial facility to relieve traffic, is a consideration in facility and system design. Working with local governments and the Wisconsin Department of Transportation (WisDOT), the Commission has defined the arterial street system of the Region for over 50 years. The definition of arterials has been determined by an evaluation of four major factors: 1) traffic characteristics—traffic volume and type, operating speeds, and average trip length; 2) physical characteristics—horizontal and vertical alignment, pavement width, and pavement type; 3) system integration—system continuity and facility spacing; and 4) land use service—the areawide significance of the land use activities served.

Collector and land access streets should form a street system within neighborhoods, with the boundaries of those neighborhoods determined by arterial streets, or other built or natural boundaries. Desirably, collector and land access streets should not extend directly through a neighborhood, or from neighborhood to neighborhood. Otherwise, traffic may begin to occur on the collector and land access streets, particularly if the arterial street system is experiencing traffic congestion. Neighborhood residents experience traffic concerns at relatively low levels of traffic volume, specifically, 1,500 to 2,500 vehicles per average weekday, or about one-ninth to one-sixth of the potential traffic-carrying design capacity of a two-lane urban arterial street. The collector and land access street system within a neighborhood should be designed to discourage through traffic from traveling within the neighborhood. It should also be designed to permit reasonably direct travel—by personal vehicle, bicycle, and walking—by residents to all parts of the neighborhood, including parks, schools, and commercial centers, and to each arterial street along the neighborhood boundary.

Arterial Street and Highway System

The arterial street and highway system of the Region may be further described and classified in a number of different ways. The arterial street system may be divided into freeway facilities and non-freeway or surface arterial streets and highways. A freeway is a special type of arterial—the highest type of arterial—providing the highest degree of mobility and the most limited degree of access. A freeway is defined as a divided arterial highway with full control of access and grade separations at all interchanges. Surface (or standard) arterial streets and highways are arterials with at-grade intersections and may as well provide direct access to abutting property through driveways. Table 4.1 shows the mileage of arterials in the Region in 2011, and as well for previous regional plan base years of 1963, 1972, 1991, and 2001. The existing and historic mileage of collector and land access streets and of the total street and highway system within the Region are also shown. Over the past nearly 50 years, the mileage of arterials in the Region has increased from 3,188 miles in 1963 to 3,323 miles in 2011, an increase of 135 miles, or 4.2 percent. The lane-miles of arterials have increased over that same period by about 15 percent, while vehicle-miles of travel (VMT) on an average weekday on the arterial street and highway system have increased by over 200 percent.

Over the past 50 years, arterial lane-miles have increased 15%, while VMT on an average weekday has increased by over 200%.

Streets and highways may also be classified according to jurisdiction. Jurisdictional classification establishes which level of government—State, county, or local—has responsibility for the design, construction, maintenance, and operation of each segment of the total street and highway system. The existing jurisdictional highway subsystems are the result of a long evolutionary process influenced by many complex political, administrative, financial, and engineering considerations and constraints. Over the last 45 years, the Commission has recommended changes in the jurisdictional classification of the arterial street and highway system so that the arterial street system is grouped into logical subsystems of jurisdictional responsibility with the appropriate streets and highways under the jurisdiction of each level of government—State, county, and local. The county jurisdictional highway system plans prepared by the Commission are based upon criteria established by the Commission in cooperation with Federal, State, and local units of government and include: 1) trip service—the average trip length on each segment during an average weekday; 2) land use service—the areawide significance of land use activities to be connected and served; and 3) facility operational characteristics and system continuity, including facility spacing, traffic volume, traffic mobility, and land access.

State trunk highways should be those facilities intended to provide the highest level of mobility, to serve trips with the longest length, to provide minimal land access, to serve land uses of regional and statewide significance, and to have interregional continuity. State trunk highways are those arterial facilities which would principally serve travel through a county, and travel between counties.

County trunk highways should be those arterial facilities intended to provide an intermediate level of traffic mobility and land access, to serve land uses of countywide significance, and to have intercommunity continuity. County trunk highways are those arterial facilities which would principally serve travel between the various municipalities of a county. Local or municipal arterial streets are intended to be those facilities that provide the lowest level of arterial traffic mobility and the highest degree of arterial land access, and which have intracommunity continuity and serve principally arterial travel within a municipality. Table 4.2 presents the distribution of existing arterial

Table 4.1
Distribution of Total Street and Highway Mileage in the Region by County: 1963, 1972, 1991, 2001, and 2011[a]

	County	Arterial	Collector and Land-Access	Total[b]	Arterial Mileage as a Percent of Total Mileage
1963	Kenosha	281.5	547.1	828.6	34.0
	Milwaukee	791.5	1,642.6	2,434.1	32.5
	Ozaukee	264.9	366.9	631.8	41.9
	Racine	351.3	632.4	983.7	35.7
	Walworth	399.7	824.2	1,223.9	32.7
	Washington	402.3	688.0	1,090.3	36.9
	Waukesha	697.0	1,054.0	1,751.0	39.8
	Region	3,188.2	5,755.2	8,943.4	35.6
1972	Kenosha	287.1	593.4	880.5	32.6
	Milwaukee	795.7	1,851.7	2,647.4	30.1
	Ozaukee	253.5	466.7	720.2	35.2
	Racine	355.4	728.0	1,083.4	32.8
	Walworth	412.0	846.9	1,308.9	31.5
	Washington	344.8	821.1	1,165.9	29.6
	Waukesha	670.2	1,342.5	2,012.7	33.3
	Region	3,118.7	6,700.3	9,819.0	31.8
1991	Kenosha	317.1	660.7	978.3	32.5
	Milwaukee	775.4	2,131.6	2,907.0	26.7
	Ozaukee	250.7	610.3	861.0	29.1
	Racine	349.9	814.4	1,164.3	30.1
	Walworth	429.2	996.4	1,425.6	30.1
	Washington	400.2	922.8	1,323.6	30.3
	Waukesha	735.5	1,805.4	2,540.9	28.9
	Region	3,259.1	7,941.6	11,200.7	29.1
2001	Kenosha	317.6	715.3	1,032.9	30.7
	Milwaukee	781.8	2,187.3	2,969.1	26.3
	Ozaukee	250.7	643.7	894.4	28.0
	Racine	352.6	909.7	1,262.3	27.9
	Walworth	436.6	1,048.5	1,485.1	29.4
	Washington	406.5	1,029.3	1,435.8	28.3
	Waukesha	746.0	2,111.6	2,857.6	26.1
	Region	3,291.8	8,645.4	11,937.2	27.6
2011	Kenosha	320.0	770.3	1,090.3	29.3
	Milwaukee	788.4	2,226.4	3,014.8	26.2
	Ozaukee	250.8	689.8	940.6	26.7
	Racine	358.3	971.3	1,329.6	27.0
	Walworth	445.6	1,080.5	1,526.1	29.2
	Washington	406.5	1,129.4	1,535.9	26.5
	Waukesha	753.3	2,296.7	3,050.0	24.7
	Region	3,322.9	9,164.4	12,487.3	26.6

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

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

Source: SEWRPC

Table 4.2
Distribution of Existing Arterial Street and Highway Mileage in the Region by County and Jurisdictional Classification: 2011

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

Source: Wisconsin Department of Transportation and SEWRPC

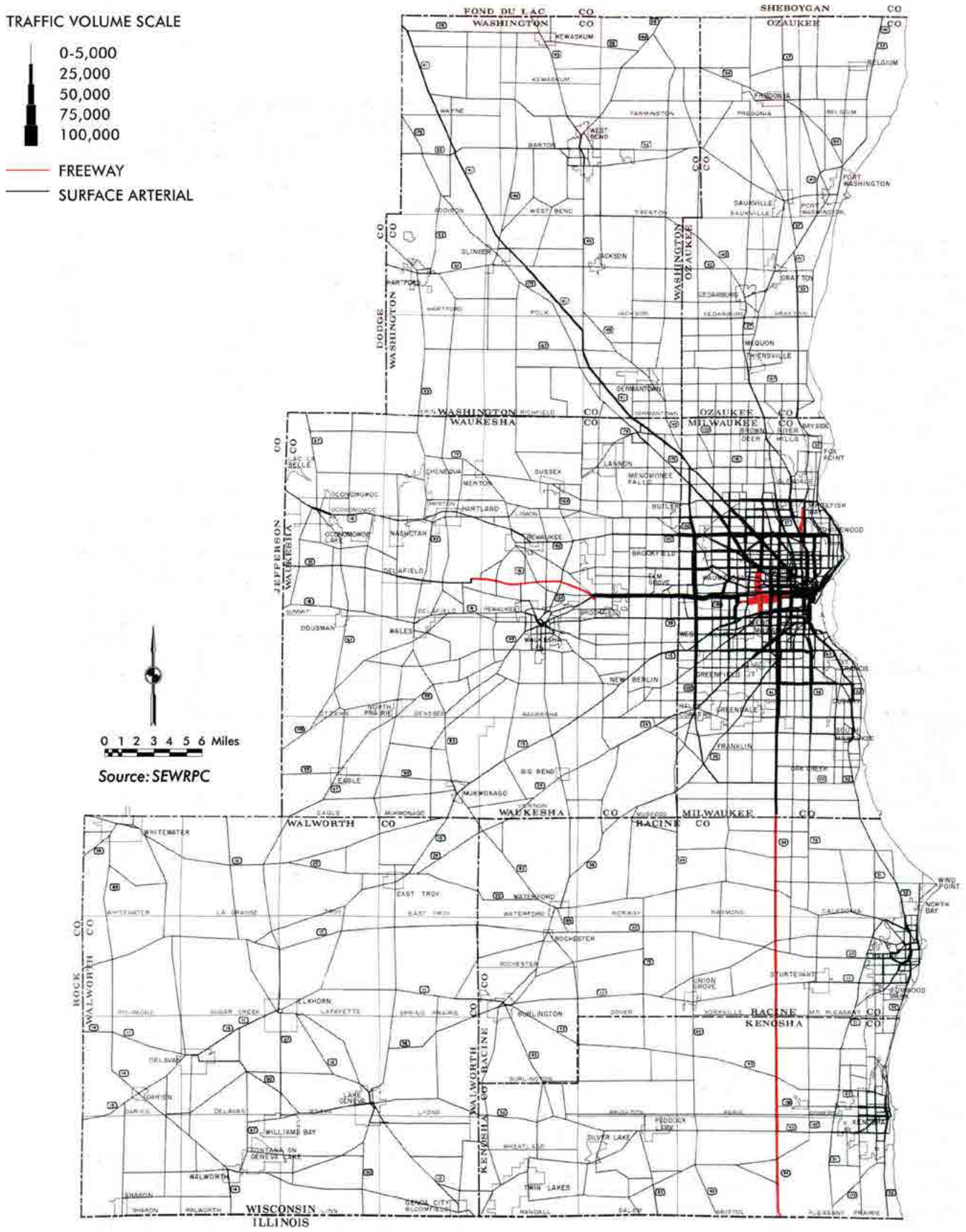
highway mileage within the Region in 2011 by State, county, and local jurisdictional classification.

Arterial Street and Highway System Traffic Volume

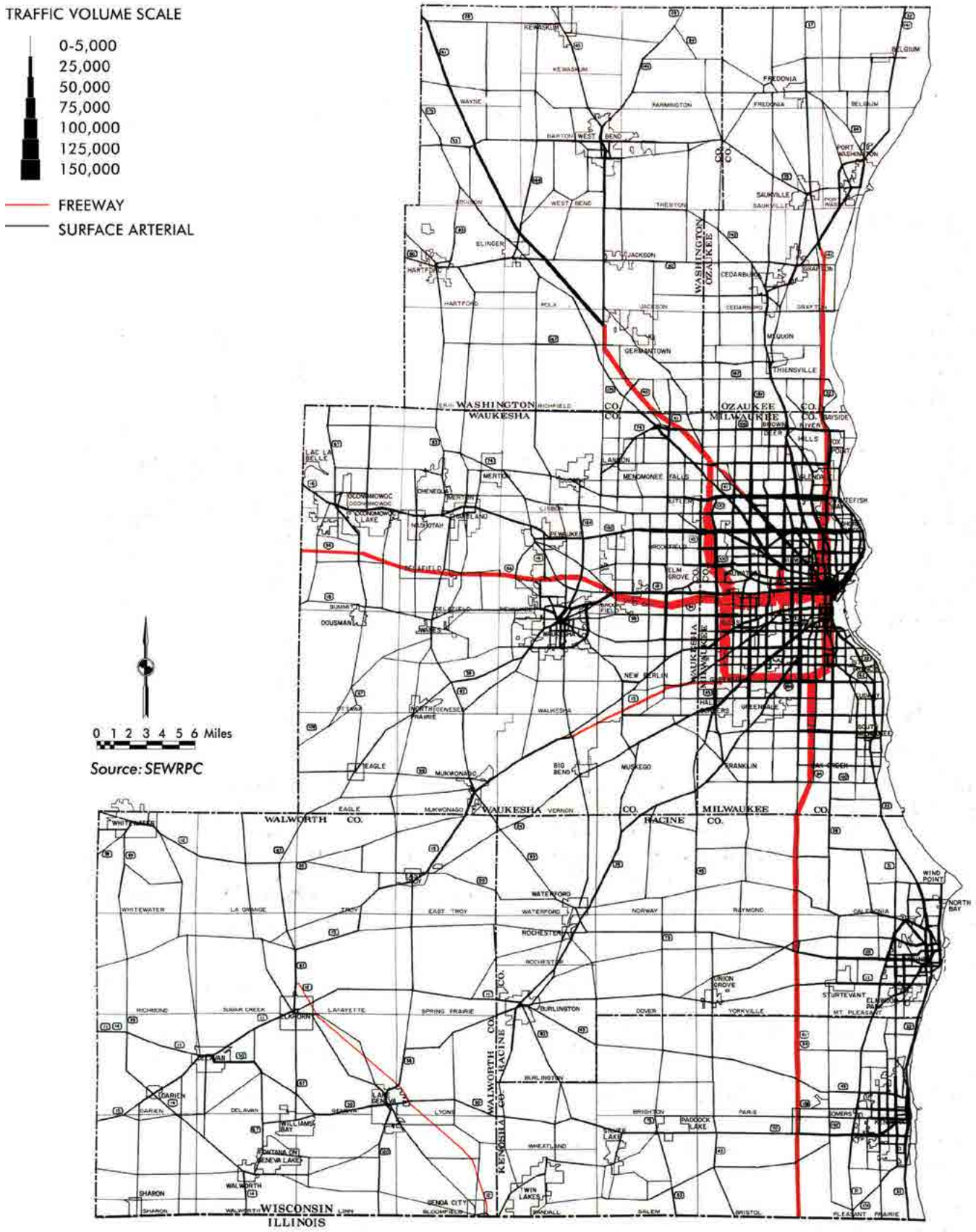
The average weekday traffic volume on each segment of the arterial street and highway system within the Region in 2011 is graphically displayed on Map 4.1, and compared to arterial street and highway traffic volume patterns of 1963, 1972, 1991, 2001 and 2011. The estimate of average weekday traffic volume is based upon traffic volume counting conducted principally by WisDOT, supplemented by certain county and municipal governments, particularly the City of Milwaukee. The effect of the completion of the freeway system between 1963 and 1972 is apparent in the significant reduction of traffic volume on the surface arterials in Milwaukee County.

The magnitude of arterial street and highway traffic volume can also be measured in terms of total arterial system average weekday vehicle-miles of travel, or VMT, which is a measure of total travel (estimated by multiplying the average weekday traffic volume on each segment of arterial highway by the length in miles of each segment of arterial highway). As shown in Table 4.3, about 40.9 million VMT occurred on the arterial street and highway system within the Region on an average weekday in 2011. Table 4.3 also compares the arterial VMT within each County and the Region for the years 1963, 1972, 1991, 2001, 2005, and 2011. Between 2005 and 2011, the arterial VMT in the Region on an average weekday decreased from 42.4 million to 40.9 million, a decrease of 3.5 percent, or 0.6 percent annually. Between 2001 and 2005, arterial VMT increased from 39.7 million to 42.4 million, an increase of 7 percent, or 1.7 percent annually. Overall, arterial VMT increased by 3 percent, or 0.3 percent annually, between 2001 and 2011. Between 1991 and 2001, arterial VMT increased from 33.1 million to 39.7 million, an increase of 20 percent, or 1.8 percent annually. Between 1972 and 1991, arterial VMT increased from 20.1 million to 33.1 million, an increase of 64 percent, or 2.6 percent annually. Between 1963 and 1972, arterial VMT increased from 13.1 million to 20.1 million, an increase of 53 percent, or 4.8 percent annually. The annual rate of growth of average weekday VMT for the Region and for each county is shown in Table 4.4.

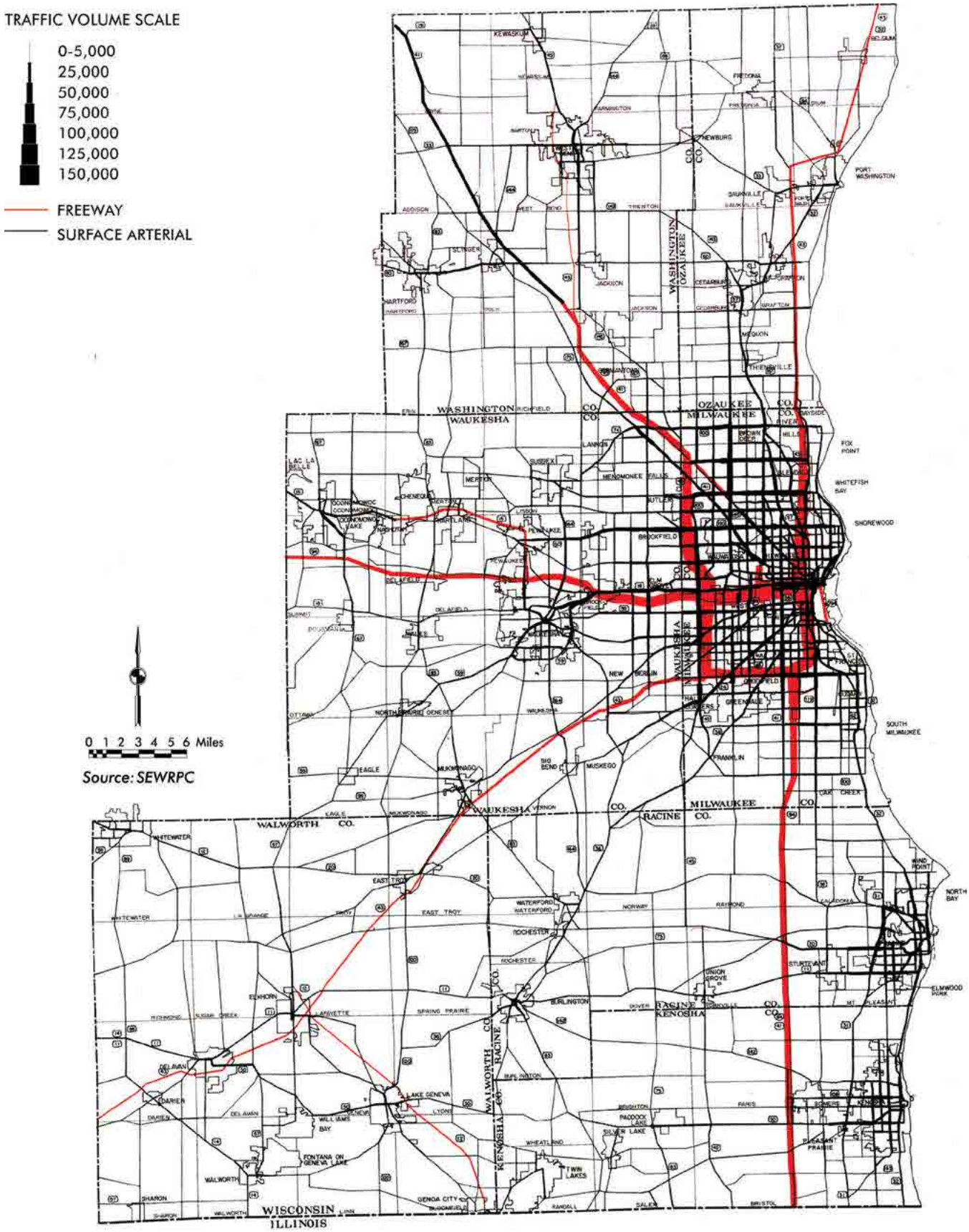
Map 4.1a
Arterial Street and Highway Utilization in the Region: 1963



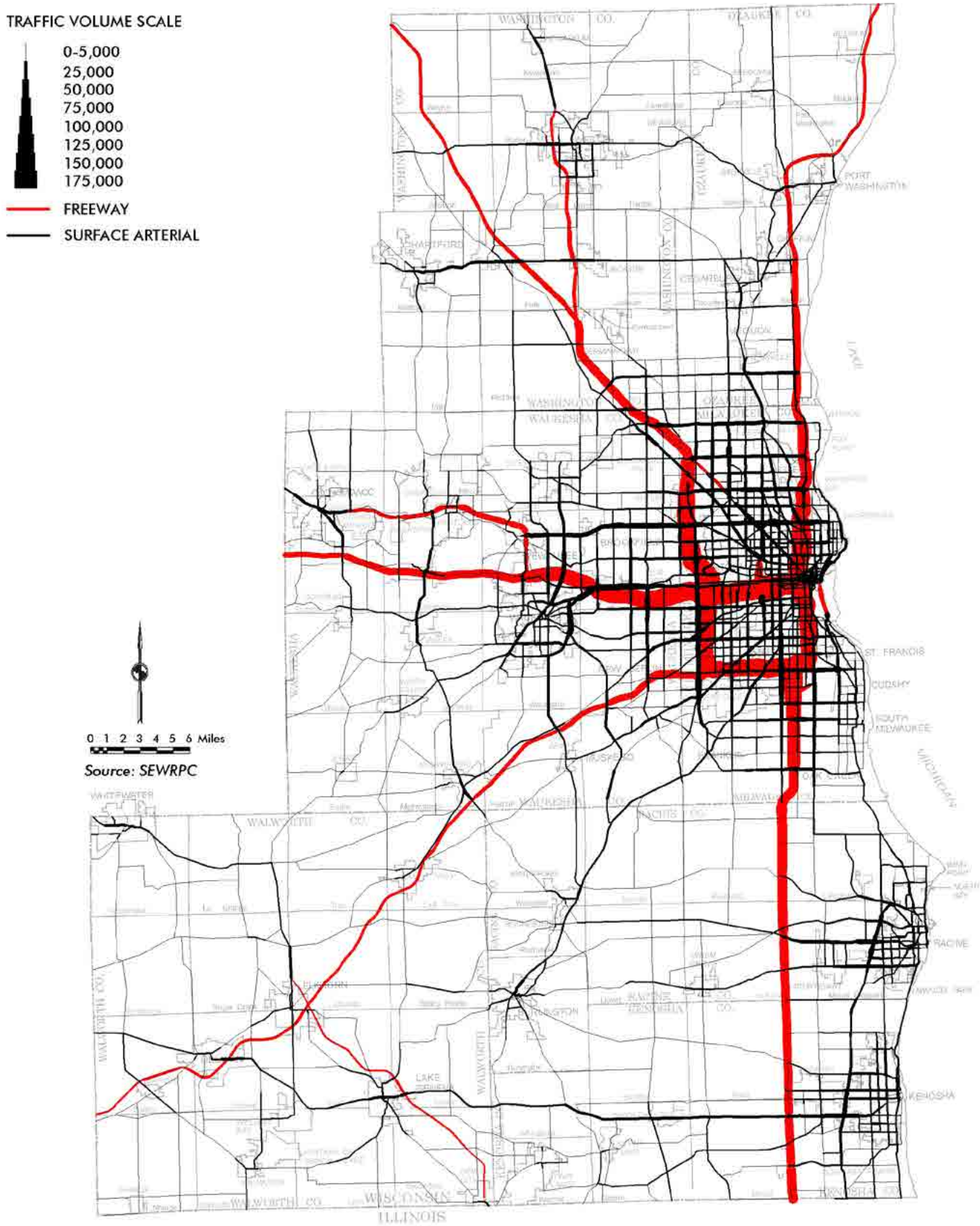
Map 4.1b
Arterial Street and Highway Utilization in the Region: 1972



Map 4.1c
Arterial Street and Highway Utilization in the Region: 1991



Map 4.1d
Arterial Street and Highway Utilization in the Region: 2001



Map 4.1e
Arterial Street and Highway Utilization in the Region: 2011

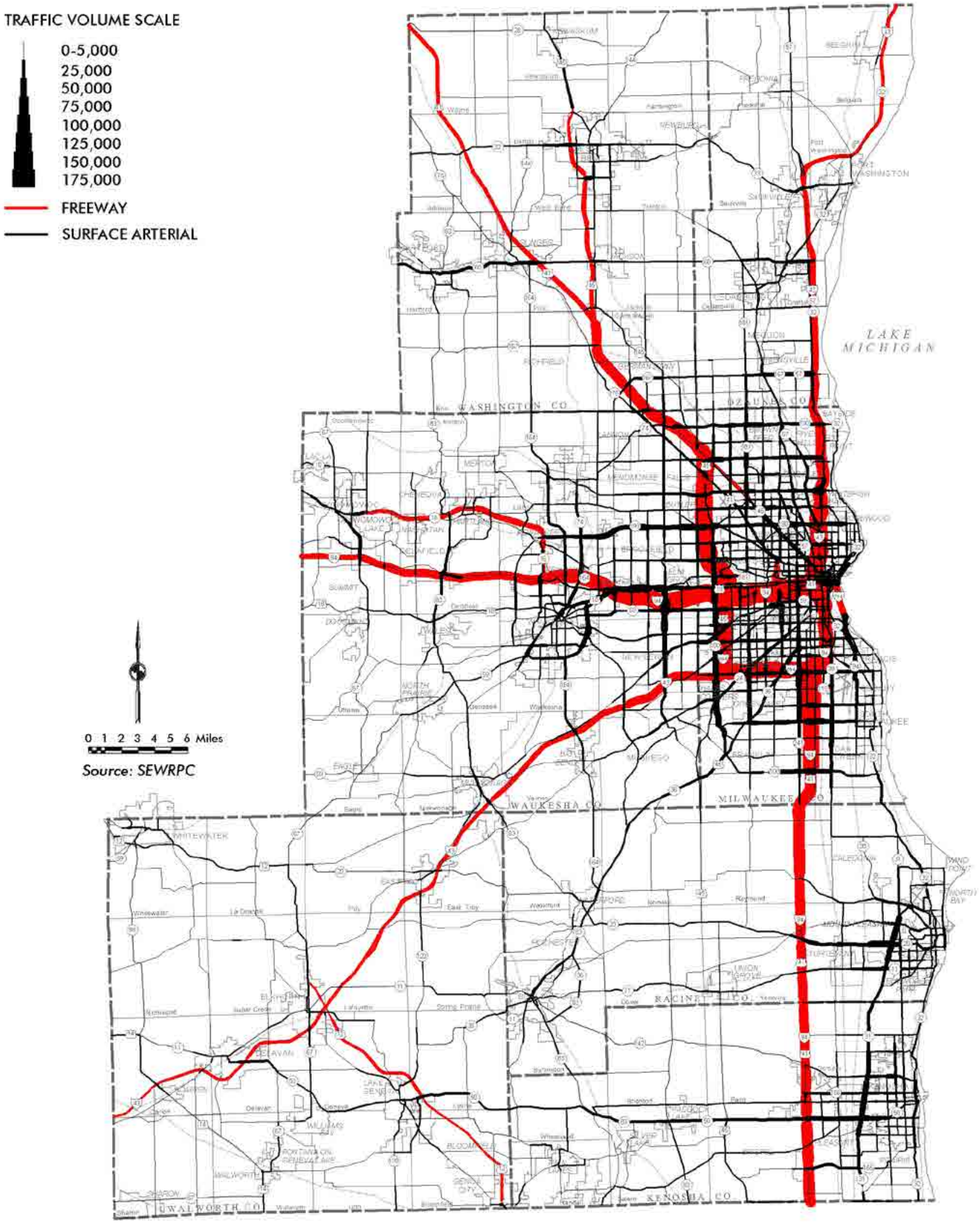


Table 4.3
Arterial Vehicle-Miles of Travel in the Region on an Average Weekday by County: 1963, 1972, 1991, 2001, 2005, and 2011

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

Source: SEWRPC

Table 4.4
Average Annual Growth Rate of Average Weekday Vehicle-Miles of Travel in the Region by County

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

Source: SEWRPC

Figure 4.1 compares the growth in VMT in the Region from 1963 to 2011 to changes in travel characteristics over the same period and to changes in the Region's population and economy. Contributing to the growth in VMT was a growth in person-trip making due to increases in households and jobs, a decline in vehicle occupancy due to growth in vehicle availability and a change in population lifestyles including household size, and an increase in vehicle trip length.

Per mile, freeways in the seven-county Southeastern Wisconsin Region carried substantially more traffic than surface arterials and nonarterials. In 2011, freeways in Southeastern Wisconsin carried 57,400 VMT per mile on an average weekday, as compared to 8,300 VMT per mile on standard surface arterials, and 500 VMT per mile on collector and land access streets. Within Milwaukee County in 2011, freeways carried an average of 102,900 VMT per mile on an average weekday.

The freeway system in Southeastern Wisconsin carries about 34% of all travel on an average weekday, and about 38% of all arterial street and highway system travel.

The freeway system in Southeastern Wisconsin carries about 34 percent of travel across all modes on an average weekday, and about 38 percent of all arterial street and highway system travel. The arterial street and highway system carries about 90 percent of all street and highway travel (arterials and nonarterials). In total, streets and highways carry about 90 to 95 percent of travel across all modes.

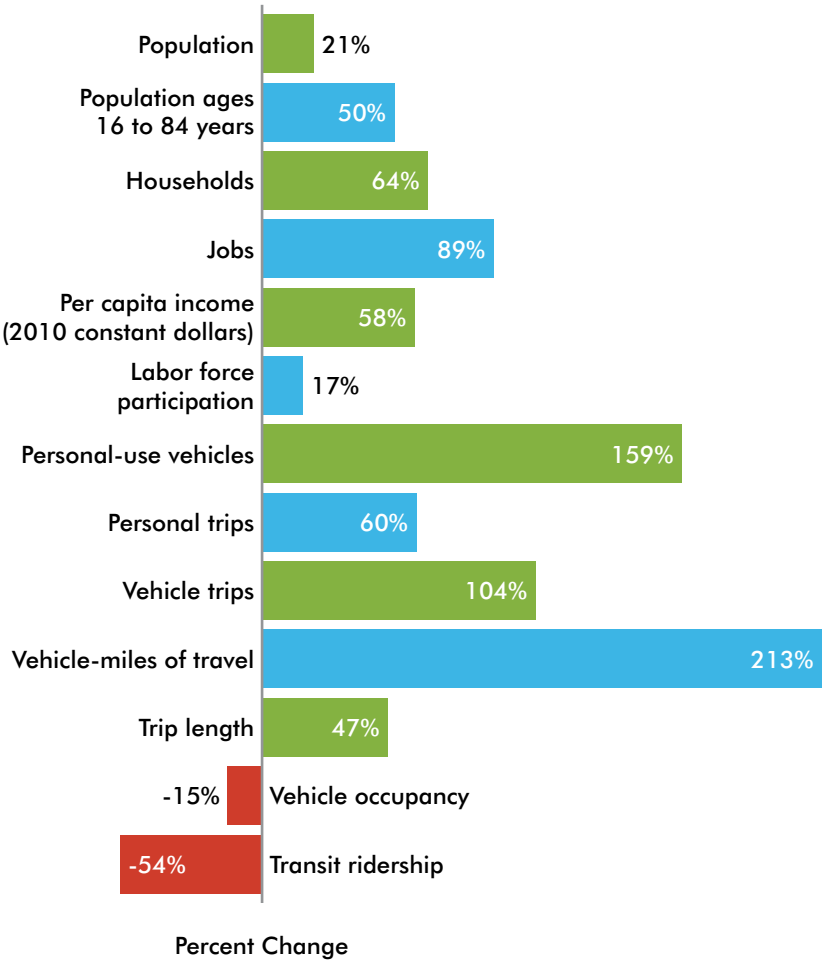
Arterial Street and Highway System Traffic Congestion

The traffic congestion on the arterial street and highway system can be assessed by comparing the average weekday traffic volume on each segment of arterial street and highway to its design capacity. Table 4.5 presents the estimated design capacity of freeway and surface arterial facilities, and the estimated impacts on traffic—estimated average speed and typical operating conditions—as those design capacities are exceeded.

Table 4.6 and Map 4.2 present the existing level of traffic congestion experienced in the year 2011 on the arterial street and highway system. Table 4.7, Figure 4.2, and Map 4.3 present more detail on existing year 2011 congestion on the freeway system, and historic freeway congestion, including the number of hours of congestion experienced on congested freeway segments on an average weekday.

Table 4.8 and Figure 4.3 compare the estimated change in traffic congestion on the arterial street and highway system over the years 1972, 1991, 2001, 2005, and 2011. The miles of arterials experiencing traffic congestion declined from 217 miles in 1963 to 160 miles in 1972, even though traffic

Figure 4.1
Relative Changes in Selected Travel and Socioeconomic Characteristics in the Region: 1963 to 2011



Source: SEWRPC

grew during that period by over 50 percent. The decline in traffic congestion may be attributed to the completion of the freeway system during that period. Between 1972 and 1991, the miles of arterials experiencing traffic congestion is estimated to have increased from 160 miles to 273 miles, as traffic grew during that period by nearly 65 percent, as regional employment and households increased by about 30 percent, and vehicle occupancy and carpooling significantly declined. The decline in vehicle occupancy from an average of 1.39 people per vehicle to 1.22 people per vehicle is estimated to have resulted in nearly a 15 percent increase in vehicle traffic. As well, only limited transportation system improvement and expansion was completed between 1972 and 1991 in Southeastern Wisconsin. The miles of arterials carrying traffic volumes exceeding their design capacity and experiencing traffic congestion is estimated to have increased modestly from 273 miles in 1991 to 290 miles in 2001, and to 310 miles in 2005. From 2005 to 2011, the miles decreased from 310 miles to 274 miles. From 1991 to 2001, traffic is estimated to have increased by about 21 percent, and from 2001 to 2011 by about 3 percent. The modest increase in traffic congestion from 1991 to 2011 may be attributed to the implementation of an extensive number of significant surface arterial street and highway widening and new construction projects between 1991 and 2011. The estimated modest

Table 4.5
Estimated Freeway and Surface Arterial Facility Design Capacity and Attendant Level of Congestion[a]

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

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

Freeway

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

Surface Arterial

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

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

Source: SEWRPC

Table 4.6
Traffic Congestion on the Arterial Street and Highway System in the Region by County: 2011

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

Source: SEWRPC

increase in congestion between 1991 and 2011 is not uniform systemwide, as the extent and severity of congestion on the Milwaukee area freeway system is estimated to have substantially increased between 1991 and 2011 (see Table 4.7).

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

While the extent of congestion on the Milwaukee area freeway system increased between 2001 and 2011, some segments of the freeway system experienced a decrease in congestion.

Congestion on Designated Truck Routes and National Highway System

Table 4.9 and Map 4.4 present the existing level of traffic congestion experienced on designated truck routes and the National Highway System (NHS) in the year 2011 compared to the congestion level experienced in 2001. The State of Wisconsin maintains a truck operations map that identifies streets and highways for operation of vehicles and combination of vehicles for which the overall lengths cannot be limited. In addition, the truck operations map identifies restricted truck routes where the overall lengths are limited. The NHS includes highways important to the nation's economy, defense, and mobility. In 2012, the NHS was expanded to include interstate highways, multimodal connections, and roadways functionally classified as a principal arterial previously not on the NHS. The coverage of these two systems illustrates the ability of truck freight to move throughout the Region. The miles of designated truck routes and the expanded NHS carrying traffic volumes exceeding their design capacity increased from 202 miles in 2001 to 205 miles in 2011, or by about 1.5 percent. Reductions in congestion on these roadways favorably affect the travel time of freight movement.

Map 4.2
Traffic Congestion on the Arterial Street and Highway System in the Region: 2011

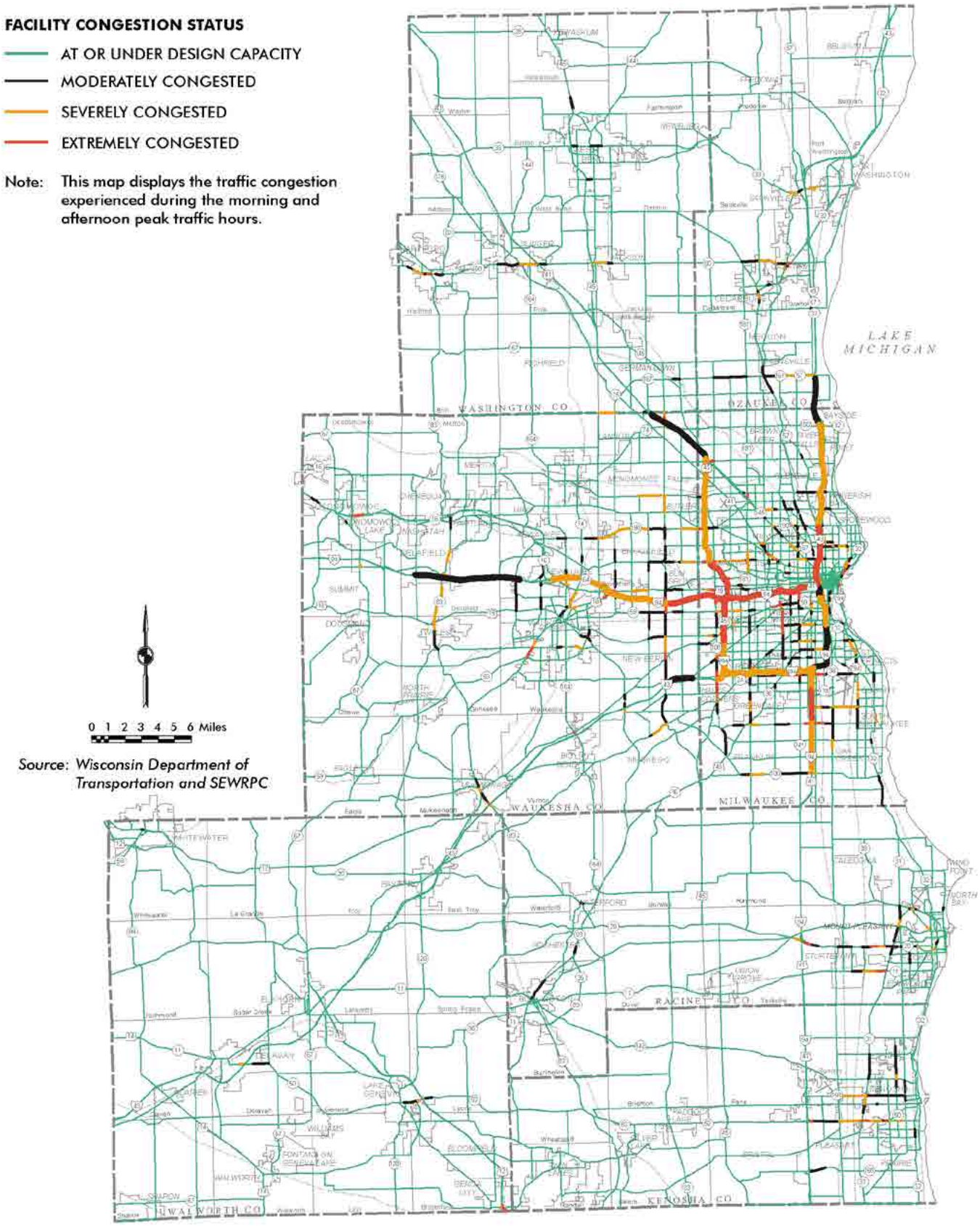


Table 4.7
Traffic Congestion on the Freeway System in the Region on an Average Weekday: 1972, 1991, 2001, 2005, and 2011

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

Source: SEWRPC

Traffic Safety—Vehicular Crashes

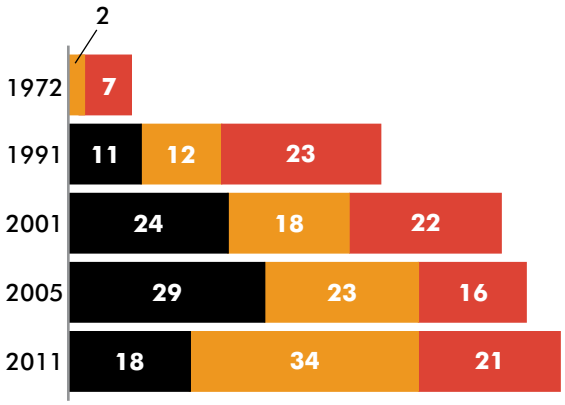
Number of Vehicular Crashes

Historic vehicular crash data over a 19-year period—1994 through 2012—were collated from data maintained for WisDOT by the Wisconsin Traffic Operations and Safety Laboratory (TOPS Lab) at the University of Wisconsin-Madison. Figure 4.4 shows that there has been a general decline in the number and severity of vehicular crashes over this time period. Vehicular crashes in the Region totaled about 35,600 in 2012, representing a nearly 27 percent decline in vehicular crashes since 1994. Crashes involving an injury or a fatality totaled about 11,500 crashes in 2012, representing about one-third of all crashes. Between 1994 and 2012, crashes involving an injury or a fatality decreased by about 35 percent. Property damage-only crashes decreased by 24 percent over the 19-year period to about 24,200 crashes in 2012, representing the remaining two-thirds of all crashes. The overall decrease in vehicular crashes since 1994 is particularly significant given the increase in annual VMT over that same period of about 17 percent.

There were 140 vehicular crashes in the Region in 2012 that resulted in 156 fatalities. As shown in Figure 4.5, roadway crash fatalities dropped from a peak of 190 in 2005 to a low of 130 fatalities in 2009, and then rose again by about 20 percent between 2009 and 2012. Figure 4.6 presents selected characteristics of vehicle-related fatalities in the Region during 2012. Alcohol was cited as a contributing factor in about 40 percent of all fatalities.

In 2012, there were about 830 non-fatal vehicular crashes in the Region that resulted in at least one serious injury. While serious injury vehicular crashes increased by about 3 percent from 2011 to 2012, as shown in Figure 4.7, such injury crashes have declined significantly—about 62 percent—since 1994.

Figure 4.2
Traffic Congestion on the Freeway System in the Region on an Average Weekday: 1972, 1991, 2001, 2005, and 2011



Freeway Miles Affected by Congestion on an Average Weekday

Moderate Congestion: At least one hour—in each direction on an average weekday—with travel speeds of one to two mph below the free-flow speed and substantial restrictions on the ability to maneuver and change lanes.

Severe Congestion: At least one hour—in each direction on an average weekday—with travel speeds of up to ten mph below the free-flow speed and virtually no ability to maneuver and change lanes.

Extreme Congestion: At least one hour—in each direction on an average weekday—with travel speeds of 20 to 30 mph or less and breakdowns in traffic flow with stop-and-go, bumper-to-bumper traffic.

Source: SEWRPC

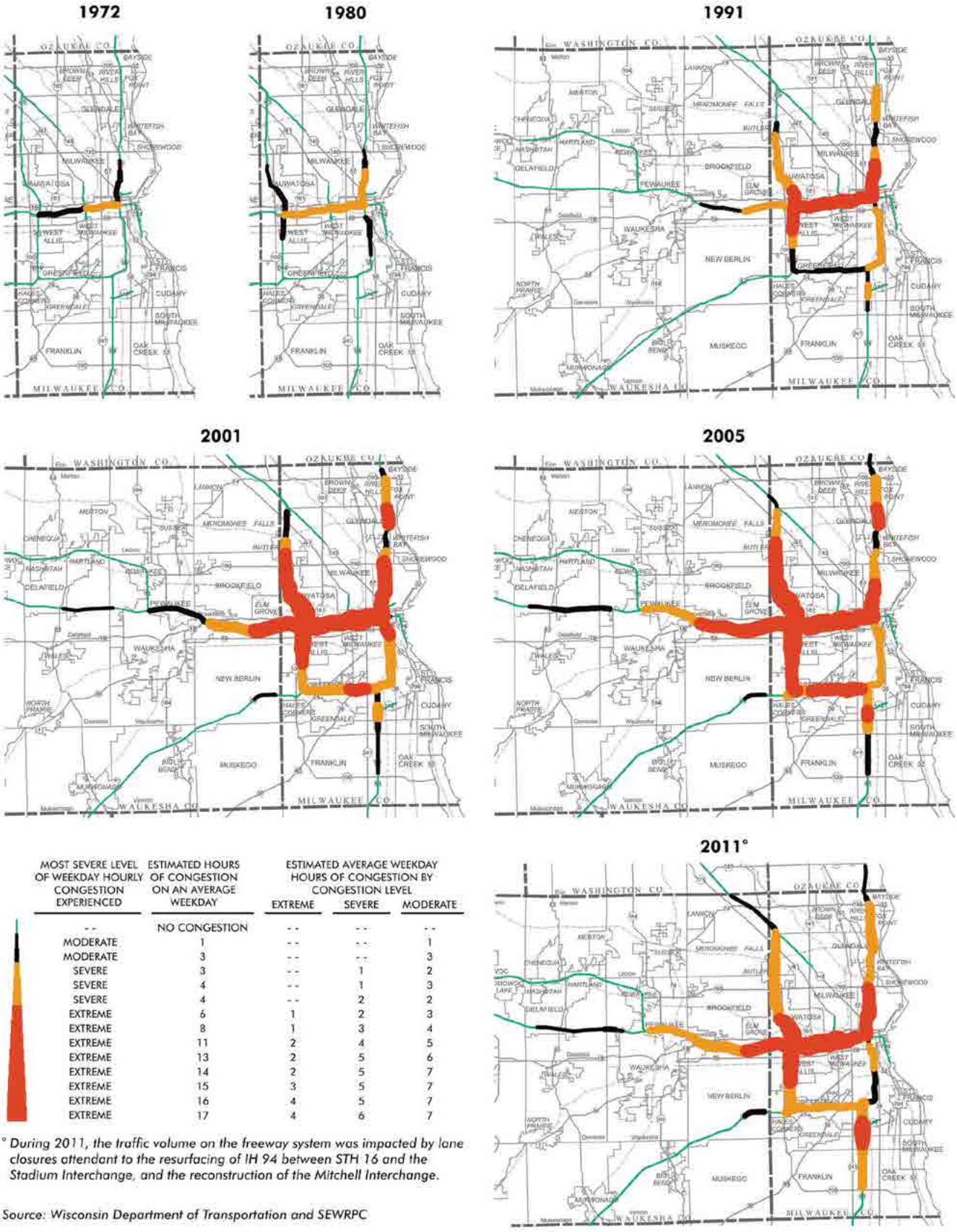
Vehicular Crash Rate

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

The average freeway and surface arterial crash rates on state trunk highways in the Region and within each of the seven counties are shown in Table 4.10. Only the Milwaukee County freeway crash rate, 120.2 crashes per 100 million VMT, is greater than the Region average freeway crash rate of 72.5 crashes per 100 million VMT. Only Milwaukee County state trunk highway surface arterials, with 372.8 crashes per 100 million VMT, exceed the Region average surface arterial crash rate of 265.0 crashes per 100 million VMT.

Map 4.5 displays those freeway and state trunk highway surface arterial segments in the Region with average traffic crash rates that exceed the Region average freeway crash rate. Within each county there are freeway

Map 4.3
Historical Traffic Congestion on the Freeway System in the Region



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

° *During 2011, the traffic volume on the freeway system was impacted by lane closures attendant to the resurfacing of IH 94 between STH 16 and the Stadium Interchange, and the reconstruction of the Mitchell Interchange.*

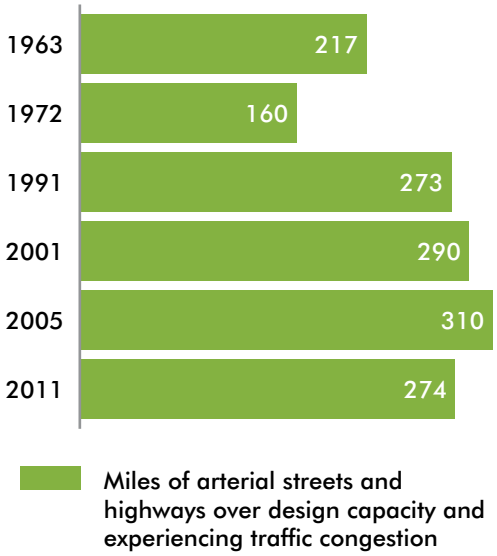
Source: Wisconsin Department of Transportation and SEWRPC

Table 4.8
Traffic Congestion on the Arterial Street and Highway System in the Region: 1963, 1972, 1991, 2001, 2005, and 2011

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

Source: SEWRPC

Figure 4.3
Traffic Congestion on the Arterial Street and Highway System in the Region: 1963, 1972, 1991, 2001, 2005, and 2011



Source: SEWRPC

Table 4.9
Traffic Congestion on Designated Truck Routes and the National Highway System in the Region: 2001 and 2011

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

Source: Wisconsin Department of Transportation and SEWRPC

Map 4.4
Traffic Congestion on Designated Truck Routes and the National Highway System in the Region: 2001 and 2011

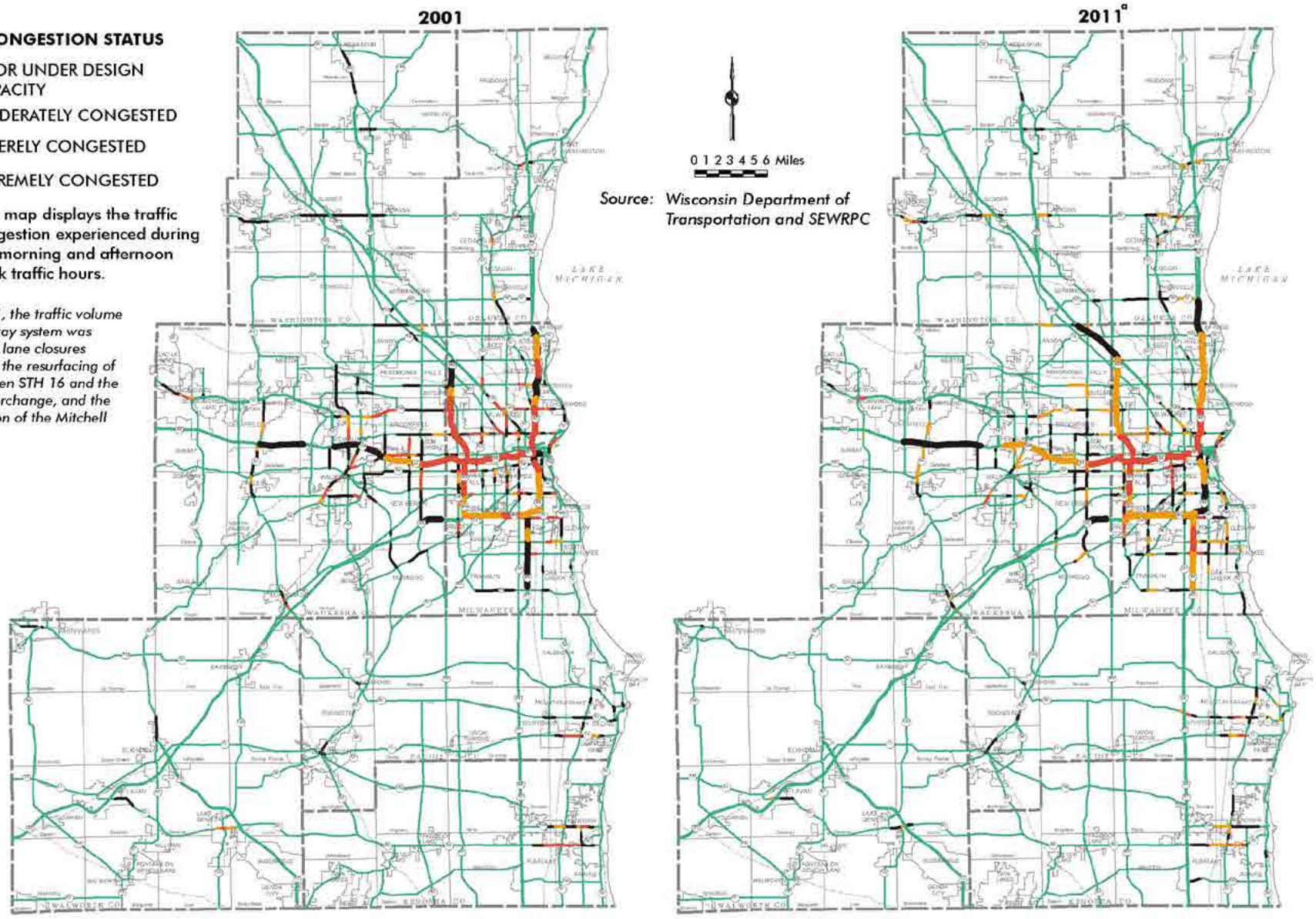
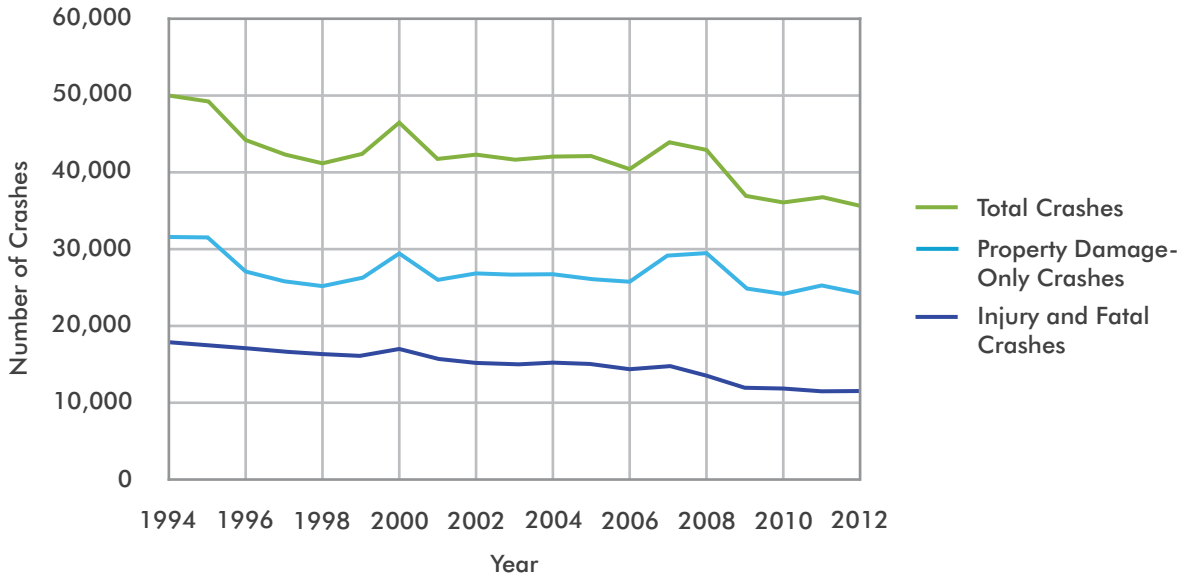
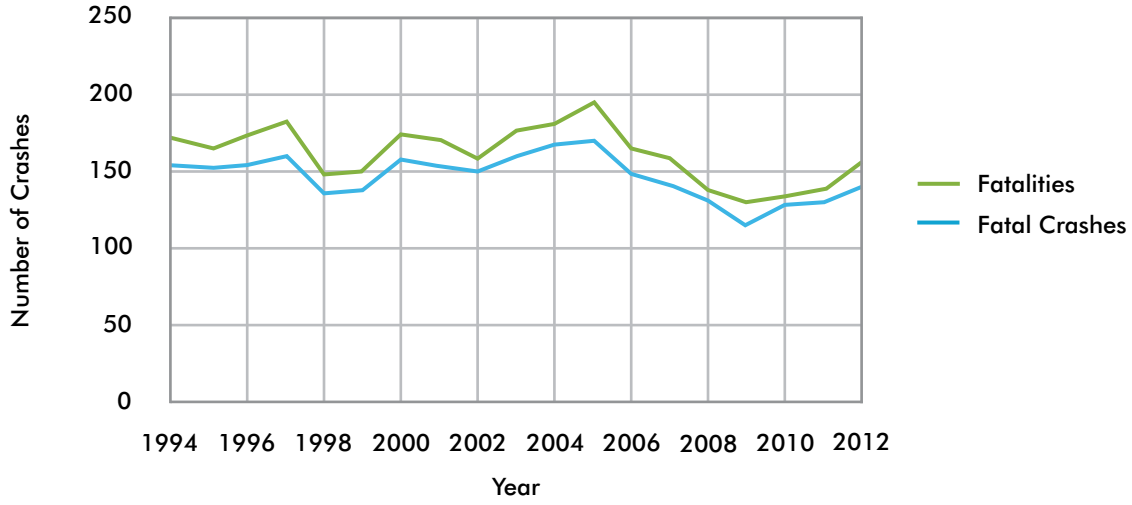


Figure 4.4
Total, Property Damage-Only, and Injury and Fatal Vehicular Crashes Reported in the Region: 1994-2012



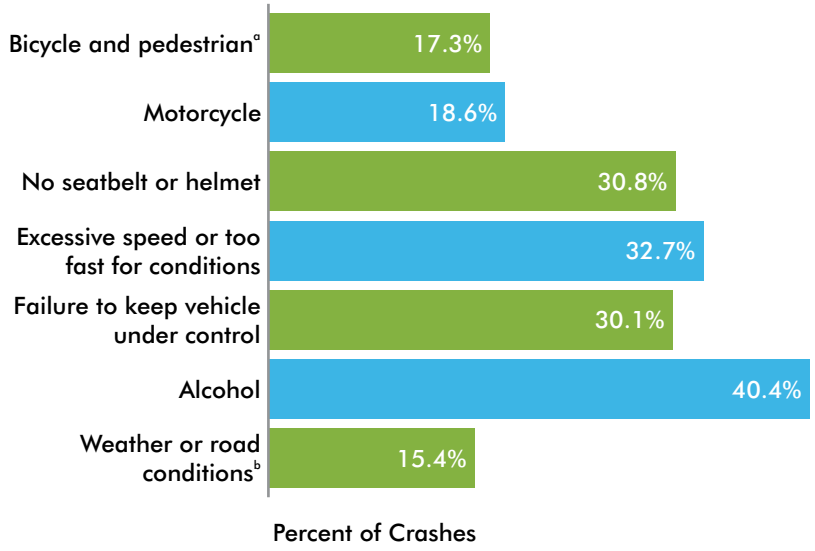
Source: Wisconsin Department of Transportation and SEWRPC

Figure 4.5
Fatal Vehicular Crashes and Fatalities Reported in the Region: 1994-2012



Source: Wisconsin Department of Transportation and SEWRPC

Figure 4.6
Selected Characteristics of Vehicular Crash-Related Fatalities in the Region: 2012



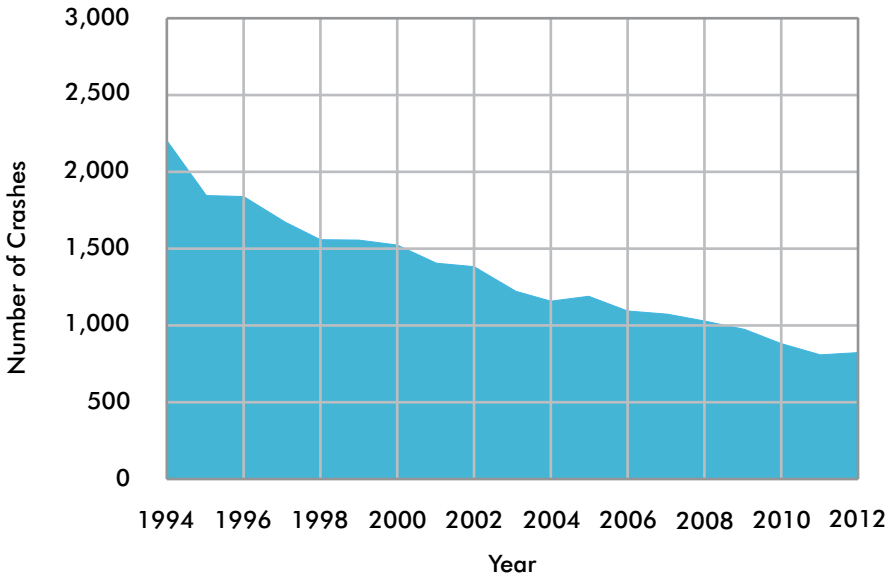
[a] *In 2012, there were four bicycle fatalities (2.6% of total fatalities) and 23 pedestrian fatalities (14.7% of total fatalities).*

[b] *This category includes snowy, rainy, and foggy conditions, and snow-covered, icy or wet roads.*

Note: Fatalities attributable to multiple categories are counted more than once.

Source: Wisconsin Department of Transportation and SEWRPC

Figure 4.7
Total Number of Crashes Resulting in a Serious Injury Reported in the Region: 1994-2012



Source: Wisconsin Department of Transportation and SEWRPC

Table 4.10
Average Vehicular Crash Rate on State Trunk Highways in the Region by Arterial Type and County: 2008-2012

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

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

Source: Wisconsin Department of Transportation and SEWRPC

and state trunk highway surface arterial segments that exceed the regional average crash rate.

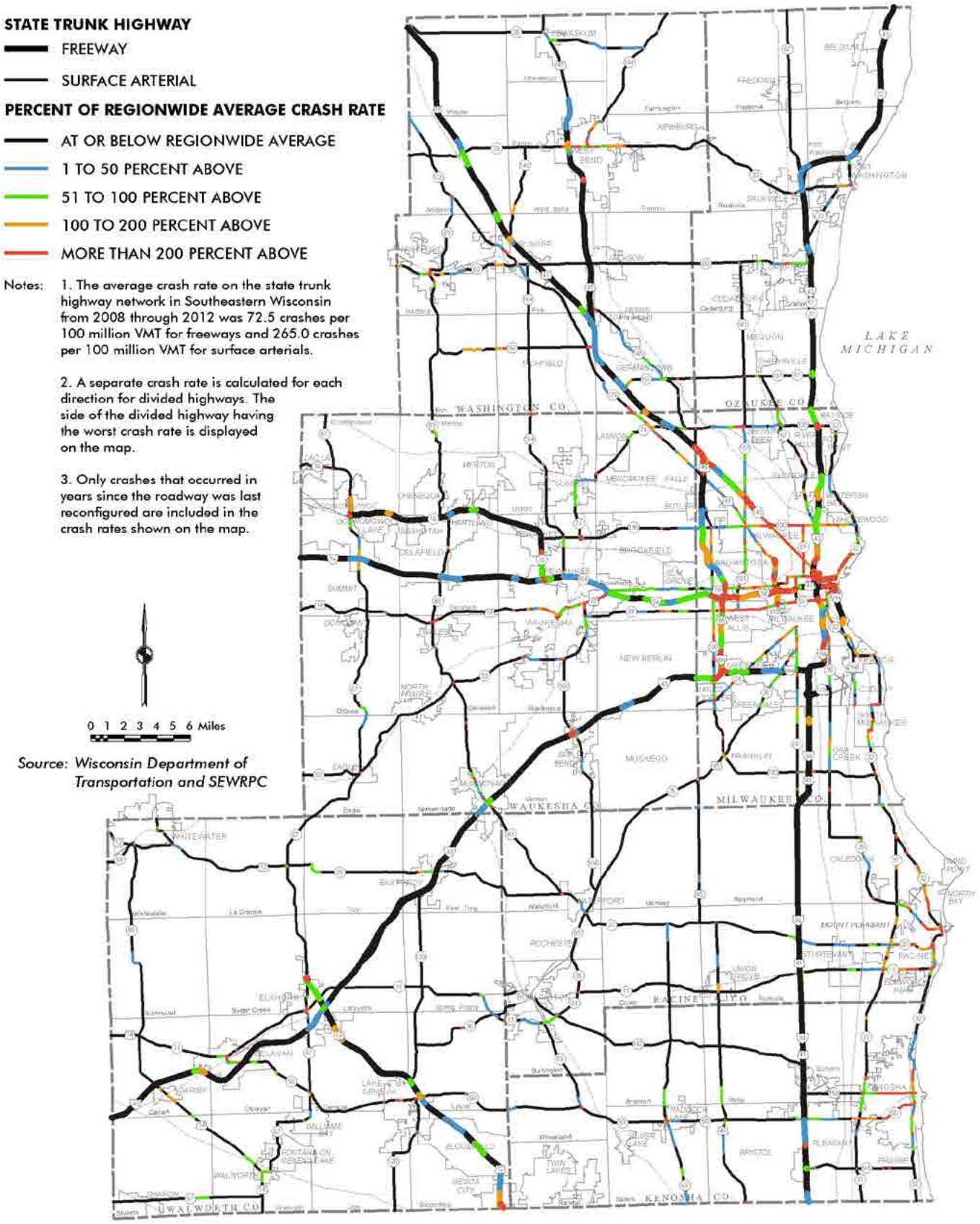
Maps 4.6 through 4.12 display, for each of the seven counties, those freeway and state trunk highway surface arterial segments that exceed the average crash rate for freeways within each county.

Bicycle and Pedestrian Crashes

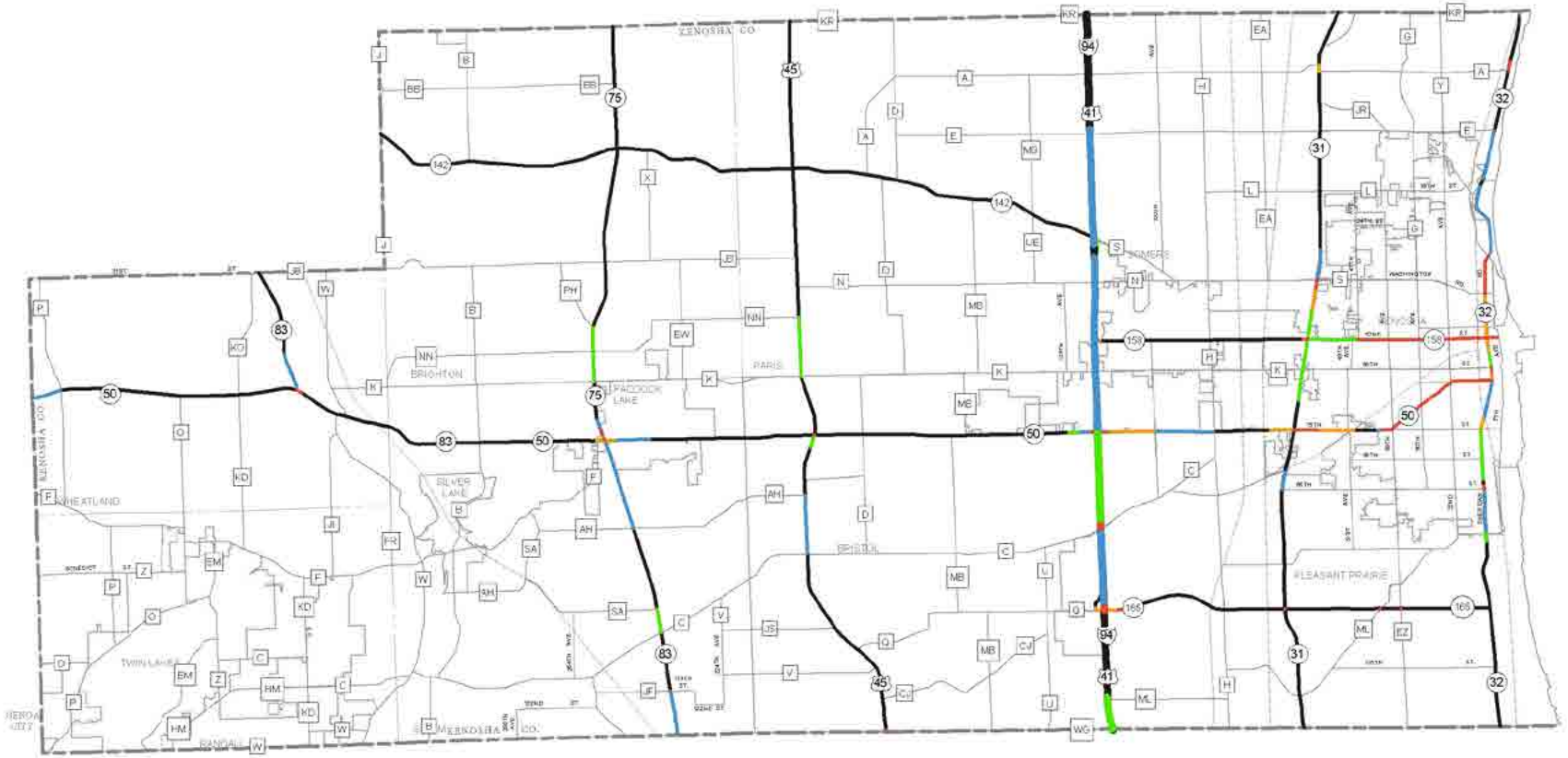
Figure 4.8 shows the total vehicular crashes involving either a bicycle or a pedestrian over the 19-year time period between 1994 and 2012. Following about a 44 percent decline in the number of reported vehicular crashes involving a bicycle from 707 crashes in 1994 to a low of 391 crashes in 2008, the number of such crashes has increased since 2008 by about 8 percent to 424 crashes in 2012. While the number of reported vehicular crashes involving pedestrians increased to 723 crashes in 2012 from the 19-year low of 653 crashes in 2011, such crashes have declined by about 37 percent from 1994 to 2012.

While the number of reported vehicular crashes involving either a bicycle or a pedestrian accounted for only 3 percent of all vehicular crashes in the Region in 2012, they accounted for 17 percent of vehicular crashes resulting in a fatality (as shown in Figure 4.6) and 18 percent of vehicular crashes resulting in a serious injury. Map 4.13 shows the location of the reported vehicular crashes involving a bicycle or a pedestrian that resulted in either a fatality or serious injury. As shown in Figure 4.9, the number of reported vehicular crashes involving a bicycle that resulted in either a fatality or a serious injury declined between 1994 and 2000 by 56 percent. Following an increase between 2000 and 2002 of about 33 percent, such crashes declined to 51 crashes in 2003, a reduction of 25 percent. Between 2003 and 2012, fatal and serious injury crashes involving a bicycle have decreased by 6 crashes to 44 crashes, a reduction of 14 percent. Four of these 44 crashes reported in 2012 resulted in a fatality, consistent with the 19-year annual average of four vehicular crashes involving a bicycle that resulted in a fatality. Figure 4.9 also shows that the number of reported vehicular crashes involving a pedestrian that resulted in either a fatality or a serious injury decreased between 1994 and 2003 by 59 percent. Except for an increase in 2006, the number has remained steady between 2003 and 2012, with 134 such crashes reported in 2012. Of these 134 crashes, 23 crashes resulted in a fatality, which is slightly above the 19-year annual average of 22 vehicular crashes involving a pedestrian that resulted in a fatality.

Map 4.5
Average Vehicular Crash Rate of State Trunk Highways in the Region: 2008-2012



Map 4.6
Average Vehicular Crash Rate of State Trunk Highways in Kenosha County: 2008-2012



STATE TRUNK HIGHWAY

- FREEWAY
- SURFACE ARTERIAL

PERCENT OF COUNTYWIDE AVERAGE CRASH RATE

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

Notes:

1. The average crash rate on the state trunk highway network in Kenosha County from 2008 through 2012 was 45.7 crashes per 100 million VMT for freeways and 255.6 crashes per 100 million VMT for surface arterials.

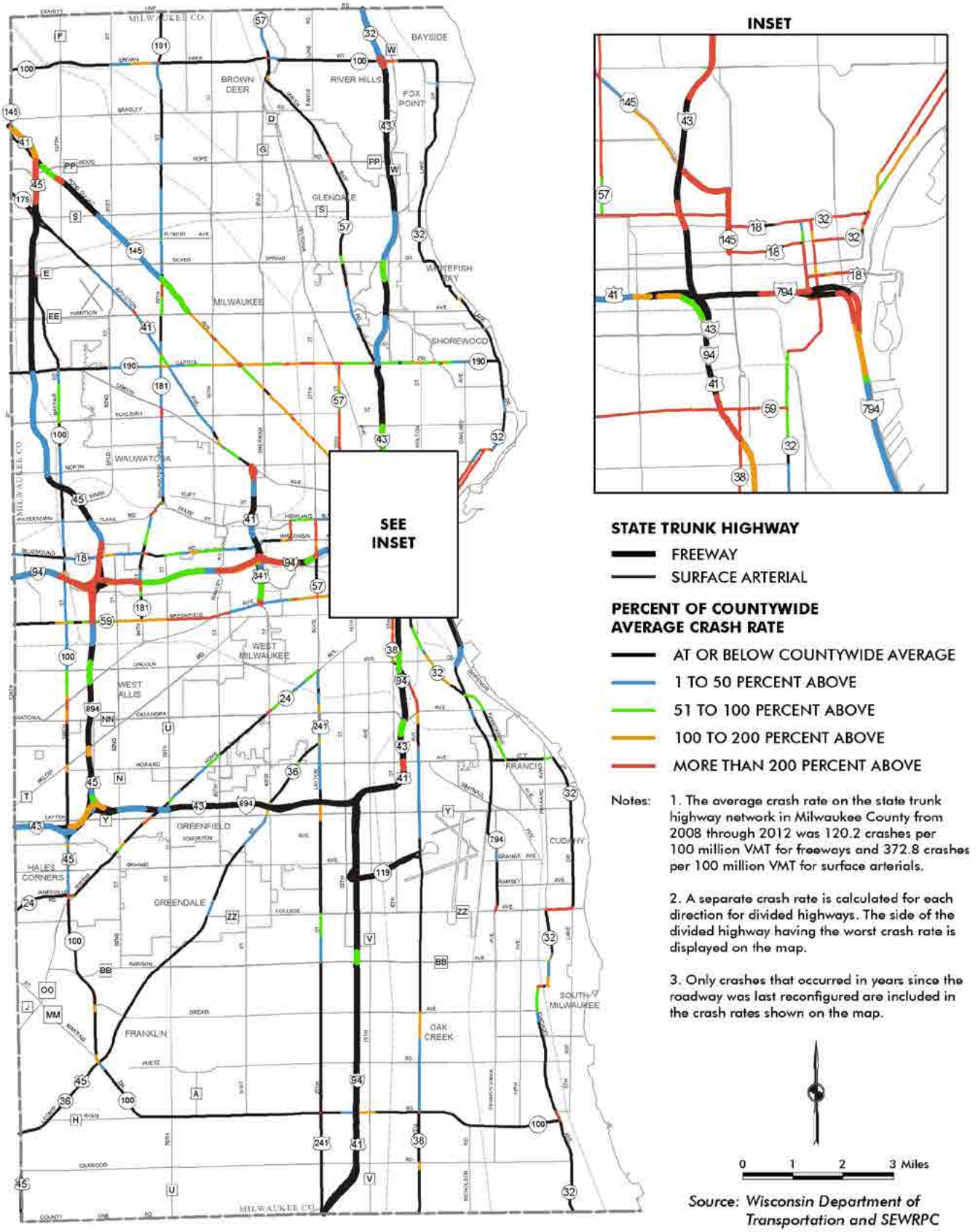
2. A separate crash rate is calculated for each direction for divided highways. The side of the divided highway having the worst crash rate is displayed on the map.

3. Only crashes that occurred in years since the roadway was last reconfigured are included in the crash rates shown on the map.

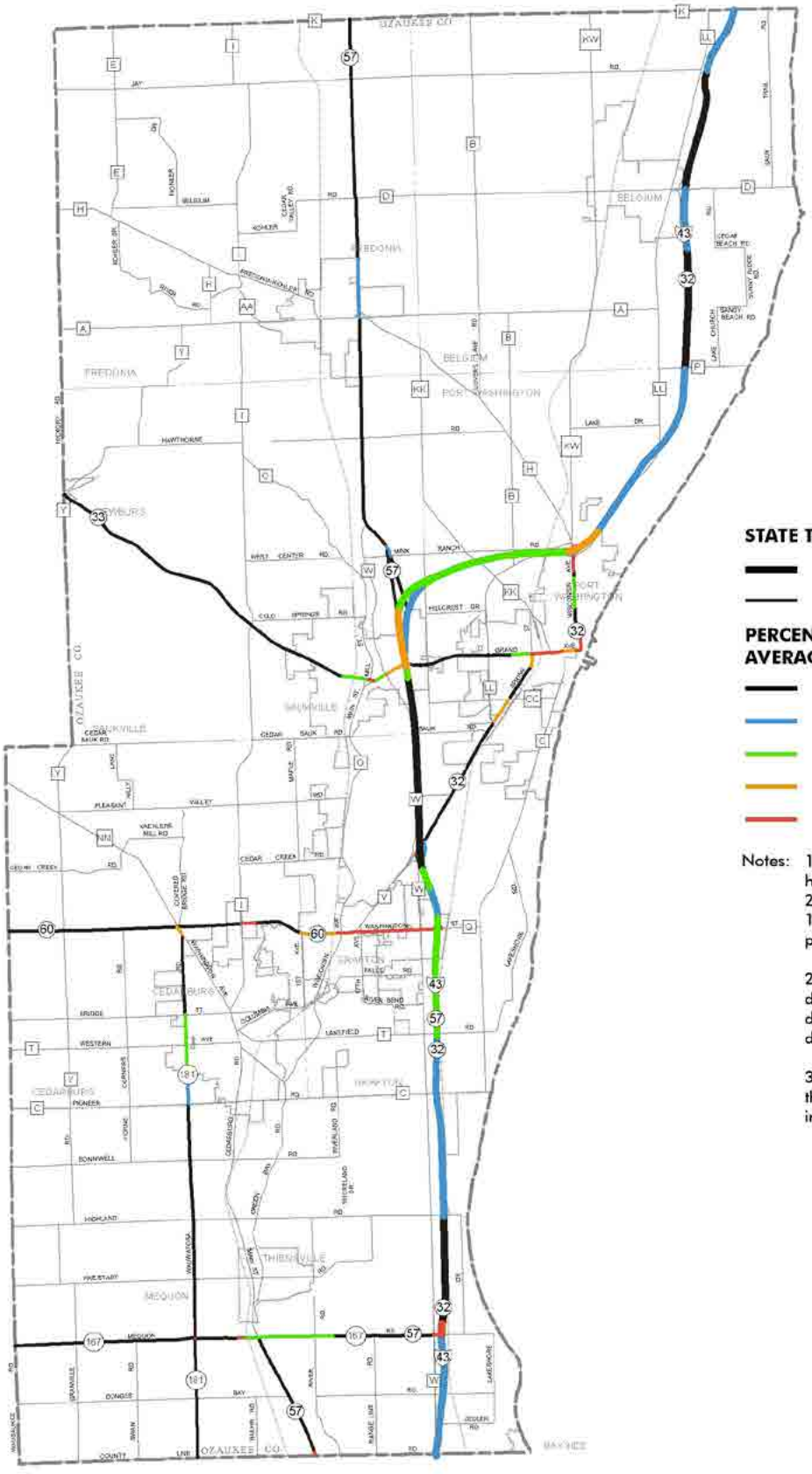
0 1 2 3 Miles

Source: Wisconsin Department of Transportation and SEWRPC

Map 4.7
Average Vehicular Crash Rate of State Trunk Highways in Milwaukee County: 2008-2012



Map 4.8
Average Vehicular Crash Rate of State Trunk Highways in Ozaukee County: 2008-2012



STATE TRUNK HIGHWAY

- FREEWAY
- SURFACE ARTERIAL

PERCENT OF COUNTYWIDE AVERAGE CRASH RATE

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

Notes:

1. The average crash rate on the state trunk highway network in Ozaukee County from 2008 through 2012 was 41.0 crashes per 100 million VMT for freeways and 119.0 crashes per 100 million VMT for surface arterials.

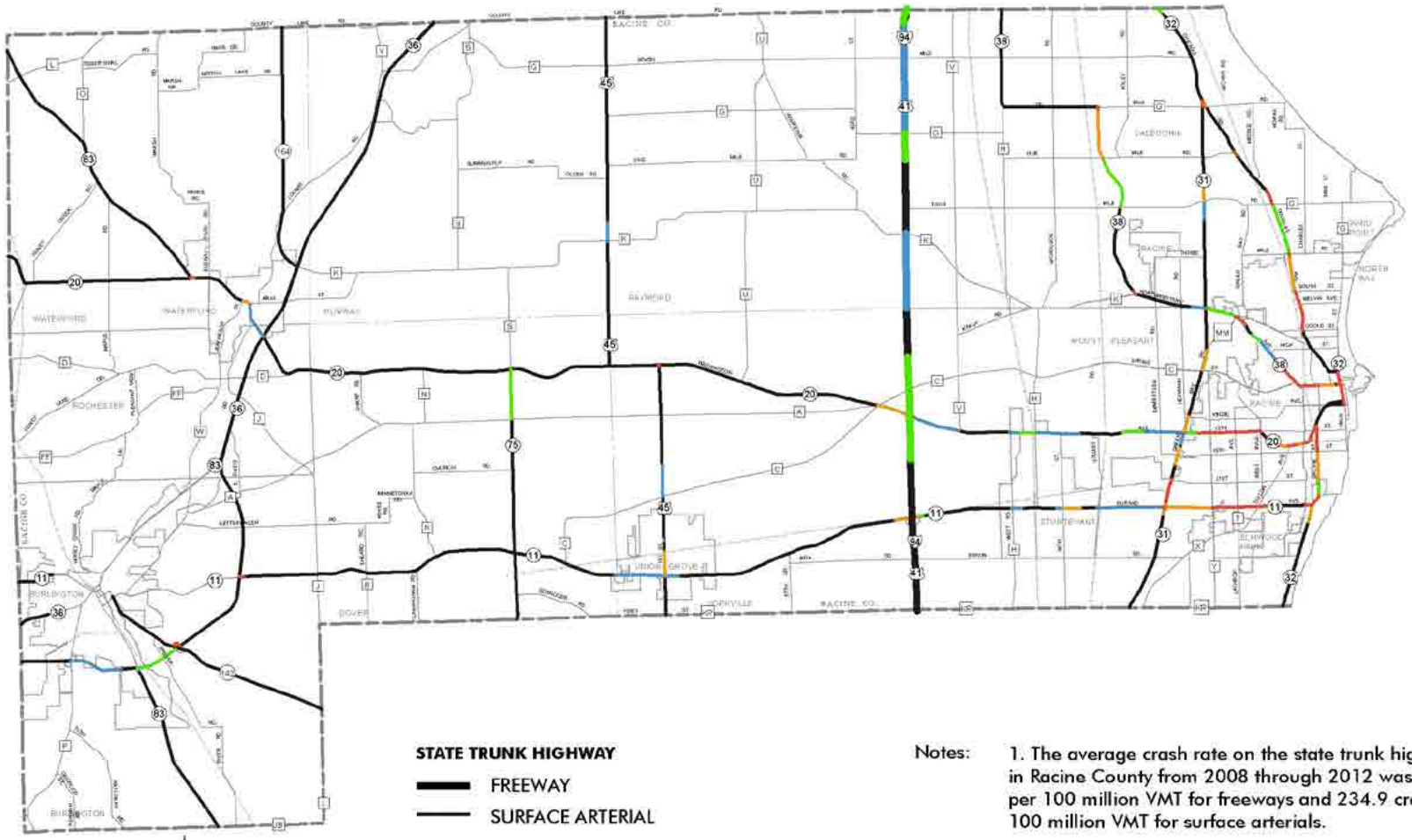
2. A separate crash rate is calculated for each direction for divided highways. The side of the divided highway having the worst crash rate is displayed on the map.

3. Only crashes that occurred in years since the roadway was last reconfigured are included in the crash rates shown on the map.

0 1 2 3 Miles

Source: Wisconsin Department of Transportation and SEWRPC

Map 4.9
Average Vehicular Crash Rate of State Trunk Highways in Racine County: 2008-2012



Source: *Wisconsin Department of Transportation and SEWRPC*

STATE TRUNK HIGHWAY

- FREEWAY
- SURFACE ARTERIAL

PERCENT OF COUNTYWIDE AVERAGE CRASH RATE

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

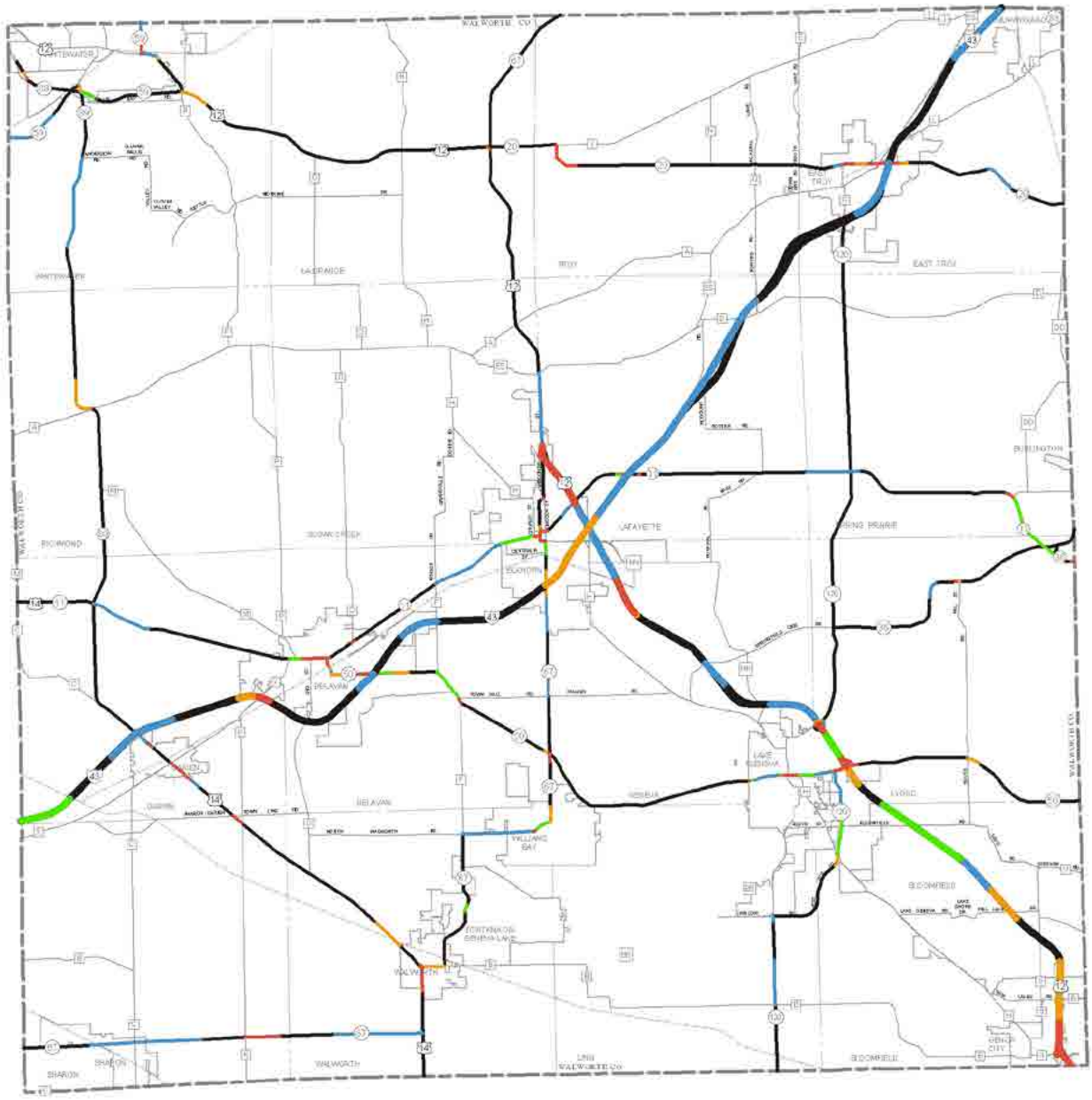
Notes:

1. The average crash rate on the state trunk highway network in Racine County from 2008 through 2012 was 33.7 crashes per 100 million VMT for freeways and 234.9 crashes per 100 million VMT for surface arterials.

2. A separate crash rate is calculated for each direction for divided highways. The side of the divided highway having the worst crash rate is displayed on the map.

3. Only crashes that occurred in years since the roadway was last reconfigured are included in the crash rates shown on the map.

Map 4.10
Average Vehicular Crash Rate of State Trunk Highways in Walworth County: 2008-2012



STATE TRUNK HIGHWAY

- FREEWAY
- SURFACE ARTERIAL

PERCENT OF COUNTYWIDE AVERAGE CRASH RATE

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

Notes:

1. The average crash rate on the state trunk highway network in Walworth County from 2008 through 2012 was 38.3 crashes per 100 million VMT for freeways and 139.2 crashes per 100 million VMT for surface arterials.

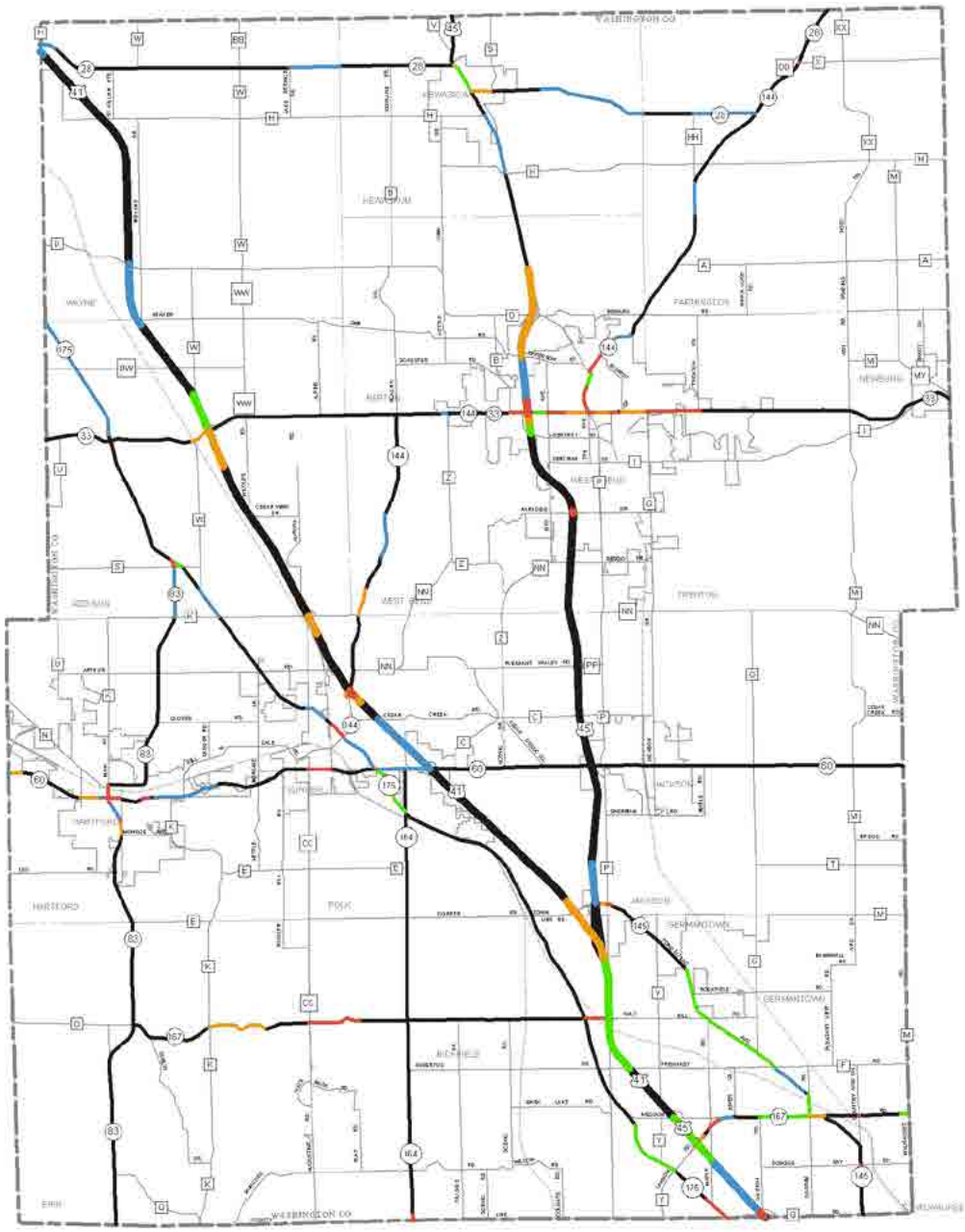
2. A separate crash rate is calculated for each direction for divided highways. The side of the divided highway having the worst crash rate is displayed on the map.

3. Only crashes that occurred in years since the roadwaywas last reconfigured are included in the crash rates shown on the map.

0 1 2 3 Miles

Source: Wisconsin Department of Transportation and SEWRPC

Map 4.11
Average Vehicular Crash Rate of State Trunk Highways in Washington County: 2008-2012



STATE TRUNK HIGHWAY

- FREEWAY
- SURFACE ARTERIAL

PERCENT OF COUNTYWIDE AVERAGE CRASH RATE

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

Notes:

1. The average crash rate on the state trunk highway network in Washington County from 2008 through 2012 was 43.3 crashes per 100 million VMT for freeways and 215.0 crashes per 100 million VMT for surface arterials.

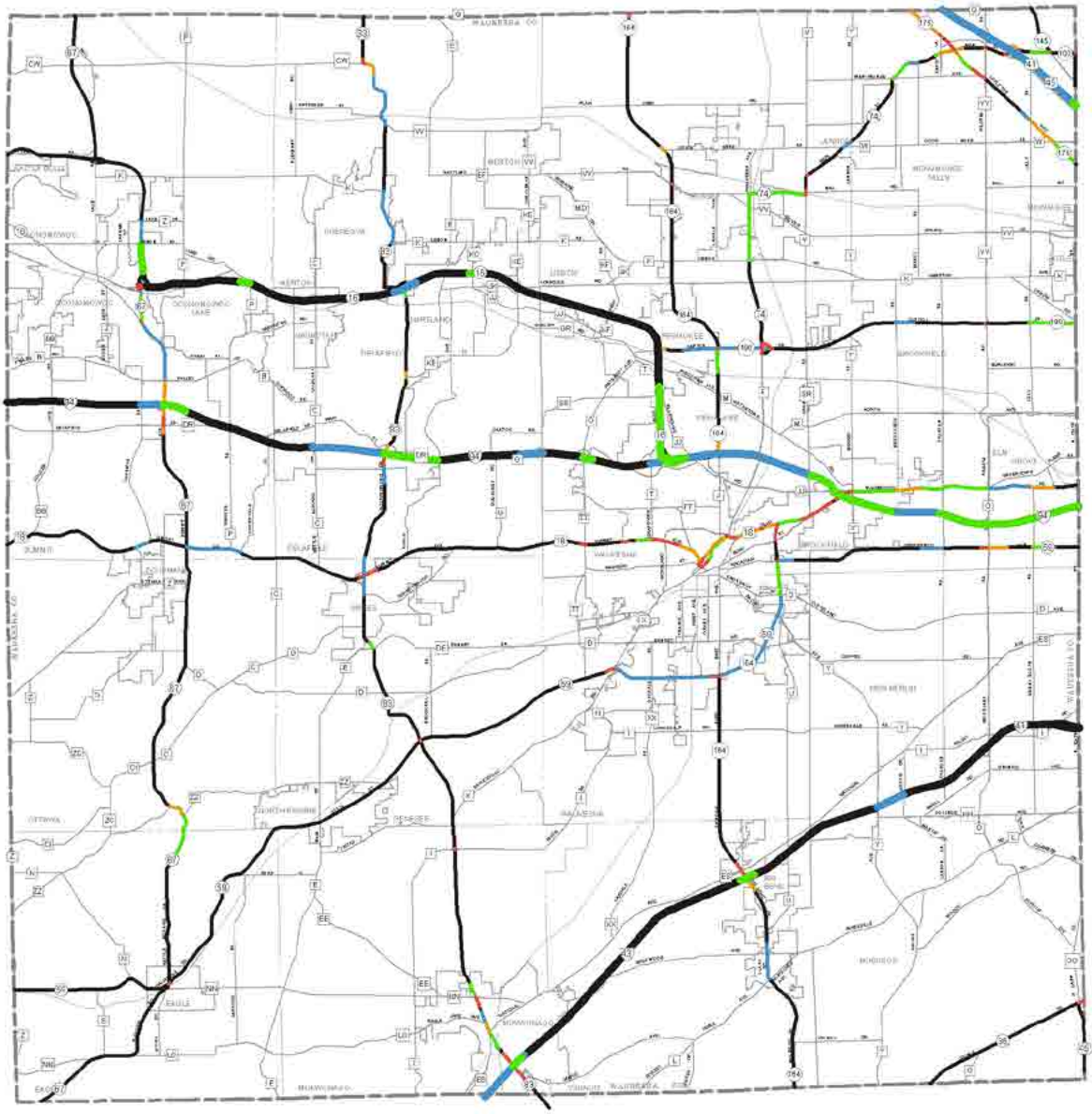
2. A separate crash rate is calculated for each direction for divided highways. The side of the divided highway having the worst crash rate is displayed on the map.

3. Only crashes that occurred in years since the roadway was last reconfigured are included in the crash rates shown on the map.

0 1 2 3 Miles

Source: Wisconsin Department of Transportation and SEWRPC

Map 4.12
Average Vehicular Crash Rate of State Trunk Highways in Waukesha County: 2008-2012



STATE TRUNK HIGHWAY

- FREEWAY
- SURFACE ARTERIAL

PERCENT OF COUNTYWIDE AVERAGE CRASH RATE

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

Notes:

1. The average crash rate on the state trunk highway network in Waukesha County from 2008 through 2012 was 53.7 crashes per 100 million VMT for freeways and 222.4 crashes per 100 million VMT for surface arterials.

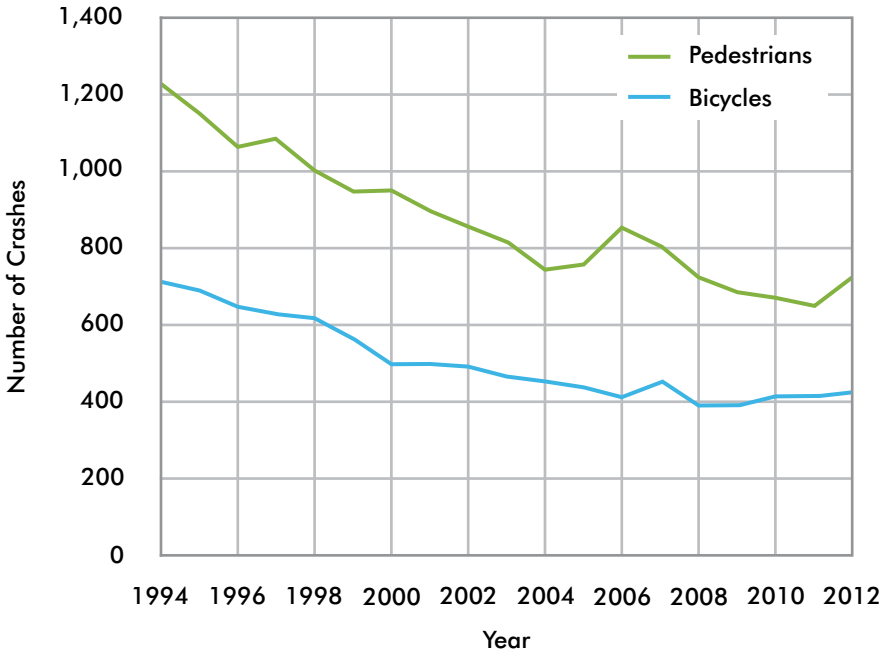
2. A separate crash rate is calculated for each direction for divided highways. The side of the divided highway having he worst crash rate is displayed on the map.

3. Only crashes that occurred in years since the roadway was last reconfigured are included in the crash rates shown on the map.

0 1 2 3 Miles

Source: Wisconsin Department of Transportation and SEWRPC

Figure 4.8
Total Number of Vehicular Crashes Involving Bicycles or Pedestrians as Reported in the Region: 1994-2012



Source: Wisconsin Traffic Operations and Safety Laboratory and SEWRPC

Transit Crashes and Passenger Injuries

Table 4.11 provides a comparison of the number and rate of transit crashes resulting in property damage and the number of passenger injuries for the six-year period between 2006 and 2011. The rate of transit crashes has decreased from 261 crashes per 100 million revenue vehicle-miles in 2006 to 179 crashes per 100 million revenue vehicle-miles in 2011, or a decrease of about 31 percent over that time period. Following an increase in the rate of passenger injuries from 564 passenger injuries per 100 million revenue vehicle-miles in 2006 to 711 passenger injuries per 100 million revenue vehicle-miles in 2007, the rate of passenger injuries decreased in each of the following years to 140 passenger injuries per 100 million revenue vehicle-miles in 2011.

4.3 PUBLIC TRANSIT

This section of the chapter describes the existing provision and utilization of public transit within the Region. Public transit may be defined as the transportation of people by publicly operated vehicles between trip origins and destinations. A classification of all public transportation provided in the Region is shown in Figure 4.10. Public transportation may be divided into service provided for the general public and service provided to specific population groups. Examples of specific group public transportation include yellow school bus service operated by area school districts, and fixed-route bus and paratransit van service provided by counties or municipalities for seniors and people with disabilities. Service limited to specific population groups is considered only implicitly in the planning process, with the exception of paratransit operated within urban fixed-route transit service areas to meet the transportation needs of people with disabilities who are

Map 4.13
Vehicular Crashes Involving Bicycles or Pedestrians that Resulted in a Fatality or Serious Injury in the Region: 2012

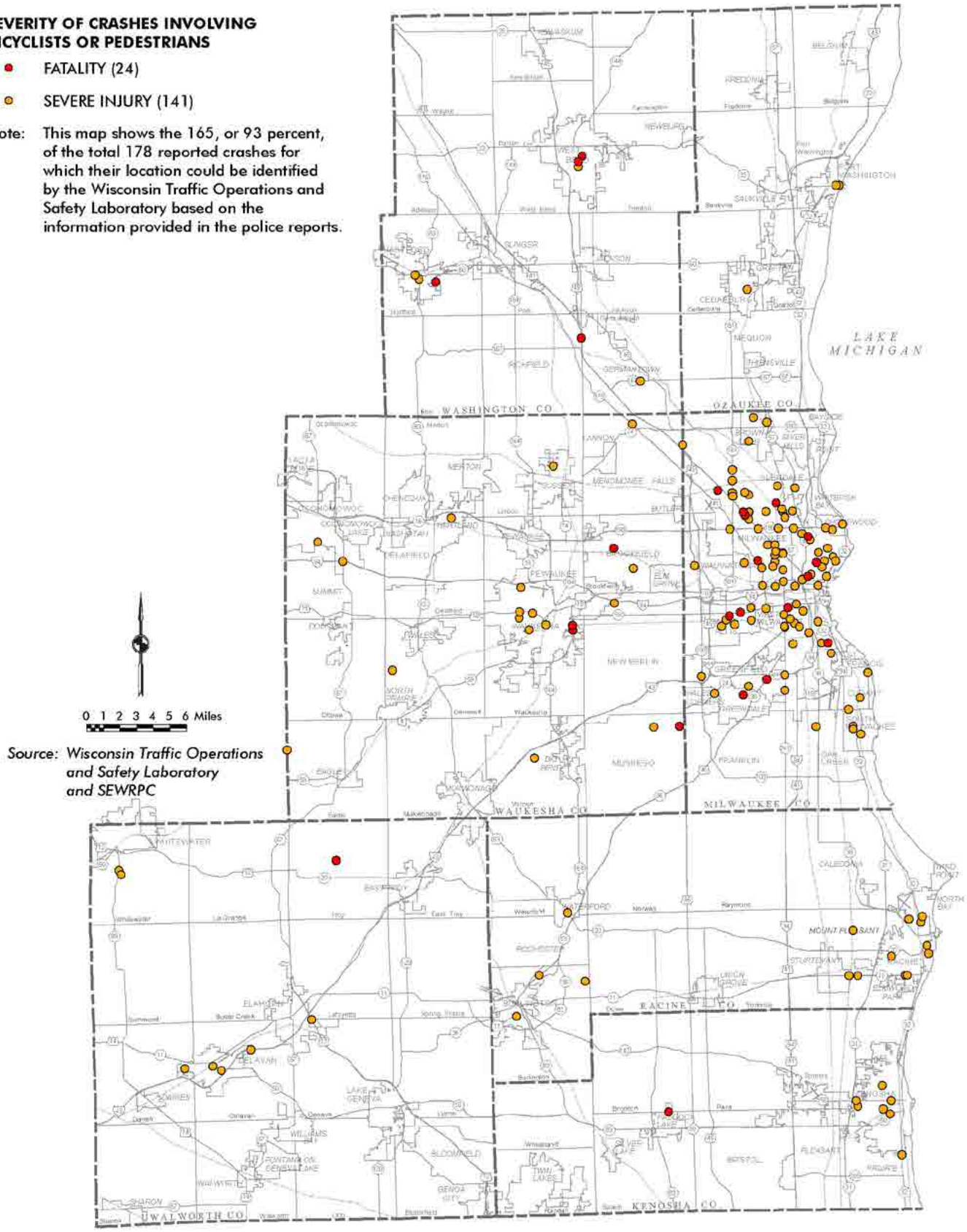
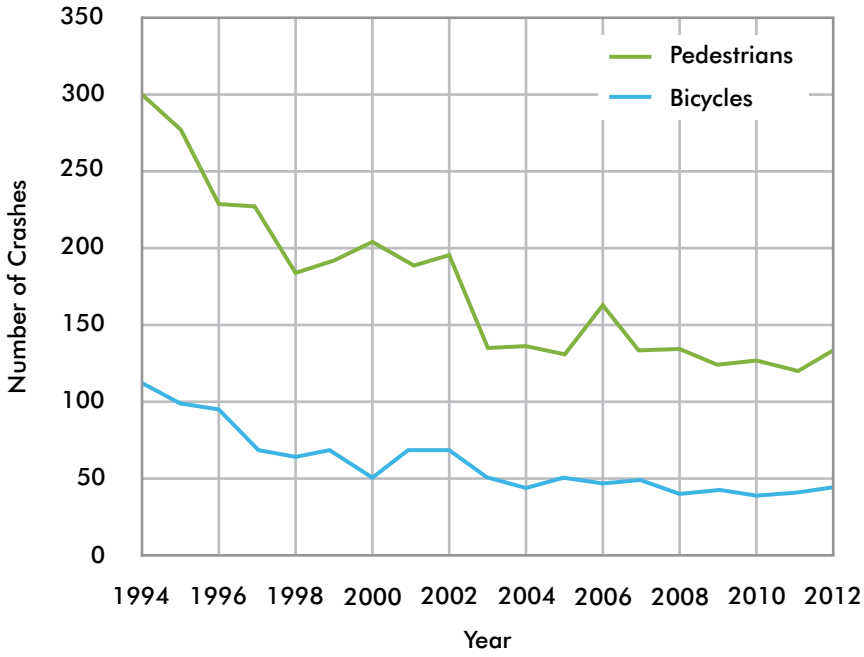


Figure 4.9
Total Number of Vehicular Crashes Involving Bicycles or Pedestrians Resulting in a Fatality or a Serious Injury as Reported in the Region: 1994-2012



Source: Wisconsin Traffic Operations and Safety Laboratory and SEWRPC

Table 4.11
Comparison of Transit Crashes and Passenger Injuries in the Region: 2006-2011

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

[a] *Includes only crashes that resulted in more than $5,000 in property damage.*

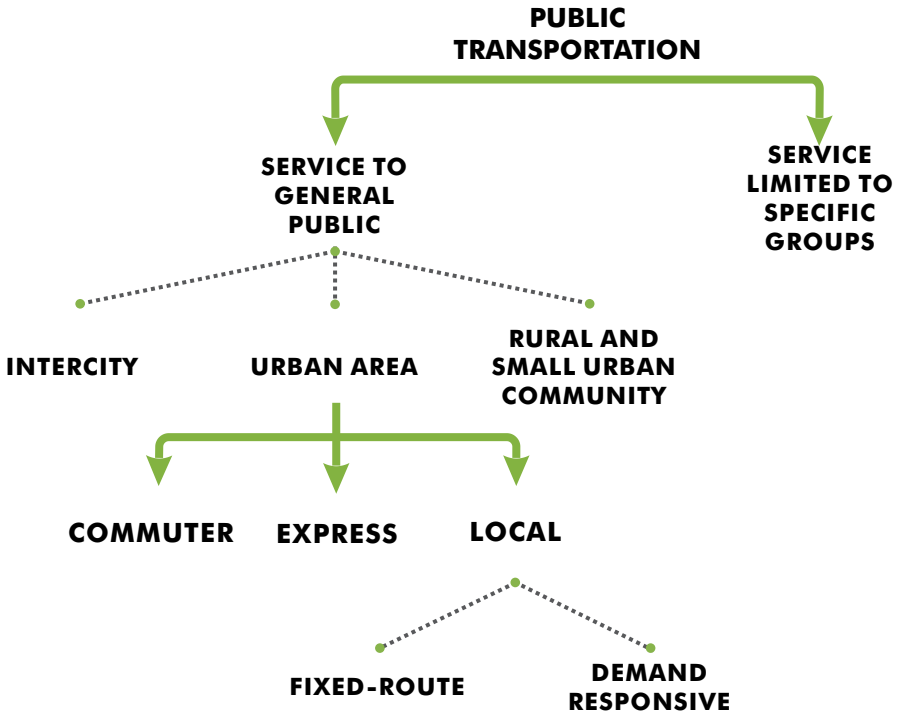
[b] *Includes only passenger injuries that required medical attention.*

Source: National Transit Database and SEWRPC

unable to use conventional transit service. Such service is required to be provided within fixed-route urban transit service areas under the Federal Americans with Disabilities Act of 1990, and the costs of such service are explicitly considered by the Commission in regional transportation planning.

As shown in Figure 4.10, public transit service to the general public may further be divided into three categories: intercity, urban, and rural. Intercity or interregional public transportation provides service across regional boundaries and includes Amtrak railway passenger service, interregional bus service, and commercial air travel. Rural—and small urban community—public transportation provides service in and between small urban communities and rural areas, and may provide connections to urban areas. Urban public transportation provides service within and between the large urban areas of the Region. Public transit is essential in any metropolitan area to meet the travel needs of people unable to use personal automobile transportation; to provide an alternative mode of travel, particularly in heavily traveled

Figure 4.10
Classification of Public Transportation



corridors within and between urban areas and in densely developed urban communities and activity centers; and to provide choice in transportation modes as an enhancement of quality of life and to support and enhance the Region's economy.

The public transit principally addressed in the Commission's regional transportation planning is urban public transit—the public transit that serves intraregional travel demand, is open to serving the general public, and operates within and between the Region's large urban areas. This includes the urban fixed-route bus transit systems operated by Ozaukee, Milwaukee, Washington, and Waukesha Counties and the Cities of Kenosha, Racine, and Waukesha. The Commission's regional transportation planning also addresses rural and small urban community public transit—public transit that also serves intraregional travel demand, is open to the general public, and operates within the Region's small urban communities and rural areas. This includes fixed-route service in western Kenosha County and nonfixed-route shared-ride taxi systems operated by Ozaukee and Washington Counties, and the Cities of Hartford, Whitewater, and West Bend.[34] Interregional public transit service is considered by WisDOT in statewide transportation planning. Regional transportation planning incorporates this statewide planning, and recognizes that terminal and intermodal facilities, such as airports and intercity bus and railway stations, may comprise major trip generators affecting internal travel demand and patterns. Interregional commercial

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

air travel is explicitly considered by the Commission under a separate comprehensive regional airport system planning program. Interregional public transportation travel has historically represented about 5 to 15 percent of all public transportation travel on an average weekday, about 5 percent of all interregional travel on an average weekday, and less than 0.5 percent of all person travel within the Region on an average weekday.

Urban public transit may be further divided into commuter, express, and local levels of service. Commuter transit is intended to facilitate relatively fast and convenient transportation along heavily traveled corridors and between major activity centers and high- and medium-density urban centers and communities within the Region. Commuter transit has relatively high average operating speeds and relatively low accessibility, with station spacing one to three miles or more apart. Commuter transit service can be provided by rail vehicles operating over exclusive, grade-separated right-of-ways or by buses operating over exclusive, grade-separated busways. Commuter transit can also be provided by buses operating in mixed traffic on freeways.

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

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

Urban public transit may be divided into commuter, express, and local levels of service.

- **Commuter transit service is intended to facilitate relatively fast and convenient service along heavily traveled corridors.**
- **Express transit service is provided over arterials and highways or exclusive right-of-ways and serves intersecting transit routes and major traffic generators with greater accessibility than commuter transit.**
- **Local transit service is characterized by a high degree of accessibility and low operating speeds.**

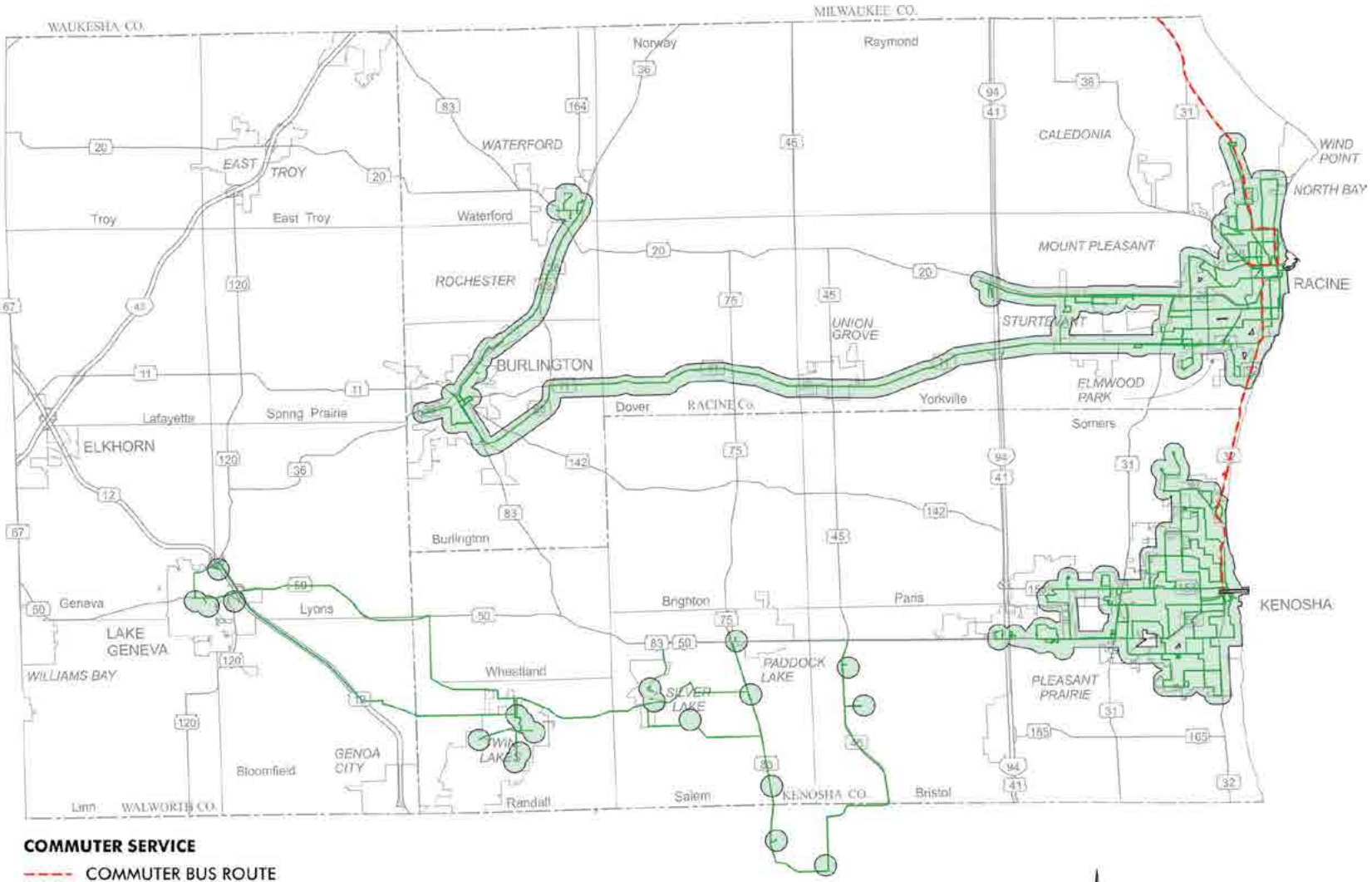
Urban Public Transit

Urban public transit service within the Region in 2012 is shown on Map 4.14 (Kenosha and Racine areas) and Map 4.15 (Milwaukee area).

Commuter Transit Service

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

Map 4.14
Local Fixed-Route Public Transit Service in the Kenosha and Racine Areas: 2012



COMMUTER SERVICE

- COMMUTER BUS ROUTE (NON-FREEWAY)

LOCAL SERVICE

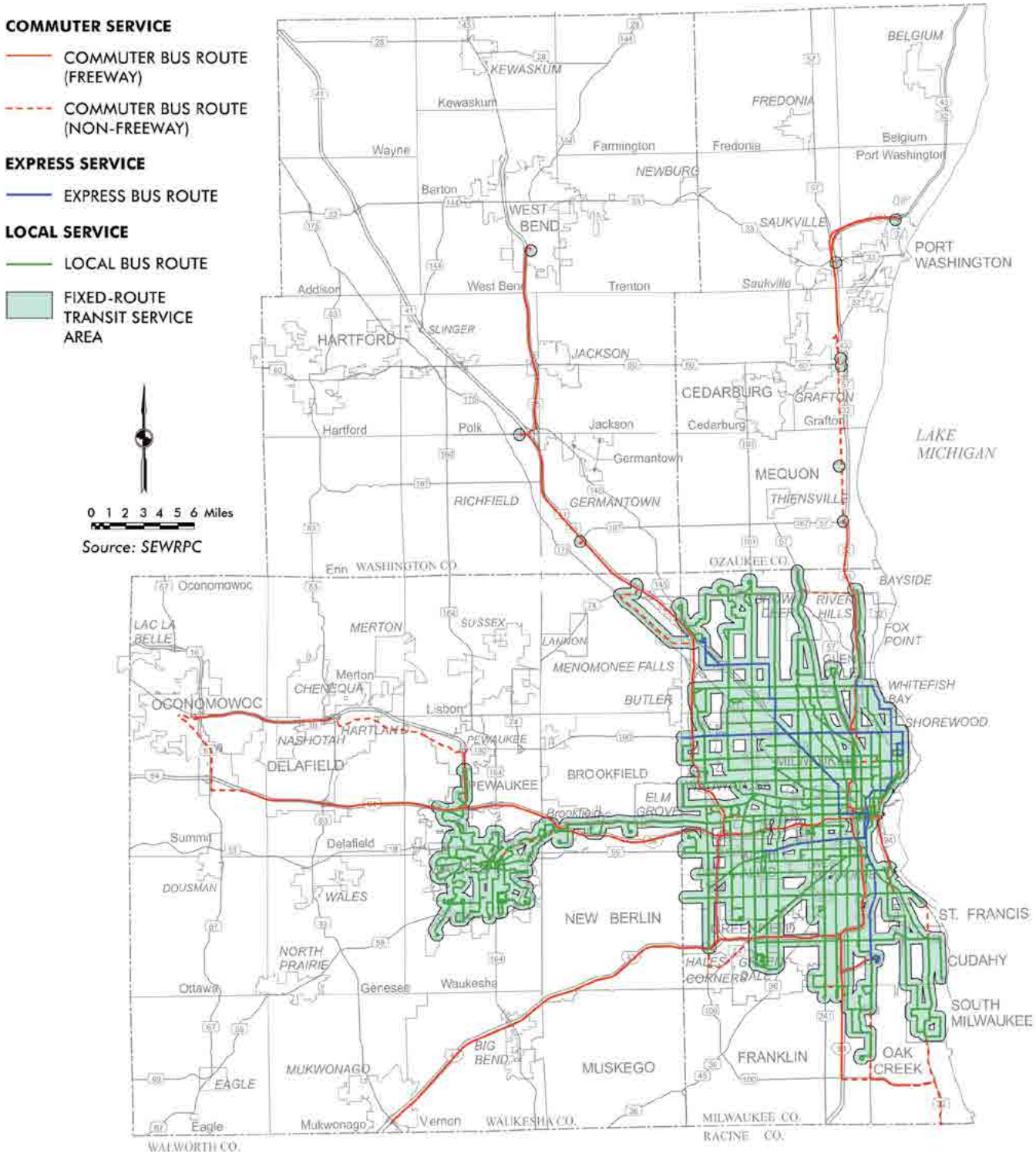
- LOCAL BUS ROUTE
- ELECTRIC STREETCAR LINE
- FIXED-ROUTE TRANSIT SERVICE AREA

Note: The Racine County Link—a public shuttle service designed to serve cross-county trips between the City of Racine, the Village of Union Grove, and the Burlington/Rochester Areas—is included in this map, but was eliminated in January of 2013.

0 1 2 3 Miles

Source: SEWRPC

Map 4.15
Local Fixed-Route Public Transit Service in the Milwaukee Area: 2012



Five commuter bus routes were provided by Waukesha County. One route between the Village of Menomonee Falls and the central business district (CBD) of Milwaukee was operated for Waukesha County by MCTS. The other four routes between the City of Waukesha, City of Oconomowoc, and the Village of Mukwonago and the Milwaukee CBD were operated for Waukesha County by Wisconsin Coach Lines, Inc., a private transit operator (see Map 4.15). Selected bus trips on the Waukesha-Milwaukee route were extended to serve UWM. Ozaukee County provided one route between the City of Port Washington and central Milwaukee County, including the Milwaukee CBD, operated by MCTS. Ozaukee County also provided connecting shared-ride taxi services as an extension of their commuter bus route to serve major employment centers. Washington County provided two routes between the City of West Bend and central Milwaukee County, including the Milwaukee CBD, the Milwaukee Regional Medical Center, and the Veterans Administration (VA) Medical Center. These routes were operated under contract by Riteway Bus Service, Inc. The City of Racine sponsored the Kenosha-Racine-Milwaukee commuter bus, operated by Wisconsin Coach Lines, between downtown Kenosha, downtown Racine, and the Milwaukee CBD (see Map 4.14).

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

Express Transit

In 2012, MCTS began operating three express routes using Federal Highway Administration (FHWA) Congestion Mitigation and Air Quality (CMAQ) funding. Two of these routes served downtown Milwaukee and the third served the Capitol Drive (STH 190) corridor in north Milwaukee. Express service was also provided to UWM, Mitchell Airport, Bayshore Mall, and the VA Center (see Map 4.15). These routes provided service from 4:30 a.m. to 2:00 a.m. seven days a week, with buses arriving every 10 to 30 minutes during the week and every 25 to 45 minutes on weekends. The adult cash fare for these routes was $2.25.

Local Transit: Fixed-Route

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

Kenosha Area Transit

In 2012, Kenosha Area Transit operated service over 20 fixed routes. The City system included six regular bus routes, radial in design and emanating from downtown Kenosha, with direct, nontransfer service from the downtown area to all portions of the City and its immediate environs, including the University of Wisconsin-Parkside (see Map 4.14). One other bus route provided local transit service to major commercial, recreational, and employment centers that have developed west of Green Bay Road (STH 31) outside the regular Kenosha local transit service area. The system also included additional school-day bus routes in the morning and afternoon to serve Kenosha secondary schools, and an electric streetcar line in downtown Kenosha that connected the central transfer terminal for the bus routes, the Metra commuter rail station, the Kenosha CBD, and the Harborpark development. In 2012, the bus system provided service on most routes from 6:00 a.m. to 7:30 p.m. on weekdays and 6:00 a.m. to 5:00 p.m. on Saturday, with buses arriving every 30 to 60 minutes during weekday peak periods and every 60 minutes during weekday off-peak periods and on Saturday. Service was provided on the streetcar line every 15 minutes from 11:00 a.m. to 6:30 p.m. on weekdays and from 10:00 a.m. to 5:30 p.m. on Saturdays, with limited hours from January to March. The adult cash fares charged by the Kenosha transit system were $1.50 per trip for bus service and $1.00 per trip for the streetcar line.

Western Kenosha County Transit

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

Racine Belle Urban System

In 2012, the City of Racine Belle Urban System operated local service over 10 fixed routes, including nine regular routes and one school-day route to serve Racine secondary schools. As shown on Map 4.14, eight of the nine regular fixed routes were radial in design, emanating from the Racine Metro Transit Center, and provided service to all portions of the City and to its immediate environs. The ninth regular route acted as an extension of one of the fixed routes serving downtown and the Metro Transit Center. In 2012, the system provided service from 5:30 a.m. to 10:00 p.m. on weekdays, 5:30 a.m. to 6:30 p.m. on Saturdays, and from 9:30 a.m. to 6:30 p.m. on Sundays. Buses arrived every 30 to 60 minutes on weekdays and every 60 minutes on Saturdays and Sundays. The adult cash fare charged by the City of Racine was $2.00 per trip for local bus service.

Racine County Link

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

Milwaukee County Transit System

As shown on Map 4.15, MCTS provided local transit service in the Milwaukee area in 2012 over 44 fixed routes. Of these local routes, 11 were radial

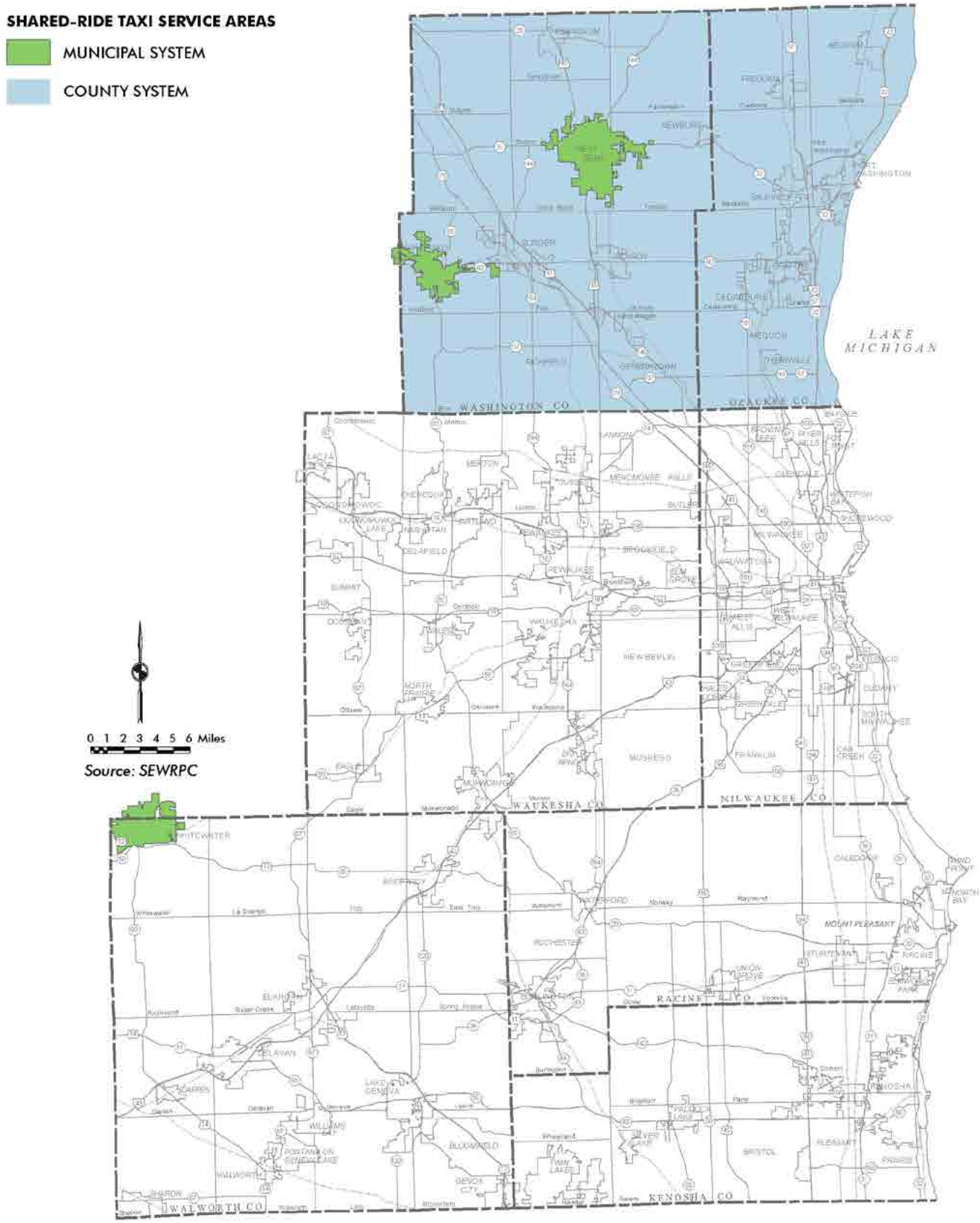
routes serving downtown Milwaukee; 21 were crosstown or feeder routes not serving downtown Milwaukee; two were shuttle routes providing connections from other routes to major concentrations of jobs in industrial parks and commercial development in the outlying portions of the County; and 10 were school-day routes principally designed to serve secondary schools in Milwaukee County. The system provided local bus service seven days a week, typically from 5:00 a.m. to 1:00 a.m., at an adult cash fare of $2.25 per trip. On most routes serving central Milwaukee County, buses arrived every 10 to 20 minutes during weekday peak periods and every 15 to 30 minutes during weekday off-peak periods. Buses arrived every 15 to 60 minutes on the routes serving the outer portions of the County on weekdays and on most routes on weekends.

Waukesha Metro Transit
Waukesha Metro Transit provided service over 10 fixed radial routes in 2012. The routes began in downtown Waukesha and provided direct nontransfer service from downtown to all portions of the City and its immediate environs. In addition, one route operating twice a day each weekday provided service from downtown Waukesha to the Easter Seals Training Center. As shown on Map 4.15, two of the routes served traffic generators outside of the City: the Waukesha County Technical College in the Village of Pewaukee; the Goerke's Corners public transit station in the Town of Brookfield; and the commercial district along Bluemound Road in the Town and City of Brookfield, including Brookfield Square Mall. In 2012, the system provided service from 6:00 a.m. to 10:30 p.m. on weekdays, from 8:00 a.m. to 10:00 p.m. on Saturdays, and from 9:00 a.m. to 7:00 p.m. on Sundays. Buses on the routes arrived every 30 to 60 minutes. The adult cash fare was $2.00 per trip for the local bus service provided by the City of Waukesha.

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

Rural and Small Urban Community Transit: Demand-Responsive
Demand-responsive rural public transit in the form of publicly operated shared-ride taxi service was also provided in the Region in 2012 (see Map 4.16). Shared-ride taxi service was provided by the Hartford City Taxi Service and City of West Bend Taxi Service in Washington County. These two systems served local travel in and immediately adjacent to the sponsoring municipality. In addition, both Ozaukee and Washington Counties provided shared-ride taxi service on a countywide basis. The two county taxi systems principally served travel in the small urban communities and rural areas in each county and between the rural areas and all communities. The Ozaukee County taxi system also served travel within the City of Port Washington, which discontinued its separate taxi system at the end of 2011. The Ozaukee and Washington County taxi systems did serve some communities located within the Milwaukee urban area, including the communities of Germantown in Washington County; the northern portion of the Village of Menomonee Falls in Waukesha County; and Mequon, Cedarburg, and Grafton in Ozaukee County. The Washington County taxi system, however, did not serve trips that could be made on the Hartford and West Bend municipal systems. Public shared-ride taxi service was also provided in Walworth County by Browns Cab Service, which served local travel in and immediately adjacent to the City of Whitewater.

Map 4.16
Local Rural and Small Urban Community Demand-Responsive Public Transit Service in the Region: 2012



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

Level of Transit Service

The extent and amount of public fixed-route transit service provided within the Region can be measured by the revenue vehicle-hours and revenue vehicle-miles of transit service provided on an average weekday. As shown in Table 4.12, between 2001 and 2011 the average weekday vehicle-hours and vehicle-miles of fixed-route transit service provided within the Region decreased significantly, by about 16 percent and 22 percent, respectively. The level of transit service provided in the Region was also less than the levels provided in 1972 and 1963. In general, vehicle-hours and vehicle-miles of service provided in the Region declined significantly throughout the 1950s, 1960s, and early 1970s. Public transit service began to increase in the mid-1970s with the initiation of public acquisition and operation of transit service. Public transit service continued to increase to the early 1980s due to motor fuel price increases in the mid and late 1970s, and attendant transit ridership increases. Transit service in the Region then declined slightly through the middle and late 1980s. During the 1990s, transit service increased substantially through the year 2000. Since 2001, transit service has decreased each year, due to continued reductions in Federal funding and State and local budget constraints.

The level of demand-responsive service provided by public shared-ride taxi systems has increased significantly since 1991 as the number of public systems in the Region increased from two in 1991 to six in 2011 (the City of Port Washington ceased its shared-ride taxi service at the end of 2011). In 2011, about 360 vehicle-hours and 10,300 vehicle-miles of service were provided on an average weekday by the six public taxi systems in the Region, representing increases of 64 percent and 34 percent from the 2001 average weekday levels of about 220 vehicle-hours and 7,700 vehicle-miles of service and 2,300 percent and 2,475 percent from the 1991 average weekday levels of about 15 vehicle-hours and 400 vehicle-miles of service.

Public Transit Ridership

Public transit ridership levels within the Region on an average weekday in 1963, 1972, 1991, 2001, and 2011 are set forth in Table 4.13. Since 2001, ridership on fixed-route service in the Region has decreased. An estimated 118,400 transit trips were made on fixed-route bus services on an average weekday in 2011, about 17 percent less than in 2001. In comparison, the vehicle-hours and vehicle-miles of service provided on fixed-route bus

Table 4.12
Public Transit Vehicle-Hours and Vehicle-Miles Provided in the Region by Service Type: 1963, 1972, 1991, 2001, and 2011

Service Type	Average Weekday Revenue Vehicle-Hours[a]				
	1963	1972	1991	2001	2011
Fixed-Route (Bus)	6,900	5,200	5,100	5,600	4,700
Demand-Responsive (Shared-Ride Taxi)	--	--	15	220	360

Service Type	Change in Average Weekday Revenue Vehicle-Hours							
	1963-2011		1972-2011		1991-2011		2001-2011	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Fixed-Route (Bus)	-2,200	-31.8	-500	-9.6	-400	-7.8	-900	-16.1
Demand-Responsive (Shared-Ride Taxi)	--	--	--	--	345	2,300.0	140	63.6

Service Type	Average Weekday Revenue Vehicle-Miles[a]				
	1963	1972	1991	2001	2011
Fixed-Route (Bus)	84,900	64,000	63,300	79,600	61,800
Demand-Responsive (Shared-Ride Taxi)	--	--	400	7,700	10,300

Service Type	Change in Average Weekday Revenue Vehicle-Miles							
	1963-2011		1972-2011		1991-2011		2001-2011	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Fixed-Route (Bus)	-23,100	-27.2	-2,200	-3.4	-1,500	-2.4	-17,800	-22.4
Demand-Responsive (Shared-Ride Taxi)	--	--	--	--	9,900	2,475.0	2,600	33.8

[a] *Figures presented in this table are for publicly sponsored transit services for the general public. The data exclude special paratransit services directed at seniors and people with disabilities, including Federally required complementary paratransit services for people with disabilities operated by fixed-route bus systems. On an average weekday during 2011, approximately 1,100 revenue vehicle-hours and 10,600 revenue vehicle-miles of service were operated in the Region as Federally required complementary paratransit services for people with disabilities. This compares to approximately 1,500 revenue vehicle-hours and 19,500 vehicle-miles of service operated in 2001 by ADA paratransit programs. Comparable data for 1991 are not available as paratransit service data were not reported by most transit systems in the Region. Complementary paratransit services were not required or provided in 1963 or 1972.*

Source: SEWRPC

services in 2011 were about 16 percent and 22 percent less, respectively, than in 2001 (see Table 4.12). The decrease in ridership reflects the service reductions that have been implemented by the transit operators in the Region, particularly MCTS, since 2001, largely to meet constrained operating budgets.

The transit ridership levels on demand-responsive, public shared-ride taxi service increased steadily from 2001 to 2011. No public shared-ride taxi systems were in operation in 1972 or 1963. In 2011, about 1,300 transit trips were made on an average weekday on the six public taxi systems in the Region. This represented an increase of about 18 percent from the 2001 average weekday ridership of about 1,100 transit trips on public taxi services.

In general, transit ridership in the Region and in the United States was in decline throughout the 1950s and 1960s. Ridership on public transit began a gradual growth in the mid-1970s with the initiation of publicly owned transit operations. Motor fuel price increases, in the mid and late 1970s, contributed to the ridership increases which peaked in 1980. Transit ridership in the Region then experienced a moderate decline through the 1980s and the early 1990s, and then increased somewhat through the year 2000. Since 2001, ridership has decreased in each year. Factors that have contributed to the general decline in transit ridership in the Region since 1980 include the location of housing and jobs outside established transit service areas; the continuing decline in population and employment density; the increase in household income and automobile ownership and use, particularly in

Table 4.13
Average Weekday Public Transit Trips in the Region by Service Type: 1963, 1972, 1991, 2001, and 2011

Service Type	Average Weekday Transit Trips[a]				
	1963	1972	1991	2001	2011
Fixed-Route (Bus)	320,500	184,200	172,200	142,200	118,400
Demand-Responsive (Shared-Ride Taxi)	--	--	200	1,100	1,300

Service Type	Change in Average Weekday Transit Trips							
	1963-2011		1972-2011		1991-2011		2001-2011	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Fixed-Route (Bus)	-202,100	-63.1	-65,800	-35.7	-53,800	-31.2	-23,800	-16.7
Demand-Responsive (Shared-Ride Taxi)	--	--	--	--	1,100	550.0	200	18.2

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

Source: SEWRPC

terms of the number of households with two or more vehicles; increases in transit adult cash fares to defer service reductions; and the inability, owing to lack of funding, to significantly improve and expand transit service to the entire metropolitan area, provide faster express transit and commuter transit service, and provide reasonably attractive and convenient frequent transit service.

Interregional Public Transit

Intercity Passenger Rail

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

By comparison, in 2001, under contract with the State of Wisconsin and the State of Illinois, Amtrak operated six daily Hiawatha Service trains (five on Sundays) in each direction between Milwaukee and Chicago and one daily Empire Builder train in each direction between Seattle/Portland, Minneapolis-St. Paul, Milwaukee, and Chicago. In 1991, nearly two years after the State of Wisconsin and the State of Illinois began contracting with Amtrak to provide the Hiawatha Service, Amtrak operated five daily Hiawatha Service trains (six on Fridays and Saturdays) in each direction between Milwaukee and Chicago and one daily Empire Builder train in each direction between Seattle/Portland, Minneapolis-St. Paul, Milwaukee, and Chicago. In 1972,

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

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

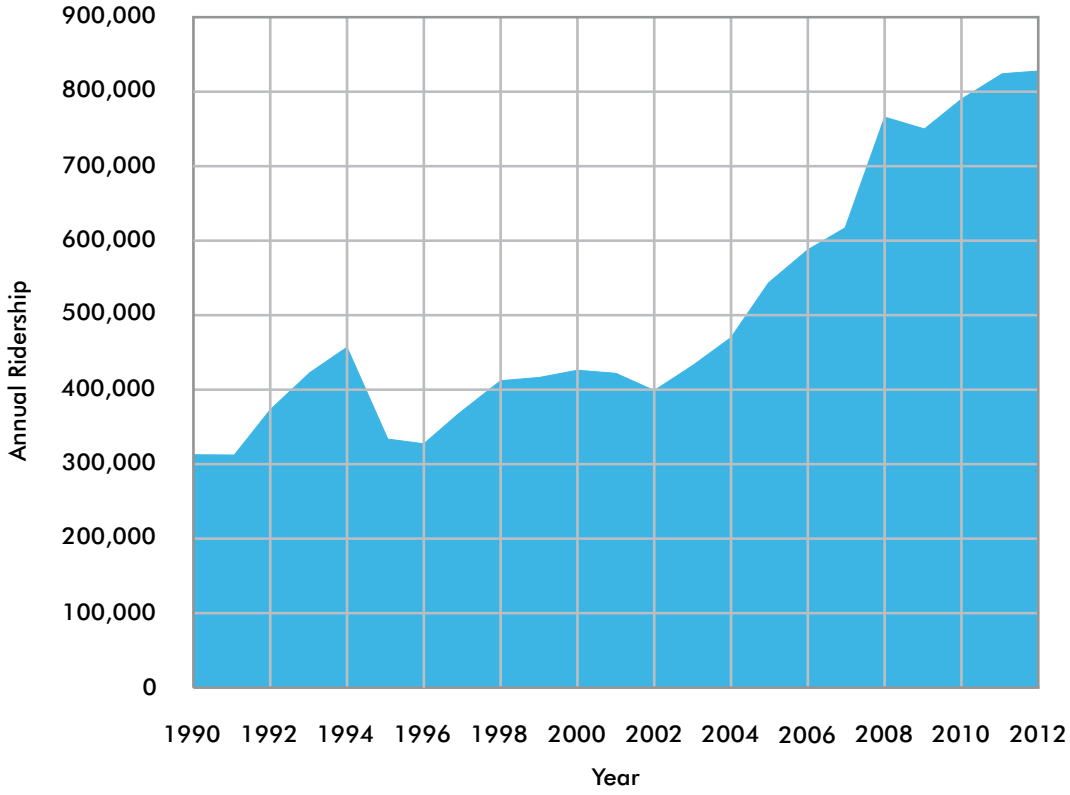
Amtrak Hiawatha Service Ridership

Ridership on Amtrak's Hiawatha Service between 1990 and 2012 is shown in Figure 4.11. Ridership on the Hiawatha Service increased from 312,404 in 1991 to 832,500 in 2012, a 166 percent increase. Following an increase in service from five daily trains (six on Fridays and Saturdays) in each direction to seven daily trains (six on Sundays) in October 1991, Hiawatha Service ridership increased from 312,404 in 1991 to 457,680 in 1994, a 47 percent increase. By 1996, Hiawatha Service ridership declined to 327,616, a 28 percent decrease, due in part to a significant reduction in service. In early 1995, as a result of an Amtrak system-wide restructuring and cost-cutting plan, Hiawatha Service fares were increased 50 percent and service was reduced from seven to four daily trains in each direction. By mid-1995 Hiawatha Service frequencies were increased to six daily trips per day (five on Sundays) in each direction. The Hiawatha Service maintained this level of service through 2002, and ridership increased from 327,616 in 1996 to 426,652 in 2000. Due in part to an economic recession, Hiawatha Service ridership declined slightly to 397,518 in 2002. Following a service increase to seven daily trips (six on Sundays) at the end of 2002, Hiawatha Service ridership increased from 397,518 in 2002 to 766,167 in 2008, a 93 percent increase. During this period, WisDOT added a new Hiawatha Service stop at General Mitchell International Airport in 2005, the Village of Sturtevant constructed a new station to replace its former station in 2006, and WisDOT opened the renovated Milwaukee Intermodal Station in downtown Milwaukee in 2007. Due in part to an economic recession, Hiawatha Service ridership declined to 741,780 in 2009. Hiawatha Service ridership steadily increased from 2010 to 2012, reaching 832,500 in 2012.

Commuter Rail

The only commuter rail service operated in the Region in 2012 was Metra's Union Pacific North Line between Kenosha and Chicago, with intermediate stops in the north shore suburbs of Northeastern Illinois. Metra is the commuter rail service division of the Regional Transportation Authority, which serves the six-county Northeastern Illinois Region. Service on this route was provided by the Union Pacific Railroad under contract with Metra and at no cost to Wisconsin residents. On weekdays in 2011, as in 2001 and 1993, this service consisted of nine commuter trains in each direction on weekdays between Kenosha and Chicago. In 1972, weekday commuter rail service in Southeastern Wisconsin consisted of nine trains in each direction between the City of Kenosha and Chicago; two trains in each direction between the City of Lake Geneva and

Figure 4.11
Annual Ridership on Amtrak Hiawatha Service: 1990-2012



Source: Amtrak

Chicago; one train in each direction between the Village of Walworth and Chicago; and one train in each direction between Watertown and Milwaukee, making intermediate stops throughout Waukesha and Milwaukee Counties. The Watertown-Milwaukee train—known as the Cannonball—was discontinued during 1972. In 1963, weekday commuter rail service consisted of the same trains operating in 1972 except that the Lake Geneva trains continued west to the Village of Williams Bay until their discontinuance in 1965.

Intercity Bus Services

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

bus trip in each direction between Milwaukee and Menomonie, including service to Green Bay, Wausau, and Eau Claire. Daily service by Lamers Bus Lines included one bus trip in each direction between Milwaukee and Wausau with intermediate stops in Stevens Point, Waupaca, New London, Appleton, Oshkosh, and Fond du Lac. In 2012, Megabus operated two round-trips daily from Milwaukee to Chicago and two round-trips daily from Milwaukee to Minneapolis. In 2012, Wisconsin Coach Lines operated 15 round-trips daily from Milwaukee to Chicago's O'Hare International Airport.

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

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

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

In 1963, there were four private intercity motor coach carriers providing interregional bus service to and from Southeastern Wisconsin. These included Greyhound Lines, Badger Coaches, Peoria-Rockford Bus Company, and Wisconsin Coach Lines. Greyhound provided by far the greatest amount

of service with Milwaukee serving as a regional network hub for routes radiating from Milwaukee to Chicago using two routes, along IH 94/USH 41 and through Racine; to Madison using three routes, along IH 94, through Oconomowoc and Watertown, and through Waukesha and Fort Atkinson; to Minneapolis-St. Paul and Seattle using two routes, through Columbus and Portage and through Madison; to Dubuque through Madison; to Stevens Point using two routes, through Hartford and Beaver Dam, and through Fond du Lac and Appleton; to Duluth-Superior via Fond du Lac and Stevens Point, and to Green Bay using three routes, through Fond du Lac, through Plymouth, and through Sheboygan. Many of the Green Bay buses continued north to various northern Wisconsin and Upper Michigan communities. Greyhound also operated a route between Chicago and Madison via Lake Geneva and Whitewater. Weekday scheduled bus frequencies varied from a low of one or two bus trips in each direction on some routes to a high of 23 bus trips in each direction between Milwaukee and Chicago. Badger Coaches operated between Milwaukee and Madison along IH 94 providing seven scheduled weekday bus trips in each direction. Peoria-Rockford operated between Milwaukee and Rockford via Whitewater and Janesville providing two scheduled weekday bus trips in each direction. Wisconsin Coach Lines operated three intercity bus routes radiating out of Milwaukee: Milwaukee to Fond du Lac via West Bend with two weekday trips in each direction; Milwaukee to Rockford, Illinois via Lake Geneva with four weekday trips in each direction; and Milwaukee to Watertown via Oconomowoc with three weekday trips in each direction.

Passenger and Automobile Ferry Service

In 2012, a passenger and car cross-lake ferry was operated by Lake Express between Milwaukee and Muskegon, Michigan, with two daily scheduled round-trips from May to October and an extra third round-trip in July and August. This service was initiated in 2004 (no cross-lake ferry service was provided to the Region from 1984 to 2003).

In 1972, cross-lake car ferry service on Lake Michigan was operated by the Chesapeake & Ohio Railway Company between Milwaukee and Ludington, Michigan. This service, which carried passengers, automobiles, and railway freight cars, had two scheduled weekday departures from each port during the summer season and was discontinued in 1984. In 1963, cross-lake ferry service serving Southeastern Wisconsin was operated across Lake Michigan by three carriers. Service between Milwaukee and Ludington, Michigan was operated by the Chesapeake & Ohio Railway Company and carried passengers, automobiles, and railroad freight cars on three scheduled round-trips per day. Service between Milwaukee and Muskegon, Michigan was provided by two carriers. The Wisconsin and Michigan Steamship Company, which operated the Milwaukee Clipper, carried passengers and automobiles on one scheduled daily round-trip; and the Grand Trunk Western Railway carried railroad freight cars and passengers on one to two regular daily round-trips, depending on railroad traffic.

Scheduled Air Carrier Service

Scheduled air carrier service to and from Milwaukee County's General Mitchell International Airport was provided by eight airline companies in 2012. These airline companies included: Air Canada, AirTran Airways, American Airlines, Delta, Frontier, Southwest Airlines, United Airlines, and US Airways. In 2012, these carriers provided over 800 scheduled nonstop weekday flights between Mitchell International and 36 other cities or metropolitan areas. Cities with 10 or more nonstop weekday flights to or from Milwaukee included: Atlanta; Charlotte; Chicago; Dallas-Fort Worth;

Table 4.14
Number of Interregional Person Trips on an Average Weekday on Intercity Modes in the Region: 1963, 1972, 1993, 2001, and 2011

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

Mode	2001 Number	2001 Percent of Total	2011 Number	2011 Percent of Total
Intercity Motor Bus	1,200	0.3	1,600	0.4
Intercity Rail	1,900	0.4	2,800	0.6
Cross-Lake Car Ferry	--	--	300	0.1
Commercial Air Carrier	16,400	4.0	18,800	4.4
Personal Vehicle	394,900	95.3	403,800	94.5
Total	414,400	100.0	427,300	100.0

[a] *Survey taken in 1971.*

[b] *Survey taken in 1989.*

[c] *Survey taken in 1991.*

Source: SEWRPC

Minneapolis-St. Paul; Philadelphia; New York; and Washington, DC. In comparison, six airline companies provided flights from Milwaukee in 1971, increasing to 16 in 1989 and 19 in 2001. These airlines provided nonstop service to 32 cities in 1971, 33 cities in 1989, and 50 cities in 2001.

Interregional Person Trips

Table 4.14 displays an estimate of existing and historic interregional person trips on an average weekday, including travel on interregional public transit modes of intercity rail and bus, commercial air carrier, and car ferry, and also travel by personal vehicle. Interregional travel by personal vehicle has consistently accounted for about 95 percent of total interregional travel within Southeastern Wisconsin over the past 50 years.

4.4 PARK-RIDE FACILITIES

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

Park-Ride Lots Served by Transit

In 2012, commuter or express transit bus service was provided to 39 park-ride lots within the Region, as shown on Map 4.17 and in Table 4.15. These intermodal parking facilities provided 6,875 parking spaces. The utilization of parking spaces at all park-ride lots served by transit in 2012 ranged from a high of 134 percent at the IH 43 and CTH C park-ride lot in the Town of Grafton to a low of 18 percent at the West Loomis Road park-ride lot in the

Map 4.17
Existing Park-Ride Lots and Transit Stations Located in the Region

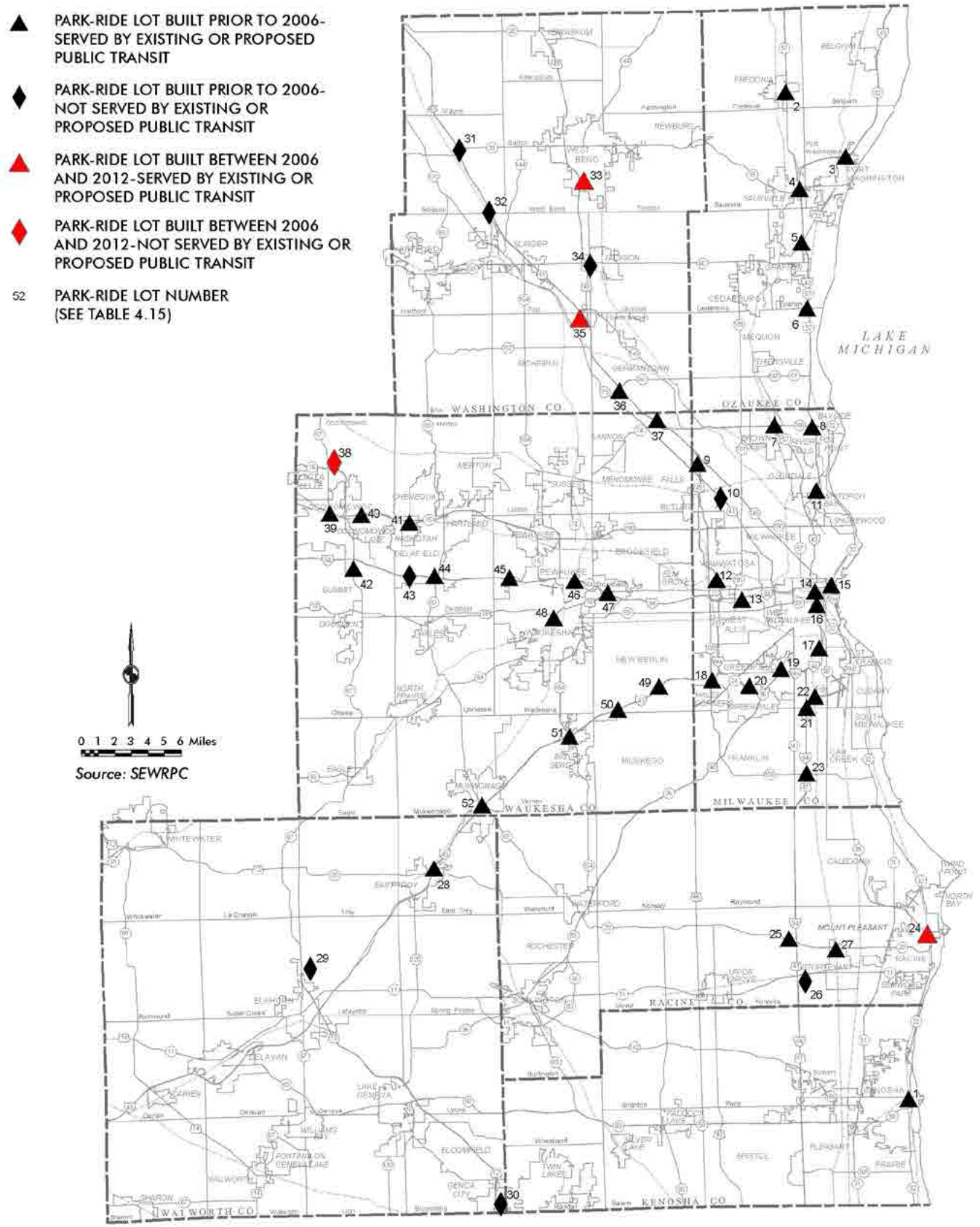


Table 4.15
Average Weekday Use of Park-Ride Lots and Transit Stations: 2012

No. On Map 4.17	Location	Served by Transit	Not Served by Transit	Shared Use	Available Parking Spaces	Autos Parked on an Average Weekday: 2012	Percent of Spaces Used
Kenosha County							
1	Metra Station (Kenosha)	X		X	145	--[a]	--[a]
Ozaukee County							
2	STH 57 and CTH H (Fredonia)		X		60	10	17
3	IH 43 and STH 32-CTH H (Port Washington)	X			50	21	42
4	Wal-Mart (Saukville)	X		X	50	13	26
5	IH 43 and CTH V (Grafton)	X			85	30	35
6	IH 43 and CTH C (Grafton)	X			65	87	134
Milwaukee County							
7	Kohl's (Brown Deer)	X		X	130	57	44
8	Brown Deer (River Hills)	X			360	98	27
9	W. Good Hope Road (Milwaukee)	X			135	36	27
10	Timmerman Field (Milwaukee)		X		140	6	4
11	North Shore (Glendale)	X			195	98	50
12	W. Watertown Plank Road (Wauwatosa)	X			240	90	38
13	State Fair Park (Milwaukee)	X			285	186	65
14	Downtown Milwaukee Intermodal Amtrak Station	X			240	--[a]	--[a]
15	Milwaukee County Transit System Downtown Transit Center (Milwaukee)	X		X	--[b]	--[a]	--[a]
16	National Avenue and IH 43/94 (Milwaukee)	X		X	55	--[a]	--[a]
17	W. Holt Avenue (Milwaukee)	X			235	87	37
18	Whitnall (Hales Corners)	X			360	205	57
19	W. Loomis Road (Greenfield)	X			410	75	18
20	Southridge (Greendale)	X		X	170	57	34
21	W. College Avenue (Milwaukee)	X			650	257	40
22	Mitchell Airport Amtrak Station (Milwaukee)	X			280	178	64
23	W. Ryan Road (Oak Creek)	X			305	164	54
Racine County							
24	Racine Metro Transit Center (Racine)	X			120	--[a]	--[a]
25	IH 94 and STH 20 (Ives Grove)	X			75	65	87
26	IH 94 and STH 11 (Mount Pleasant)		X		60	48	80
27	Sturtevant Amtrak Station (Sturtevant)	X			180	--[a]	
Walworth County							
28	East Troy Municipal Airport (East Troy)		X		40	7	18
29	USH 12 and STH 67 (Elkhorn)		X		40	13	33
30	USH 12 and CTH P (Genoa City)		X		40	10	25
Washington County							
31	USH 41 and STH 33 (Allenton)		X		35	48	137
32	USH 41 and CTH K (Addison)		X		50	11	22
33	USH 45 and Paradise Drive (West Bend)	X			100	123	123
34	STH 60 and CTH P (Jackson)		X		30	10	33
35	USH 41 and Pioneer Road (Richfield)	X			280	75	27
36	USH 41 and Lannon Road (Germantown)	X			155	132	85

Table continued on next page.

Table 4.15 (Continued)

No. On Map 4.17	Location	Served by Transit	Not Served by Transit	Shared Use	Available Parking Spaces	Autos Parked on an Average Weekday: 2012	Percent of Spaces Used
Waukesha County							
37	Pilgrim Road (Menomonee Falls)	X			70	36	51
38	STH 67 and Lang Road (Oconomowoc)		X		35	6	17
39	Collins Street Parking Lot (Oconomowoc)	X		X	--[b]	--[a]	--[a]
40	STH 16 and CTH P (Oconomowoc)	X			45	9	20
41	STH 16 and CTH C (Nashotah)	X			60	13	22
42	STH 67 and CTH DR (Summit)	X			100	56	56
43	IH 94 and CTH C (Delafield)		X		30	25	83
44	IH 94 and STH 83 (Delafield)	X			200	70	35
45	IH 94 and CTH G/CTH SS (Pewaukee)	X			245	69	28
46	IH 94 and CTH F (Pewaukee)		X		85	35	41
47	Goerke's Corners (Brookfield)	X			315	216	69
48	Waukesha Metro Transit Downtown Transit Center (Waukesha)	X		X	--[b]	--[a]	--[a]
49	IH 43 and Moorland Road (New Berlin)	X			175	33	19
50	IH 43 and CTH Y (New Berlin)		X		45	19	42
51	IH 43 and STH 164 (Big Bend)	X			145	54	37
52	IH 43 and STH 83 (Mukwonago)	X			165	66	40
	Total	39	13	8	7,565	3,004	40

[a] *Data not available.*

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

Source: SEWRPC

City of Greenfield. In addition to the IH 43 and CTH C site, other park-ride lots served by transit with utilization rates greater than 60 percent include: State Fair Park in the City of Milwaukee; the Mitchell Airport Amtrak station; IH 94 and STH 20 in the Town of Yorkville; USH 45 and Paradise Drive in the City of West Bend; USH 45 and Lannon Road in the Village of Germantown; and IH 94 at CTH Y (Goerke's Corners) in the Town of Brookfield. On an average weekday during 2012, 40 percent of the 6,875 parking spaces at park-ride lots served by transit were in use.

Park-Ride Lots Not Served by Transit

In 2012, there were 13 park-ride lots not served by transit located within the Region containing 690 parking spaces as shown on Map 4.17 and in Table 4.15. The utilization of parking spaces on an average weekday at the individual park-ride lots not served by transit varied from a high of 137 percent at the USH 41 and STH 33 park-ride lot in Allenton in the Town of Addison to a low of 4 percent at the Timmerman Field park-ride lot in the City of Milwaukee. In addition to the US 41 and STH 33 site, other park-ride lots not served by transit with average weekday utilization rates greater than 60 percent included IH 94 and STH 11 in the Village of Mount Pleasant and IH 94 and CTH C in the City of Delafield. On an average weekday during 2012, 36 percent of the 690 parking spaces at park-ride lots not served by transit were in use.

4.5 BICYCLE AND PEDESTRIAN FACILITIES

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

Accommodation of Bicycles on the Arterial Street and Highway System

On arterial streets and highways with a rural cross-section, bicycles may be accommodated with a four-foot paved shoulder and six-foot gravel shoulder on a two traffic-lane facility, and with an eight-foot paved shoulder on a four-traffic lane facility. On arterial streets with an urban cross-section, bicycles may be accommodated with bicycle lanes five to six feet in width, or with a widened outside lane of 14 feet. Accommodations may also be provided on urban and rural arterials with parallel, physically separate paths of eight to 12 feet in width (five to six feet for one-way paths) and ten feet of separation from the travel lanes. In addition, although not identified as an accommodation in the 2035 regional transportation plan because none existed when the plan was developed, enhanced bicycle facilities—such as protected bicycle lanes, buffered bicycle lanes, and green lanes—represent a newer type of bicycle accommodation.[35] Map 4.18 identifies those 882 miles of arterial streets and highways that provided accommodation through paved shoulders, bicycle lanes, enhanced bicycle facilities, or separate paths in 2014. Data are not available to identify those urban arterials with outside lanes of 14 feet in width which also accommodate bicycles.

Off-Street Bicycle Paths

Map 4.19 displays the existing 283 miles of regional off-street bicycle paths (including 28 miles of paths that were not previously in the regional transportation plan) largely developed within former railway right-of-ways and parkway corridors in 2014. 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 provide particularly safe and aesthetically attractive routes with separation from motor vehicle traffic.

4.6 TRANSPORTATION MANAGEMENT AND OPERATIONS SYSTEMS

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

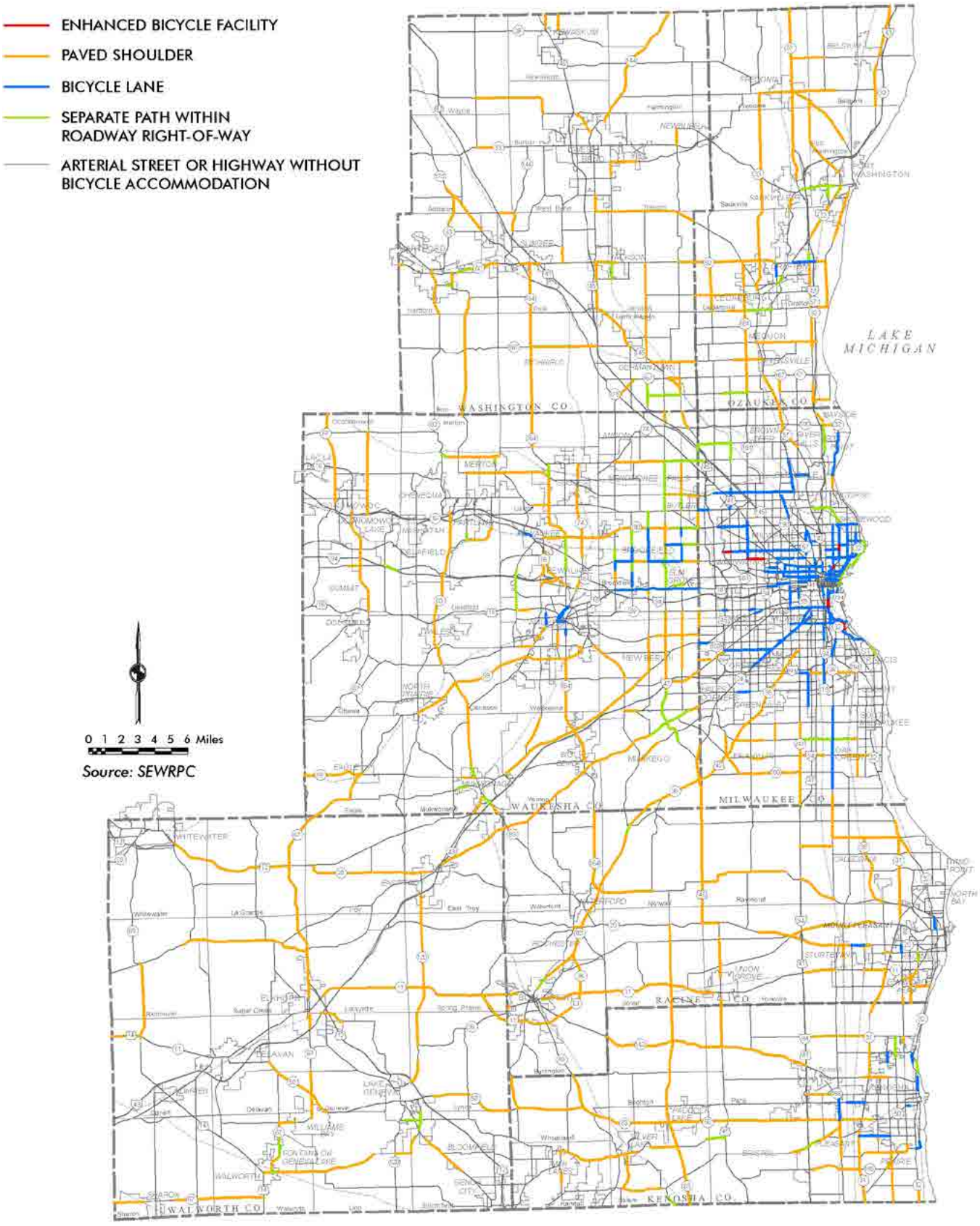
Freeway Traffic Management and Operation System

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

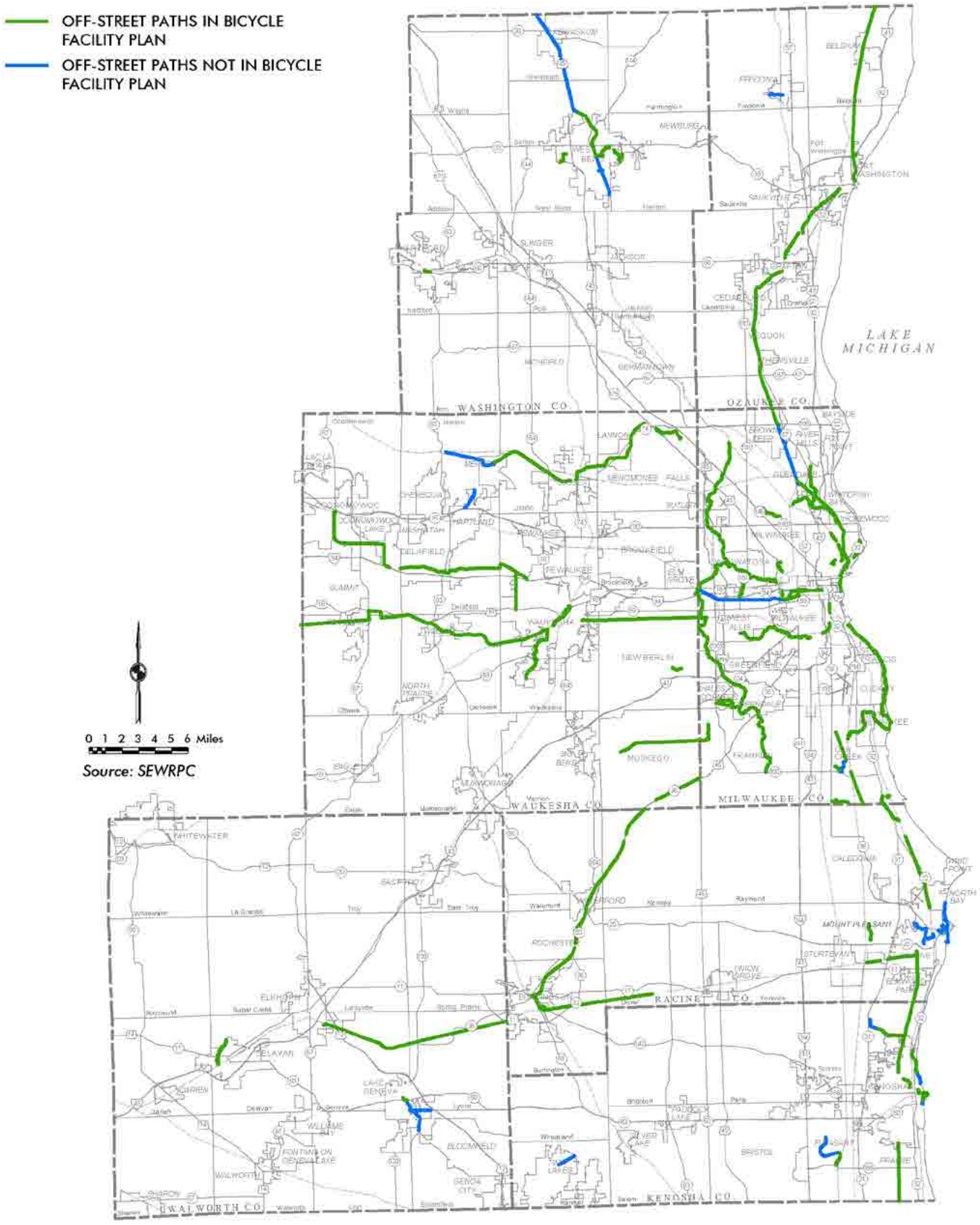
Traffic detectors measure the speed, volume, and density of freeway traffic. These data are monitored at WisDOT's State Traffic Operation Center (TOC) in Milwaukee for disruptions in traffic flow and for use in determining the operation of the ramp meter system in the Region. Congestion information derived from the speed, volume, and density data collected via the detectors is mapped, and may be viewed by the traveling public through WisDOT's

[35] *In Volumes II and III of this report, the definition for enhanced bicycle facilities was expanded to include separate paths within the road right-of-way.*

Map 4.18
Accommodation of Bicycles on the Surface Arterial Street and Highway System: 2014



Map 4.19
Existing Off-Street Bicycle Paths: 2014



website. In 2013, the traffic detectors were located throughout the Milwaukee area freeway system, including the freeways in Milwaukee County, IH 94 and portions of IH 43 and STH 16 in Waukesha County, and portions of IH 43 in Ozaukee County, and on the freeways in Racine and Kenosha Counties. The spacing of these traffic detectors is about one-half mile on most of the freeways in Milwaukee County and on portions of IH 94 in eastern Waukesha County, and about one to two miles on the remaining freeway segments.

In 2013, 121 freeway on-ramps were equipped with ramp meters and attendant traffic detectors in Southeastern Wisconsin. The metered on-ramps are located adjacent to and upstream of freeway segments that experience traffic congestion during the morning and evening peak-traffic periods. In 2013, preferential access was provided at 51 freeway on-ramps to high-occupancy vehicles.[36] Map 4.20 and Table 4.16 indicate the location and ramp meter type provided on the freeway system in Southeastern Wisconsin.

Variable message signs provide real-time information to travelers about downstream freeway traffic conditions. WisDOT uses the variable message signs to display current travel times to selected areas and to display information about lane and ramp closures as well as where travel delays begin and end. In the event of a child abduction, the variable message signs are also used to display an AMBER alert. In 2013, there were 31 variable message signs at fixed locations on the freeway system in Southeastern Wisconsin as shown on Map 4.21 and in Table 4.17, as well as 13 portable variable message signs used primarily for special events and incident management.

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

In 2013, 159 closed-circuit television cameras (see Map 4.21 and Table 4.17) provided live video of traffic conditions. The video provided by these cameras allows for the identification and confirmation of congested areas and incident locations. Video is monitored at the TOC in Milwaukee. Video is supplied to some emergency response agencies so that their dispatchers can provide personnel with incident locations and information. WisDOT also provides some of its camera images to the media and to its website for viewing by the general public.

Freeway service patrols assist disabled motorists with specially equipped vehicles. When freeway service patrols encounter severe incidents, they have the appropriate communication equipment to ensure that the appropriate personnel and equipment may be dispatched to the scene, prior to arrival by a first responder. In 2013, there were freeway service patrols in Milwaukee County (see Map 4.22 and Table 4.18). The patrol service is operated by the Milwaukee County Sheriff's Department and consists of a special fleet of two vehicles dedicated to handling and clearing incidents on weekdays from 6:00 a.m. to 10:00 p.m. In previous years, patrols were also used in Kenosha, Racine, and Waukesha Counties, but those services were eliminated in 2013 due to budgetary reasons. Temporary service patrols were also operated in

[36] *In Southeastern Wisconsin, a high-occupancy vehicle is defined as a transit vehicle or passenger vehicle with a minimum of two occupants.*

Map 4.20
Locations of Ramp Meters on the Existing Freeway System in the Region: 2013

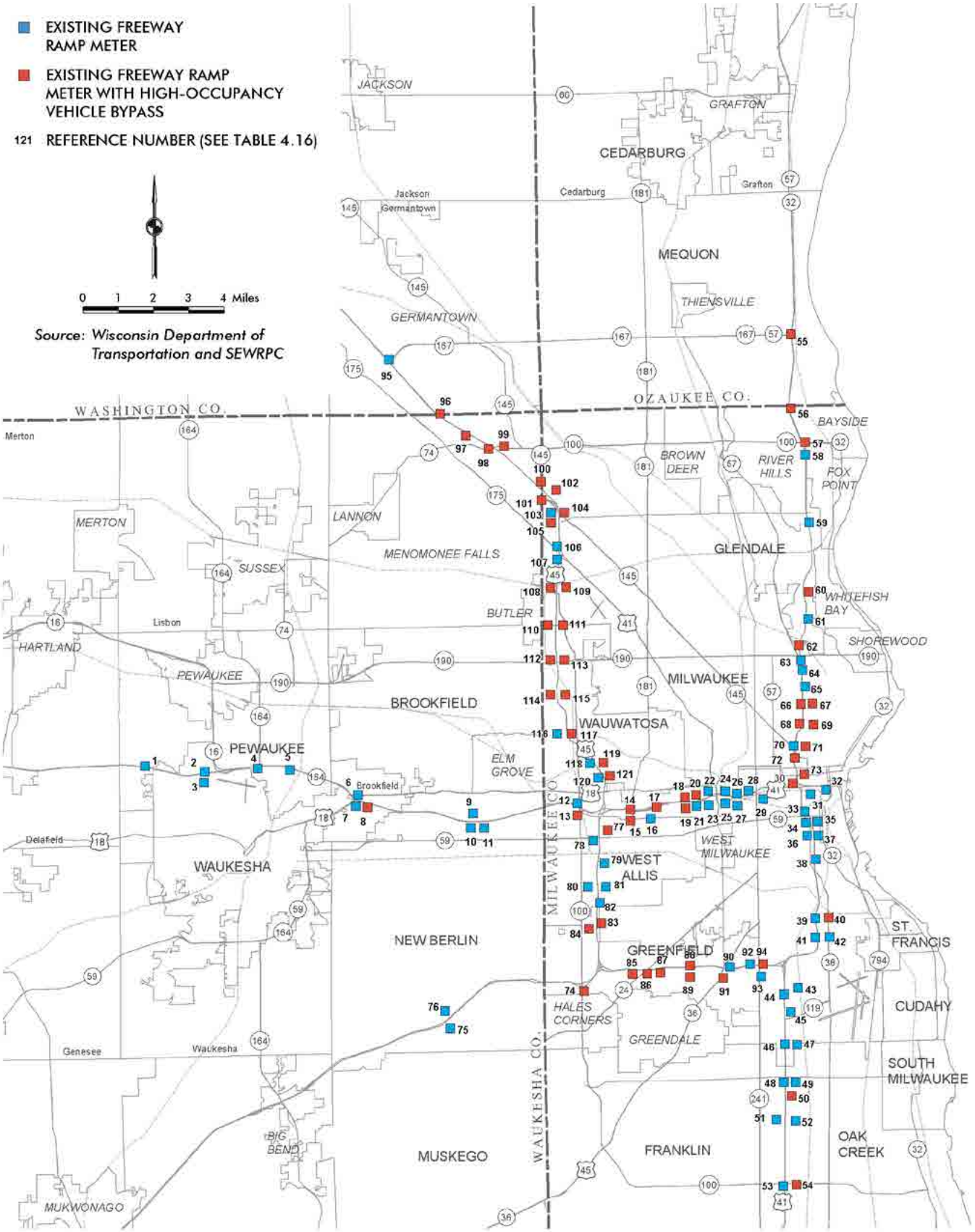


Table 4.16
Locations of Ramp Meters on the Existing Freeway System in the Region: 2013

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

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

Table continued on next page.

Table 4.16 (Continued)

Reference Number[a]	Ramp Meter Location
USH 45 Corridor (Continued)	
105	Eastbound CTH PP (W. Good Hope Road) to Southbound USH 45
106	Northbound at USH 41 (W. Appleton Avenue)
107	Southbound at STH 175 (W. Appleton Avenue)
108	Southbound at CTH E (W. Silver Spring Drive)
109	Northbound at CTH E (W. Silver Spring Drive)
110	Southbound at CTH EE (W. Hampton Avenue)
111	Northbound at CTH EE (W. Hampton Avenue)
112	Southbound at STH 190 (W. Capitol Drive)
113	Northbound at STH 190 (W. Capitol Drive)
114	Southbound at W. Burleigh Street
115	Northbound at W. Burleigh Street
116	Southbound at W. North Avenue
117	Northbound at W. North Avenue
118	Southbound at Watertown Plank Road
119	Northbound at Watertown Plank Road
120	Southbound at N. 97th Street and W. Wisconsin Avenue
121	Northbound at W. Wisconsin Avenue

[a] *See Map 4.20.*

Source: Wisconsin Department of Transportation and SEWRPC

addition to the Milwaukee County patrol services along segments of freeway that were under construction during 2013, such as the Hoan bridge, portions of IH 94 in Kenosha County, and segments of IH 94 and USH 45 as part of the Zoo Interchange project.

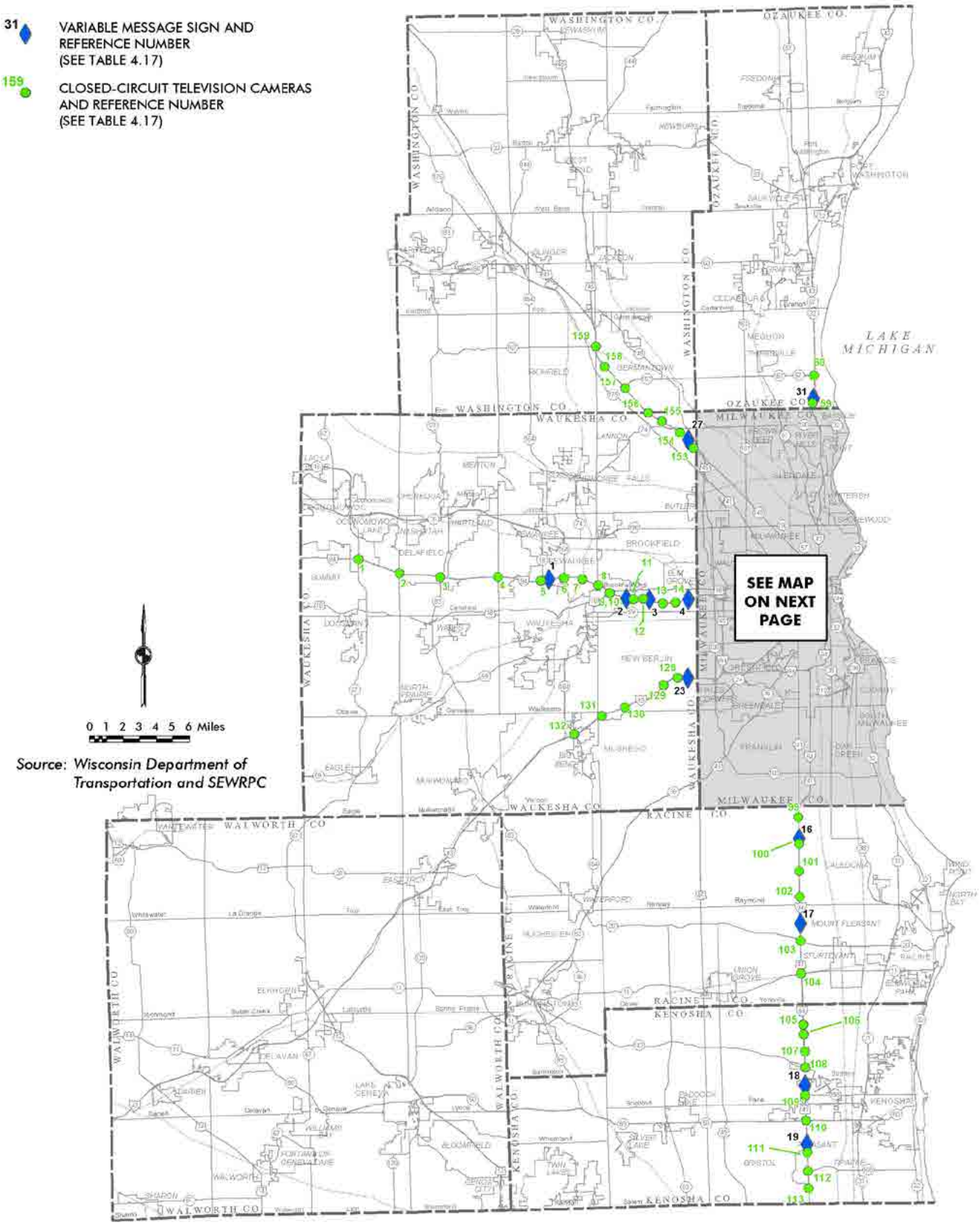
Crash investigation sites are designated safe zones for distressed motorists to relocate to if they are involved in a crash or an incident on the freeway. In 2013, there were 32 crash investigation sites (see Map 4.22 and Table 4.18) on the freeway system in Southeastern Wisconsin. These sites are intended for use by motorists involved in an incident to exchange insurance information or to make emergency repairs to their vehicle following a minor collision or breakdown. These sites are also used by the freeway service patrols to relocate the distressed motorists they assist.

Enhanced reference markers are designed to save time in identifying locations of disabled motorists to improve emergency response times to highway incidents. Enhanced reference markers can improve emergency response times, improve traffic incident clearance times, reduce crash related delays, and reduce the number of secondary crashes. In Southeastern Wisconsin, as of 2013, enhanced reference markers have been installed in the freeway median at each one-tenth or two-tenths of a mile on IH 94 through Waukesha, Milwaukee, Racine, and Kenosha Counties; on USH 45 from the Zoo Interchange in Milwaukee County to the Waukesha-Washington County line; on IH 43 in Waukesha County and from the Marquette Interchange to North Avenue in Milwaukee County; and on IH 794 in Milwaukee County.

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

The day-to-day operation and management of the Southeastern Wisconsin regional freeway system is conducted at the TOC in Milwaukee. The TOC staff coordinates the freeway lane and ramp closures in Southeastern Wisconsin, including construction projects and county maintenance work. Additionally, WisDOT works closely with local law enforcement, media, emergency responders, tow operators, transit operators, municipal governments, and others through the Traffic Incident Management Enhancement (TIME)

Map 4.21
Locations of Variable Message Signs and Closed-Circuit Television Cameras on the Existing Freeway System in the Region: 2013



Map 4.21 (Continued)

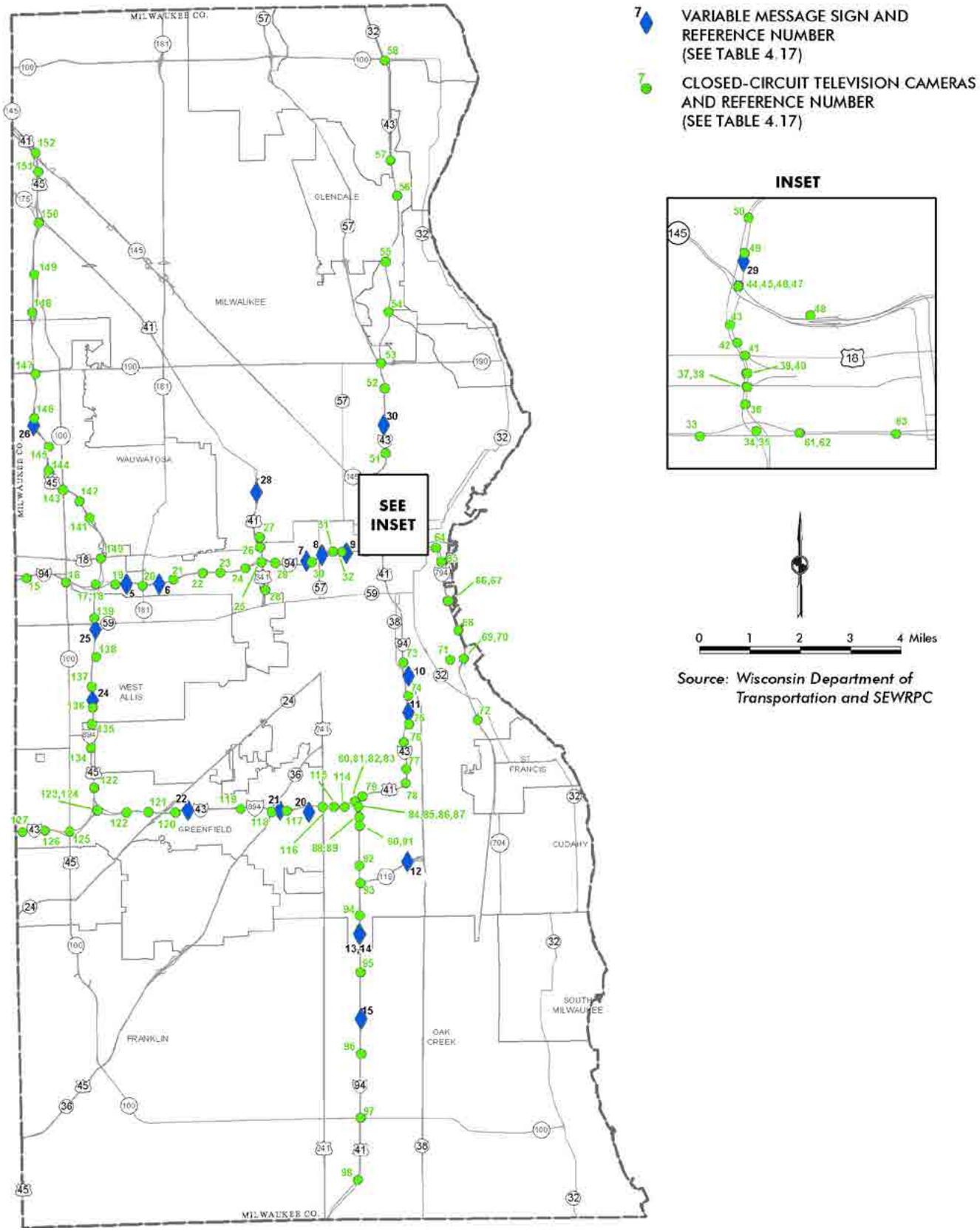


Table 4.17
Locations of Variable Message Signs and Closed-Circuit Television Cameras on the Existing Freeway System in the Region: 2013

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

Reference Number[a]	Closed-Circuit Television Camera Locations
1	IH 94 at STH 67 (Summit Avenue)
2	IH 94 at CTH P (N. Sawyer Road)
3	IH 94 at STH 83
4	IH 94 at CTH SS
5	IH 94 at CTH T
6	IH 94 at STH 164 (Pewaukee Road)
7	IH 94 at STH 74/CTH F
8	IH 94 at Springdale Road
9	IH 94 at USH 18 (Blue Mound Road)
10	IH 94 at Moorland Road
11	IH 94 west of N. Brookfield Road
12	IH 94 at Calhoun Road
13	IH 94 at Sunnyslope Road
14	IH 94 at Elm Grove Road
15	IH 94 at S. 121st Street
16	IH 94 at STH 100 (N. 108th Street)
17	IH 94 at IH 894 and USH 45 (Zoo Interchange) Upper
18	IH 94 at IH 894 and USH 45 (Zoo Interchange) Lower
19	IH 94 at S. 92nd Street
20	IH 94 at STH 181 (N. 84th Street)
21	IH 94 at S. 76th Street
22	IH 94 at N. 68th Street
23	IH 94 at Hawley Road
24	IH 94 at Mitchell Boulevard
25	IH 94 at USH 41
26	USH 41 at USH 18 (W. Bluemound Road)
27	USH 41 at W. Wells Street
28	STH 341 (Miller Park Way) at Stadium Pedestrian Bridge
29	IH 94 at N. 39th Street
30	IH 94 at N. 30th Street
31	IH 94 at N. 25th Street
32	IH 94 at N. 20th Street
33	IH 94 at N. 13th Street
34	IH 43 Northwest Ramp Northwest
35	IH 43 Northwest Ramp North
36	IH 43 at W. Wisconsin Avenue
37	IH 43 Southbound at W. Wells Street
38	IH 43 at Northbound at W. Wells Street
39	IH 43 at W. Kilbourn Avenue Tunnel Exit
40	IH 43 at W. Kilbourn Avenue Tunnel Entrance
41	IH 43 at STH 18 (W. State Street)
42	IH 43 at W. Highland Avenue
43	IH 43 at W. Juneau Avenue
44	IH 43 at STH 145 SW (W. Fond du Lac Avenue)
45	IH 43 at STH 145 E (W. Fond du Lac Avenue)
46	IH 43 at STH 145 NE (W. Fond du Lac Avenue)
47	IH 43 at STH 145 W (W. Fond du Lac Avenue)
48	USH 145 at McKinley Avenue
49	IH 43 at W. Walnut Street
50	IH 43 at W. Brown Street
51	IH 43 at W. Wright Street
52	IH 43 at W. Keefe Avenue
53	IH 43 at STH 190 (W. Capitol Drive)
54	IH 43 at W. Hampton Avenue
55	IH 43 at W. Silver Spring Drive
56	IH 43 at W. Daphne Road
57	IH 43 at CTH PP (W. Good Hope Road)
58	IH 43 at STH 100 (W. Brown Deer Road)
59	IH 43 at County Line Road
60	IH 43 at STH 167 and STH 57 (Mequon Road)
61	IH 794 at N. 7th Street (James Lovell Street) Upper
62	IH 794 at N. 7th Street (James Lovell Street) Lower
63	IH 794 at N. 2nd Street/Plankinton Avenue
64	IH 794 at Lincoln Memorial Drive (Lake Interchange)
65	IH 794 at north end of Daniel W. Hoan Bridge
66	IH 794 at south end of Daniel W. Hoan Bridge (Upper)
67	IH 794 at south end of Daniel W. Hoan Bridge (Lower)
68	IH 794 at Lake Pier
69	IH 794 at S. Carferry Drive (Upper)
70	IH 794 at S. Carferry Drive (Lower)

Table continued on next page.

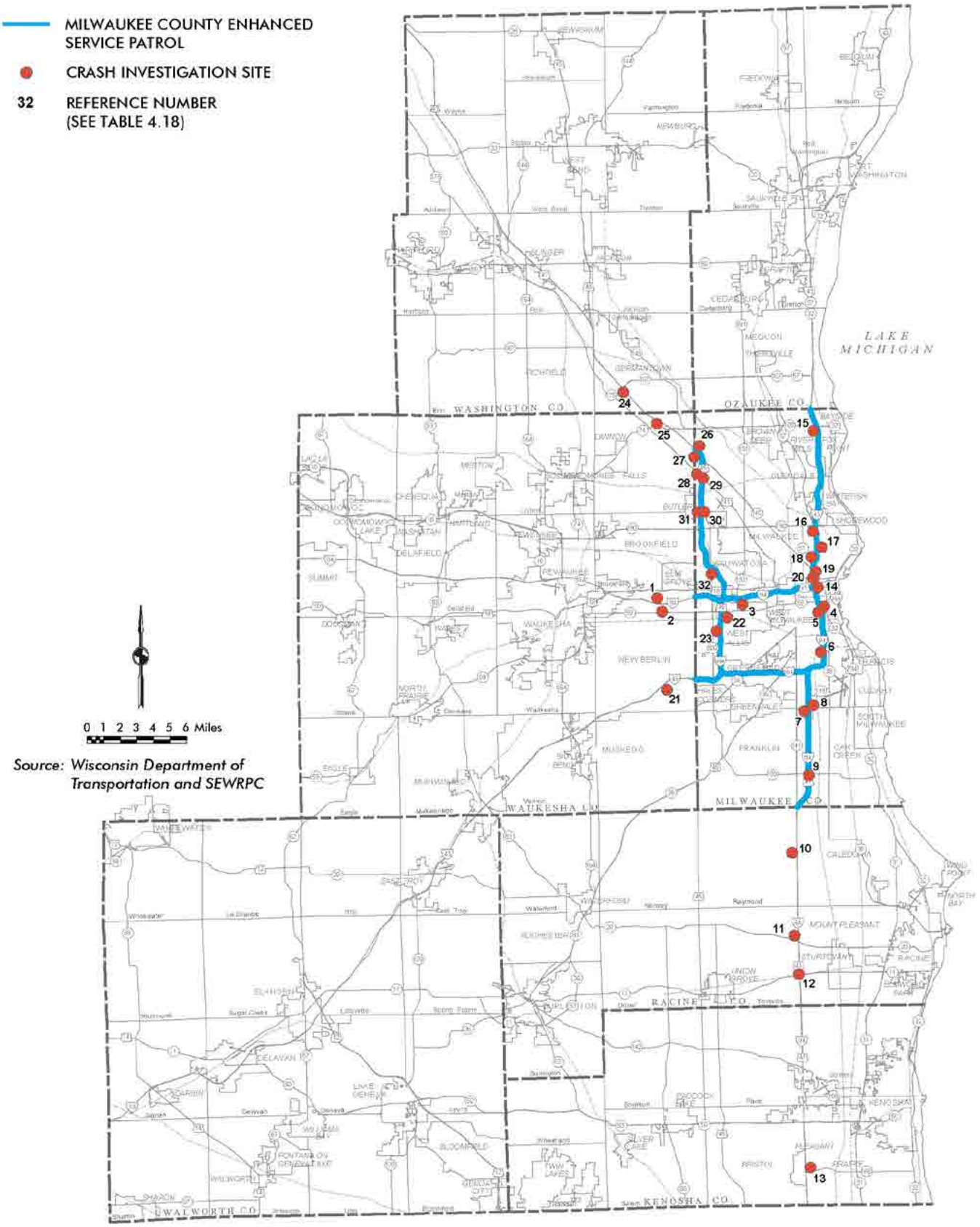
Table 4.17 (Continued)

Reference Number[a]	Closed-Circuit Television Camera Locations (continued)	Reference Number[a]	Closed-Circuit Television Camera Locations (continued)
71	IH 794 at E. Bay Street	119	IH 894 and IH 43 at S. 60th Street
72	STH 794 at E. Oklahoma Avenue	120	IH 894 and IH 43 at CTH U (S. 76th Street)
73	IH 94 and IH 43 at W. Mitchell Street	121	IH 894 and IH 43 at S. 84th Street
74	IH 94 and IH 43 at STH 38 (Chase Avenue)	122	IH 894 and IH 43 at CTH N (S. 92nd Street)
75	IH 94 and IH 43 at W. Oklahoma Avenue	123	IH 43 and IH 94 at Mitchell Interchange (NE)
76	IH 94 and IH 43 at W. Holt Avenue	124	IH 43 at Mitchell Interchange (SW)
77	IH 94 and IH 43 at W. Howard Avenue	125	IH 43 at STH 100 (S. 108th Street)
78	IH 94 and IH 43 at W. Plainfield Avenue	126	IH 43 at S. 116th Street
79	IH 894 and IH 43 at 19th Street	127	IH 43 at S. 124th Street
80	IH 94 West-North Ramp #1	128	IH 43 at S. Sunnyslope Road
81	IH 94 West-North Ramp #2	129	IH 43 at S. Moorland Road
82	IH 94 North-West Ramp #1	130	IH 43 at CTH Y (S. Racine Avenue)
83	IH 94 North-West Ramp #2	131	IH 43 at Crowbar Road
84	IH 43 East Entrance Tunnel	132	IH 43 at STH 164 (Big Bend Road)
85	IH 43 East Exit Tunnel	133	IH 894 and USH 45 at Cold Spring Road
86	IH 43 West Entrance Tunnel	134	IH 894 and USH 45 at CTH T (W. Beloit Road)
87	IH 43 West Exit Tunnel	135	IH 894 and USH 45 at CTH NN (W. Oklahoma Avenue)
88	IH 94 and IH 894 South-West Exit Tunnel		
89	IH 94 and IH 894 South-West Entrance Tunnel		
90	IH 94 at CTH Y (W. Layton Avenue)	136	IH 894 and USH 45 at W. Cleveland Avenue
91	IH 94 at CTH Y (W. Layton Avenue) Tunnel Signs	137	IH 894 and USH 45 at W. Lincoln Avenue
		138	IH 894 and USH 45 at STH 59 (W. National Avenue)
92	IH 94 at Grange Avenue		
93	IH 94 at STH 119 (Airport Interchange)	139	IH 894 and USH 45 at STH 59 (W. Greenfield Avenue)
94	IH 94 at CTH ZZ (W. College Avenue)		
95	IH 94 at CTH BB (W. Rawson Avenue)	140	USH 45 at USH 18 (W. Bluemound Road)
96	IH 94 at W. Drexel Avenue	141	USH 45 at W. Watertown Plank Road
97	IH 94 at S. STH 100 (W. Ryan Road)	142	USH 45 at Swan Boulevard
98	IH 94 at W. Oakwood Road	143	USH 45 at STH 100 (N. Mayfair Road)
99	IH 94 at Seven Mile Road	144	USH 45 at W. North Avenue
100	IH 94 at CTH G	145	USH 45 at W. Center Street
101	IH 94 at CTH K	146	USH 45 at W. Burleigh Road
102	IH 94 at CTH E (W. 27th Street)	147	USH 45 at STH 190 (W. Capitol Drive)
103	IH 94 at STH 20 (Washington Avenue)	148	USH 45 at W. Hampton Avenue
104	IH 94 at STH 11 (W. Durand Avenue)	149	USH 45 at CTH E (W. Silver Spring Drive)
105	IH 94 at CTH A (W. 7th Street)	150	USH 45 and STH 100 at USH 41 (W. Appleton Avenue)
106	IH 94 at CTH KR (County Line Road)		
107	IH 94 at CTH E (W. 12th Street)	151	USH 41 and USH 45 at CTH PP (W. Good Hope Road)
108	IH 94 at STH 142 (Burlington Road)	152	USH 41 and USH 45 at W. Park Place
109	IH 94 at STH 158 (W. 52nd Street)	153	USH 41 and USH 45 at Waukesha—Milwaukee County Line (W. 124th Street)
110	IH 94 at STH 50 (W. 75th Street)		
111	IH 94 at CTH C (Spring Street)	154	USH 41 and USH 45 at Leon Road
112	IH 94 at STH 165 (W. 104th Street)	155	USH 41 and USH 45 at Pilgrim Road
113	IH 94 at CTH ML (Springbrook Road)	156	USH 41 and USH 45 at CTH Q (Washington—Waukesha County Line Road)
114	IH 894 and IH 43 at S. 20th Street		
115	IH 894 and IH 43 at S. 22nd Street Tunnel Signs	157	USH 41 and USH 45 at STH 167 (Lannon Road)
116	IH 894 and IH 43 at USH 41 (S. 27th Street)	158	USH 41 and USH 45 at CTH F (Freistadt Road)
117	IH 894 and IH 43 at S. 35th Street		
118	IH 894 and IH 43 at STH 36 (W. Loomis Road)	159	USH 41 and USH 45 at STH 167 (Holy Hill Road)

[a] *See Map 4.21.*

Source: SEWRPC

Map 4.22
Extent of Freeway Service Patrols and Location of Crash Investigation Sites Along the Existing Freeway System in the Region: 2013



Source: Wisconsin Department of Transportation and SEWRPC

Table 4.18
Locations of Crash Investigation Sites Along the Existing Freeway System in the Region: 2013

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

[a] *See Map 4.22.*

Source: Wisconsin Department of Transportation and SEWRPC

program. The TIME program's goals are to improve and enhance freeway incident management, improve freeway safety, and enhance the quality and efficiency of freeway travel.

Surface Arterial Street and Highway Traffic Management and Operation Systems

In 2013, the surface arterial street and highway traffic management systems in Southeastern Wisconsin consisted mainly of coordinated traffic signal systems, emergency vehicle preemption, closed-circuit television cameras, and variable message signs.

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

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

In 2013, 22 closed-circuit television cameras (see Map 4.23 and Table 4.19) provided live video of traffic conditions on the surface arterial street and highway system. The video provided by these cameras allows for the identification and confirmation of congested areas and incident locations. Video is monitored at the TOC in Milwaukee. Video is supplied to some emergency response agencies so that their dispatchers can provide personnel with incident locations and information.

Variable message signs provide real-time information to travelers about upcoming traffic conditions. WisDOT uses the variable message signs to display current travel times to selected areas and to display information about lane closures as well as where travel delays begin and end. In the event of a child abduction, the variable message signs are also used to display an AMBER alert. In 2013, there were 19 variable message signs on the surface arterial street and highway system in Southeastern Wisconsin, all located near freeway access points, as shown on Map 4.23 and in Table 4.19.

Public Transit Operation and Management Systems

In 2013, public transit operation and management systems were utilized by the following transit systems in Southeastern Wisconsin: MCTS, the City of Waukesha Metro Transit System, Waukesha County Transit, the Kenosha-Racine-Milwaukee commuter bus, the Racine Belle Urban System, the Ozaukee County Express, the Ozaukee County Shared-Ride Taxi service, and the Washington County Shared-Ride Taxi service. MCTS utilizes a computer-aided dispatch and automatic vehicle location (CAD/AVL) system. The CAD/AVL system enhances communication between bus operators and dispatchers and allows MCTS to use global positioning technology to provide updated location information of transit vehicles to dispatchers, and can be used to check the on-time performance of the system. The Waukesha Metro Transit CAD/AVL system was operational beginning in June 2004. MCTS and Waukesha Metro Transit also utilize designated shoulder lanes on USH 18 (Bluemound Road) in Waukesha County between Barker Road and the Milwaukee-Waukesha County line. These shoulder lanes are designated as through lanes for transit vehicles only, and may only be accessed by passenger vehicles for right-turning movements or during distress. The Racine Belle Urban System began using a CAD/AVL system in 2004. Waukesha County Transit's express bus service and the Kenosha-Racine-Milwaukee commuter bus service are operated by Wisconsin Coach Lines and have been using a GPS-based AVL system since 2009. The Ozaukee County Express is operated by MCTS as Route 143 and utilizes the MCTS CAD/AVL system. The Ozaukee

Map 4.23
Locations of Variable Message Signs and Closed-Circuit Television Cameras on the Existing Surface Arterial Street and Highway System in the Region: 2013

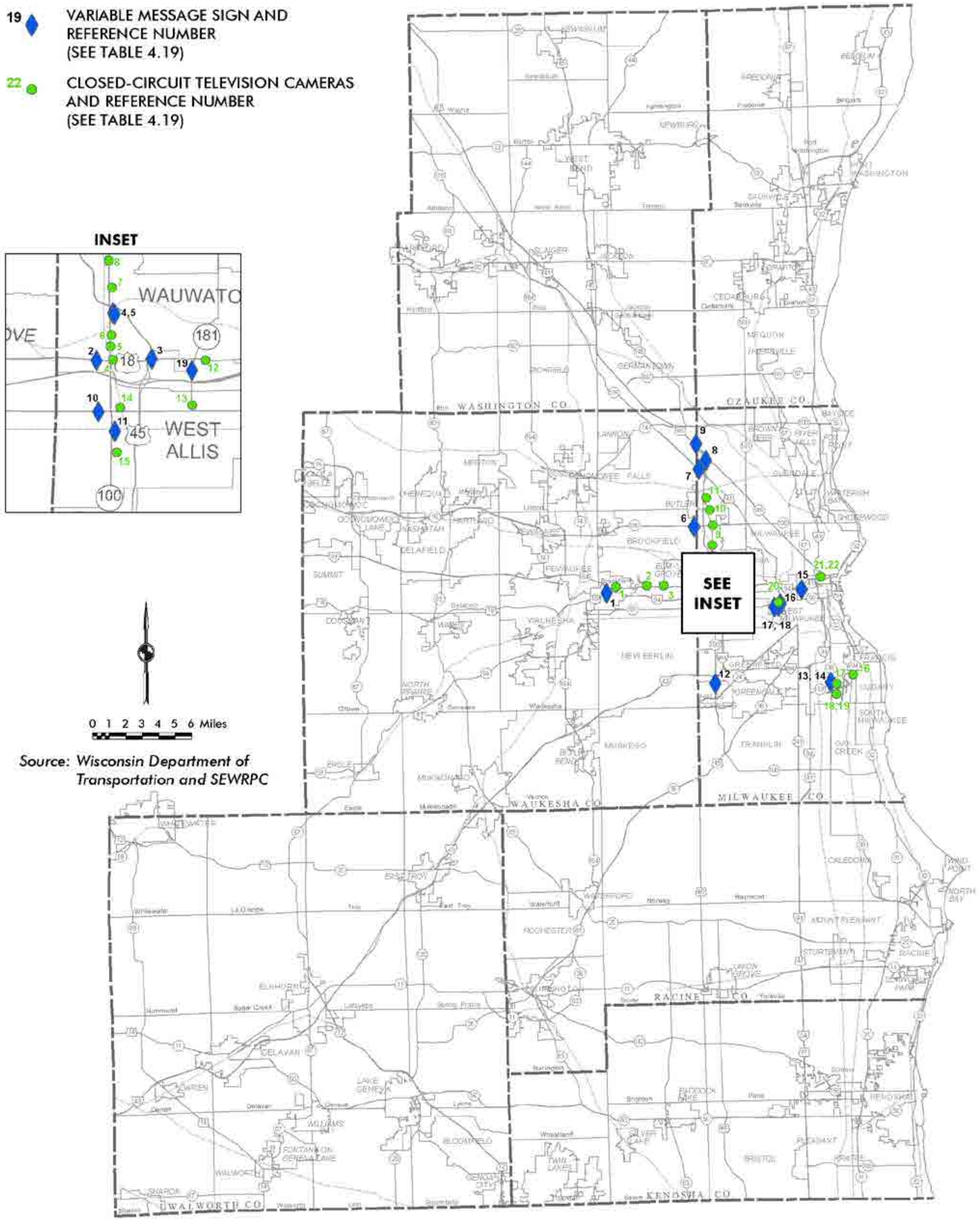


Table 4.19
Locations of Variable Message Signs and Closed-Circuit Television Cameras on the Existing Surface Arterial Street and Highway System in the Region: 2013

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

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

[a] *See Map 4.23.*

Source: Wisconsin Department of Transportation and SEWRPC

County Shared-Ride Taxi system began using a CAD/AVL system in 2008. The Washington County Shared-Ride Taxi system began using a CAD/AVL system in 2013.

Transit signal priority is beginning to be explored in Southeastern Wisconsin. Transit signal priority systems allow transit operators to extend the green phase of signal cycles using wireless communications between the transit vehicle and the traffic signal.

4.7 PAVEMENT AND BRIDGE CONDITION

The assessment of existing pavement condition in Southeastern Wisconsin is typically accomplished through one of two pavement evaluation techniques. The Pavement Surface Evaluation and Rating (PASER) technique is used for county and municipal roads. The PASER system is a rating system that employs visual inspection techniques to assess pavement condition. Pavement ratings range from 1 (a failed roadway that needs total reconstruction) to 10 (a

pavement in excellent condition and typically reflects new construction). In general, the rating system is such that those pavements rated 8 through 10 require little to no maintenance; a rating of 7 indicates a pavement that requires routine maintenance such as crack filling; ratings of 5 or 6 indicate a pavement where preservative treatments such as sealcoating or overlays are considered; ratings of 3 or 4 indicate a pavement where structural improvement such as recycling or overlay is required; and ratings of 1 or 2 indicate a pavement that is severely deteriorated and requires reconstruction. In Southeastern Wisconsin, the PASER system is used by County and local governments to evaluate the condition of the roads under their jurisdiction every two years as required under State Statute. Map 4.24 documents the pavement condition of the county and local arterial streets and highways in the Region under the PASER system for the year 2013. Pavement condition of the county and local arterial street system in the Region improved between 2005 and 2013, as shown in Table 4.20.

WisDOT uses the International Roughness Index (IRI) to assess pavement condition and the quality of riding comfort of state highways, including Interstate Highways, United States Highways, and State Highways. WisDOT uses special equipment that physically measures the profile of a roadway along the traveled way. The IRI is measured on a scale of 0 to 12, with pavements with a 0 to 2.5 rating having no ride problems, a 2.5 to 2.75 rating having minor ride problems, a 2.75 to 3.0 having moderate ride problems, and greater than 3.0 having severe ride problems. Map 4.25 documents the IRI rating of the arterial streets and highways in the Region under State jurisdiction for the year 2013. Pavement condition of state highways in the Region slightly improved between 2006 and 2013, as shown in Table 4.21.

WisDOT also maintains an assessment of the sufficiency of the bridge structures in the Region. Bridge sufficiency ratings are calculated using four separate factors to obtain a numeric value which, when combined, provide the overall sufficiency rating. The four factors are (1) structural adequacy and safety; (2) serviceability and functional obsolescence (including consideration of number of lanes, average daily traffic, approach roadway width, and bridge roadway width); (3) essentiality for public use; and (4) special reductions. Bridge structure sufficiency ratings range from 0 to 100, with 0 being a failing structure and 100 being a structure in perfect condition. Generally, the structure sufficiency ratings relate to need, and prioritization of funding, for rehabilitation and replacement. WisDOT considers a bridge structure with a sufficiency rating between 80 and 100 as not in need of rehabilitation. A bridge structure is considered in need of rehabilitation if its sufficiency rating is between 50 and 79, and replacement if its sufficiency rating is less than 50. Table 4.22 displays the number of bridge structures in Southeastern Wisconsin within each of the above mentioned ranges of sufficiency rating for the years 2006 and 2013. Map 4.26 displays the 2013 sufficiency ratings for bridge structures in Southeastern Wisconsin. Some improvement in bridge sufficiency is apparent over the last few years.

4.8 ARTERIAL HIGHWAY AND TRANSIT TRAVEL TIMES

Map 4.27 compares the year 2001 and 2011 estimated peak hour travel speeds for selected freeway and surface arterial street segments. Map 4.28 compares estimated peak hour arterial street and highway travel time contours for years 2001 and 2011 for two locations: the Milwaukee CBD and the Milwaukee Regional Medical Center. Year 2001 and 2011 arterial street and highway travel times are very similar, displaying little change.

Map 4.24
County and Local Arterial Pavement Condition in the Region: 2013

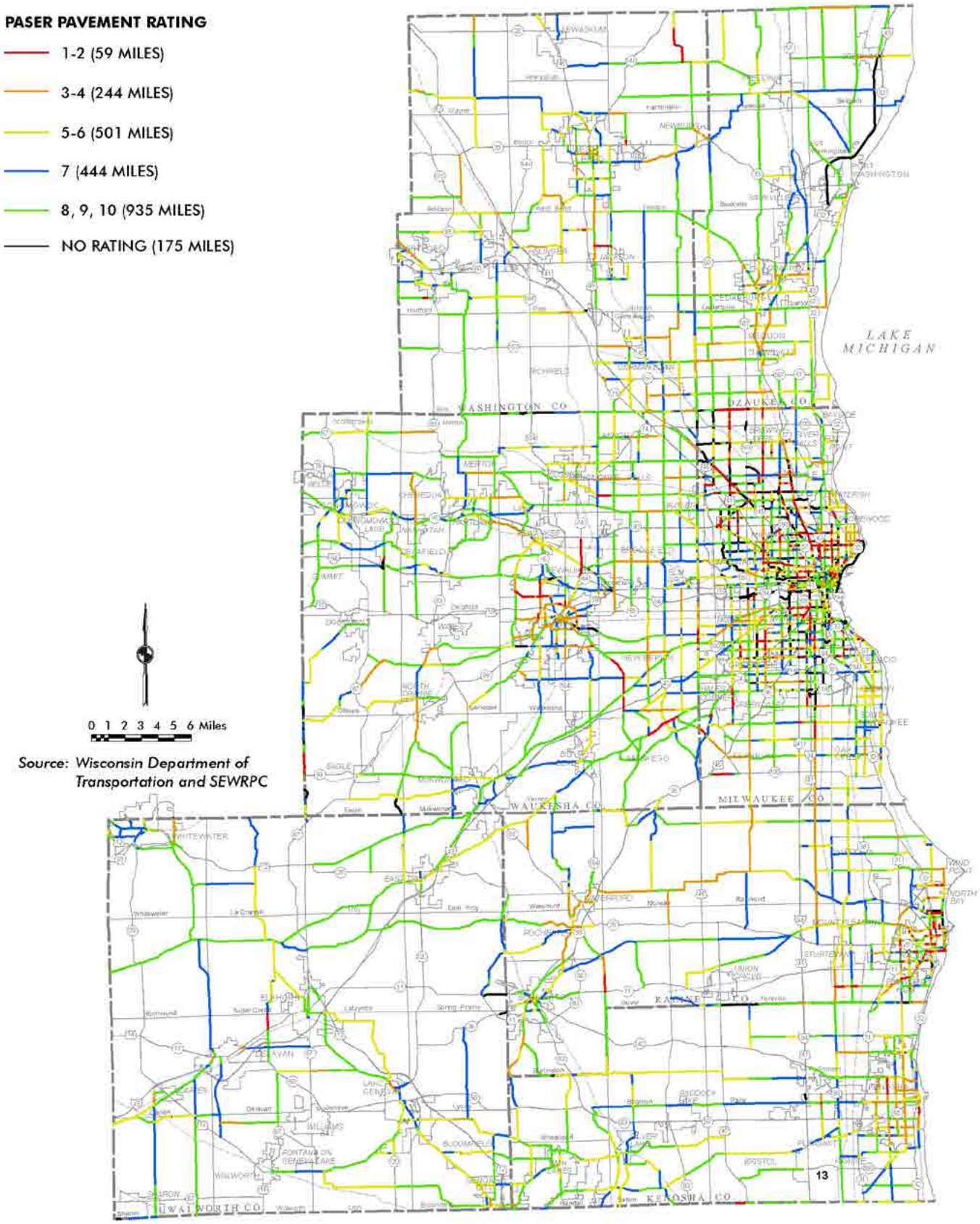


Table 4.20
County and Local Arterial Pavement Condition in the Region: 2005 and 2013

PASER Pavement Rating	2005		2013	
	Local and County Arterial (Miles)	Percent of Total	Local and County Arterial (Miles)	Percent of Total
1 and 2	132	5.7	59	2.5
3 and 4	233	10.2	244	10.3
5 and 6	431	18.8	501	21.2
7	376	16.4	444	18.8
8, 9, and 10	907	39.5	935	39.7
No Rating	215	9.4	175	7.4
Total	2,294	100.0	2,358	100.0

Source: Wisconsin Department of Transportation and SEWRPC

Map 4.29 presents the ratio of total overall transit travel time to automobile travel time between selected locations during the weekday morning peak period and midday off-peak period in 2011. Transit travel time is longer than automobile travel time, because it includes not only the time spent in the transit vehicle, but also includes the time spent walking to a bus stop, waiting for a bus, transferring between routes (including waiting for another bus) and walking to a destination. Much of the transit out-of-vehicle time is related to waiting time for each bus used. Automobile travel time includes the time spent in vehicle parking and walking between parking location and trip origin and destination.

The travel time ratios developed for travel between the selected locations indicate that the lowest ratios—and most competitive transit travel times—are for short transit trips made between areas within and adjacent to downtown Milwaukee, and the highest ratios—and least competitive transit travel times—are generally for transit trips to and from outlying portions of Milwaukee County, including locations in the northwest, southeast, and southwest portions of the Milwaukee County area.

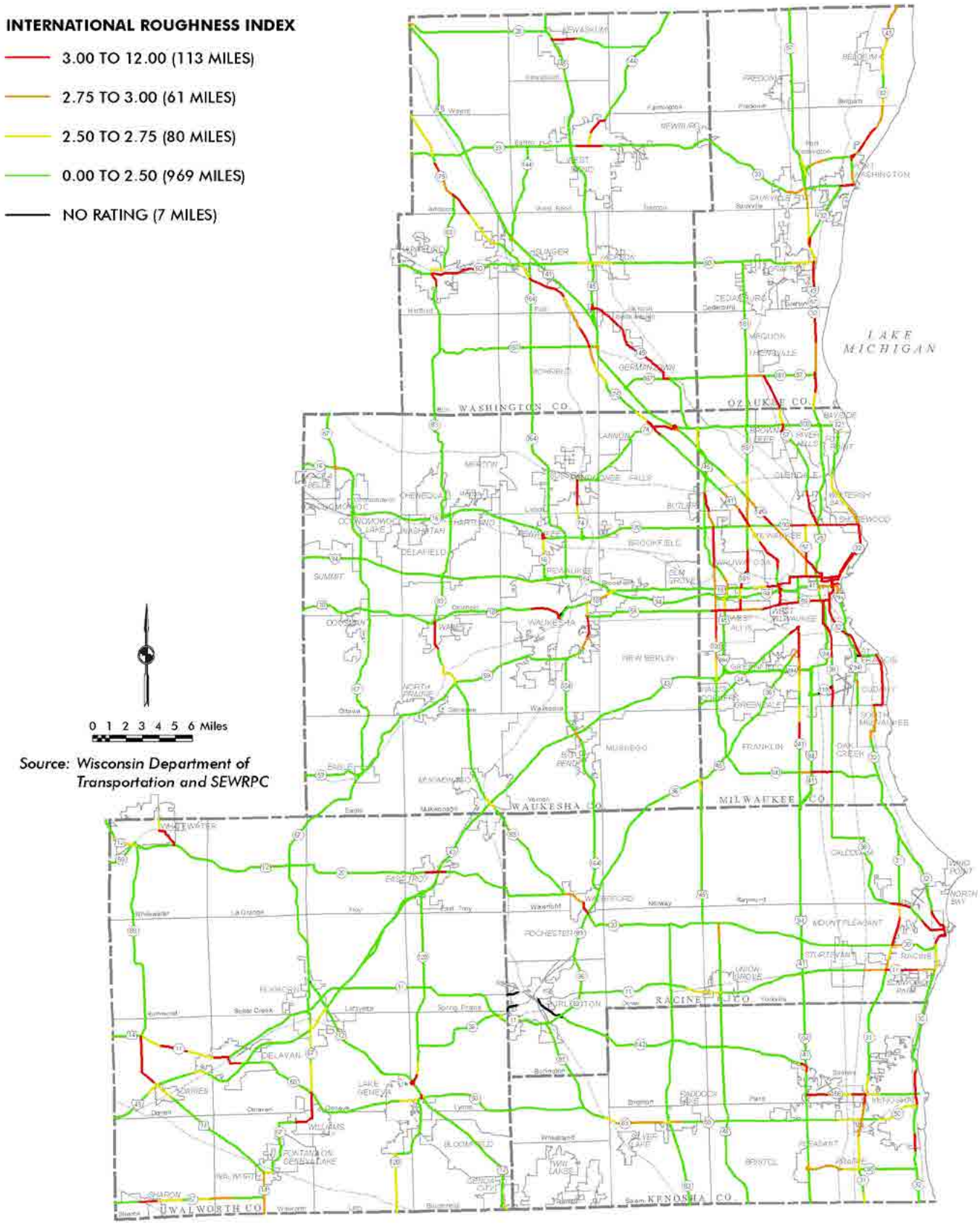
4.9 TRANSPORTATION AIR POLLUTANT AND AIR TOXIC EMISSIONS

Table 4.23 presents the estimated transportation system air pollutant and air toxic emissions and motor fuel consumption within Southeastern Wisconsin for the years 2001 and 2010. Estimated air pollutant and air toxic emissions declined between 2001 and 2010. In particular, volatile organic compounds and nitrogen oxides have been in decline due to cleaner, more efficient vehicles and lower sulfur fuels. The exception to the historic trend in emissions reductions has been carbon dioxide emissions, which are estimated to have increased from 2001 to 2010 as fuel consumption has increased slightly over these years.

4.10 SUMMARY

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

Map 4.25
State Trunk Highway Pavement Condition in the Region: 2013



Source: Wisconsin Department of Transportation and SEWRPC

Table 4.21
State Trunk Highway Pavement Condition in the Region: 2006 and 2013

International Roughness Index	2006 State Trunk Highway (Miles)	2006 Percent of Total	2013 State Trunk Highway (Miles)	2013 Percent of Total
0.00 to 2.50	916	74.2	969	78.8
2.50 to 2.75	76	6.2	80	6.5
2.75 to 3.00	61	4.9	61	5.0
3.00 to 12.00	161	13.0	113	9.2
No Rating	20	1.6	9	0.6
Total	1,234	100.0	1,230	100.0

Source: Wisconsin Department of Transportation and SEWRPC

Table 4.22
Bridge Structure Condition in the Region: 2006 and 2013

Sufficiency Rating[a]	Number of Bridges 2006	Number of Bridges 2013	Percent Change 2006-2013
Less than 50.0	98	81	-17.3
50.0 to 79.9	520	441	-18.2
80.0 to 100.0	1,244	1,372	10.3
Total	1,862	1,894	1.7

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

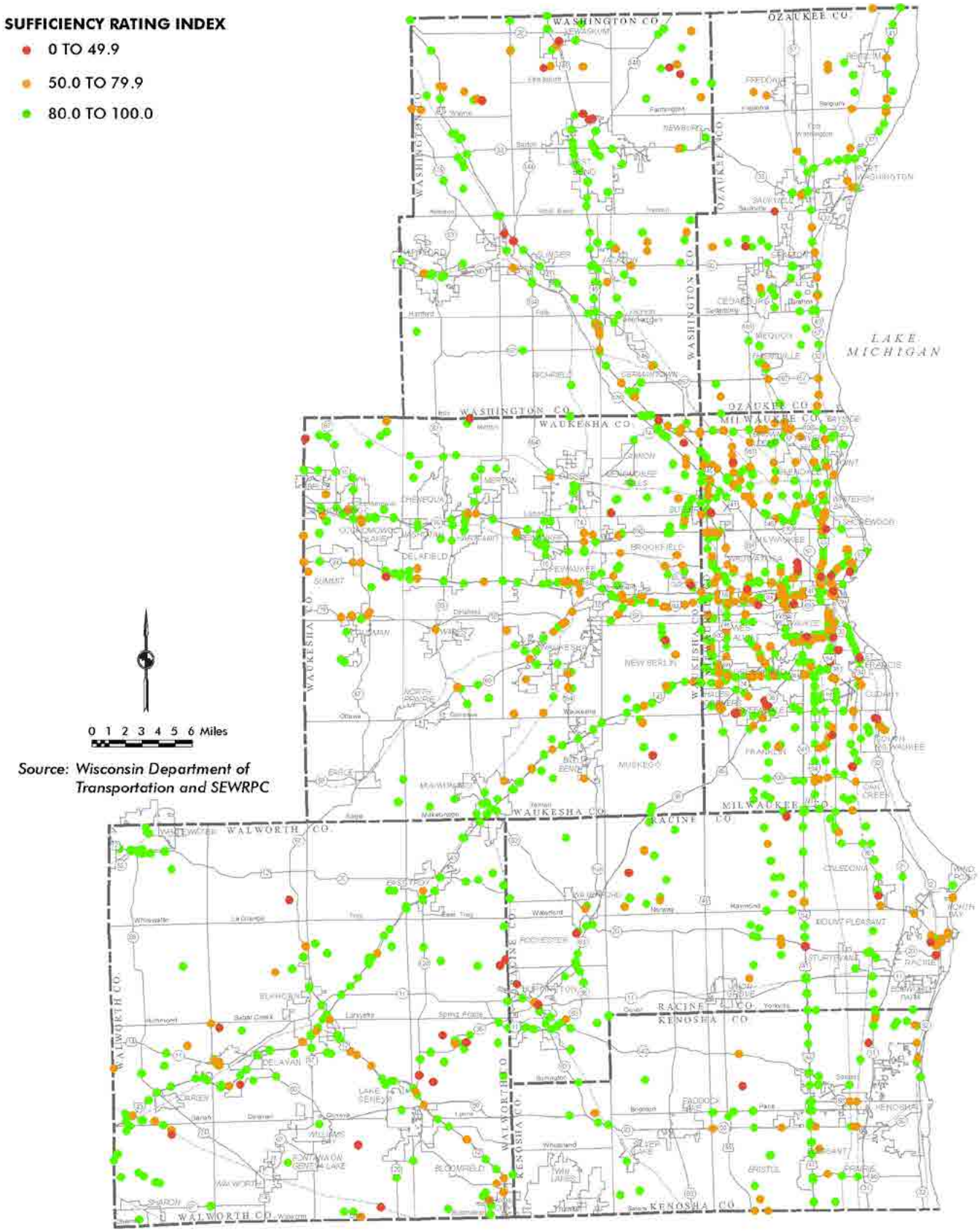
Source: Wisconsin Department of Transportation and SEWRPC

1. As of 2011, there were approximately 12,487 miles of streets and highways—land-access, collector, and arterial—within the Region. Only 26.6 percent, or 3,323 miles, of the street and highway system were arterials with the principal function of moving traffic. The miles of arterials within the Region have increased from 3,188 in 1963 to 3,323 miles in 2011, an increase of 135 miles, or 4.2 percent. The 269 miles of freeway system in 2011 accounted for 8 percent of the total arterial street and highway system and 2 percent of the total street and highway system.

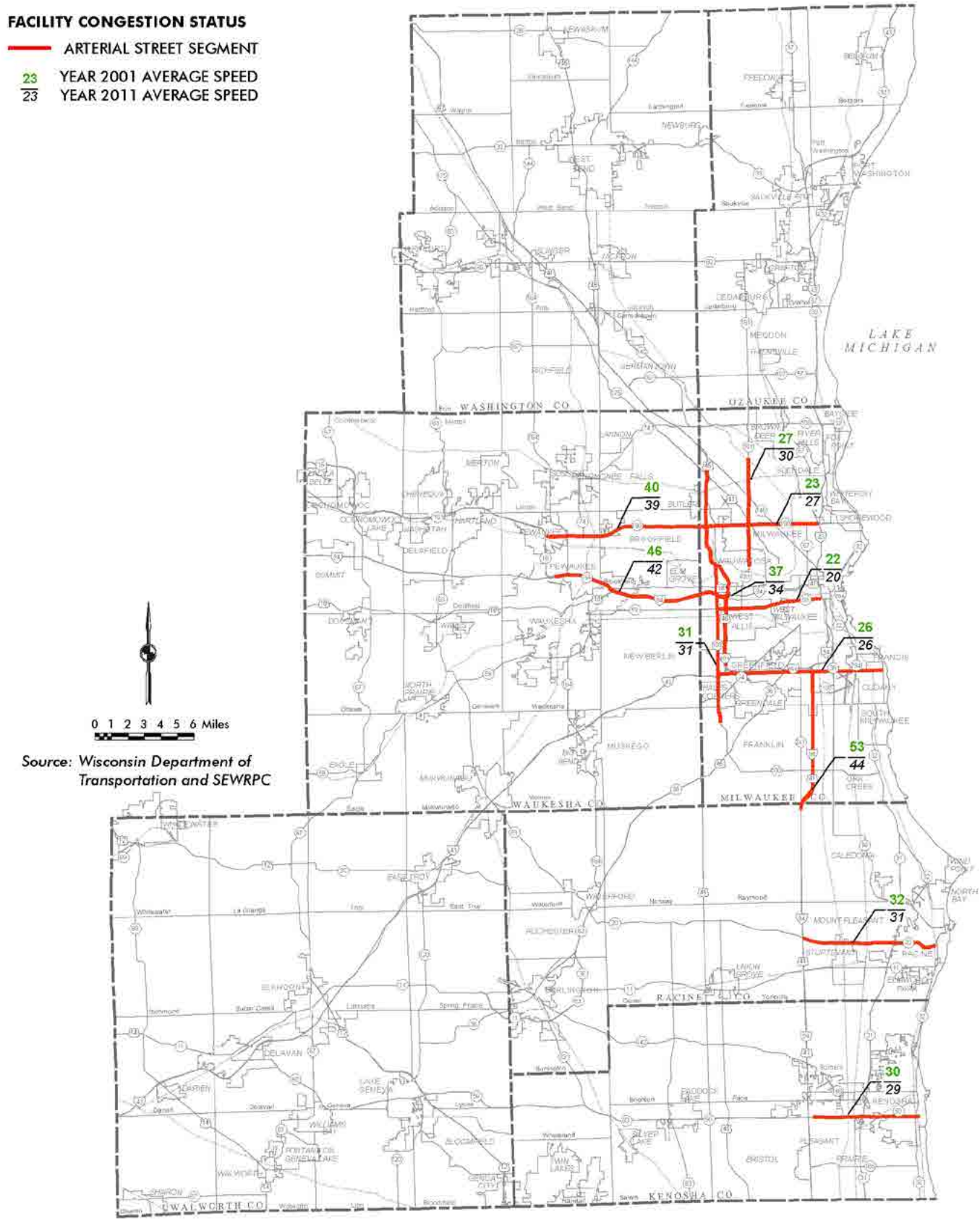
2. In 2011, approximately 40.9 million vehicle-miles of travel were estimated to occur on the arterial street and highway system on an average weekday within the Region. The arterial street and highway system accounted for about 26.6 percent of the total miles of streets and highways in the Region, and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

3. The miles of arterials carrying traffic volumes exceeding design capacity and experiencing traffic congestion declined from 217 miles in 1963

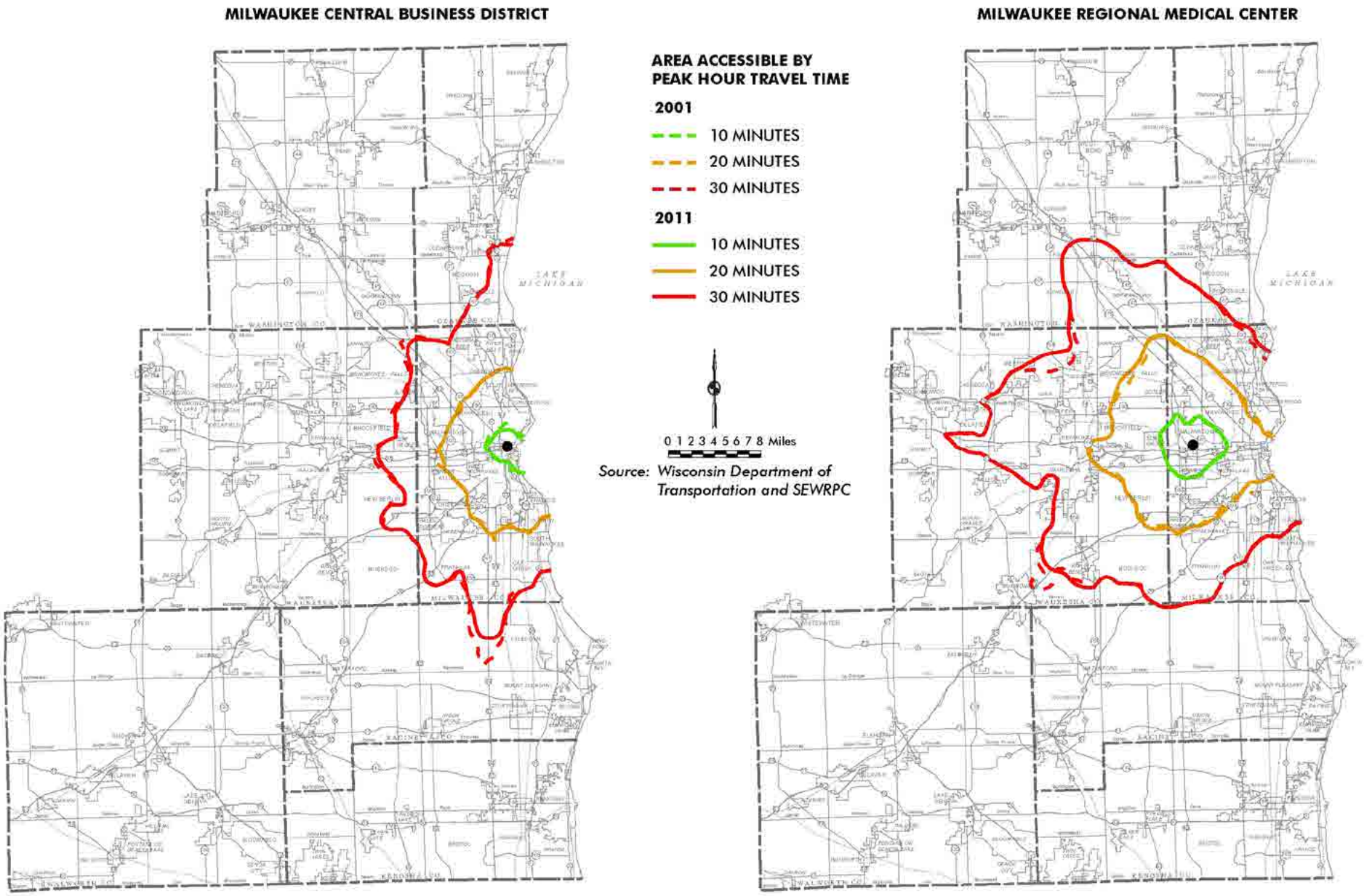
Map 4.26
Bridge Structure Condition in the Region: 2013



Map 4.27
Comparison of Estimated Year 2001 and 2011 Peak Hour Travel Speeds for Selected Freeway and Surface Arterial Streets in the Region



Map 4.28
Estimated Peak Hour Arterial Street and Highway Travel Time Contours: 2001 and 2011



Map 4.29
Ratios of Overall Transit Travel Times to Overall Automobile Travel Times Between Selected Locations in Milwaukee County for Weekday Peak and Off-Peak Periods: 2011

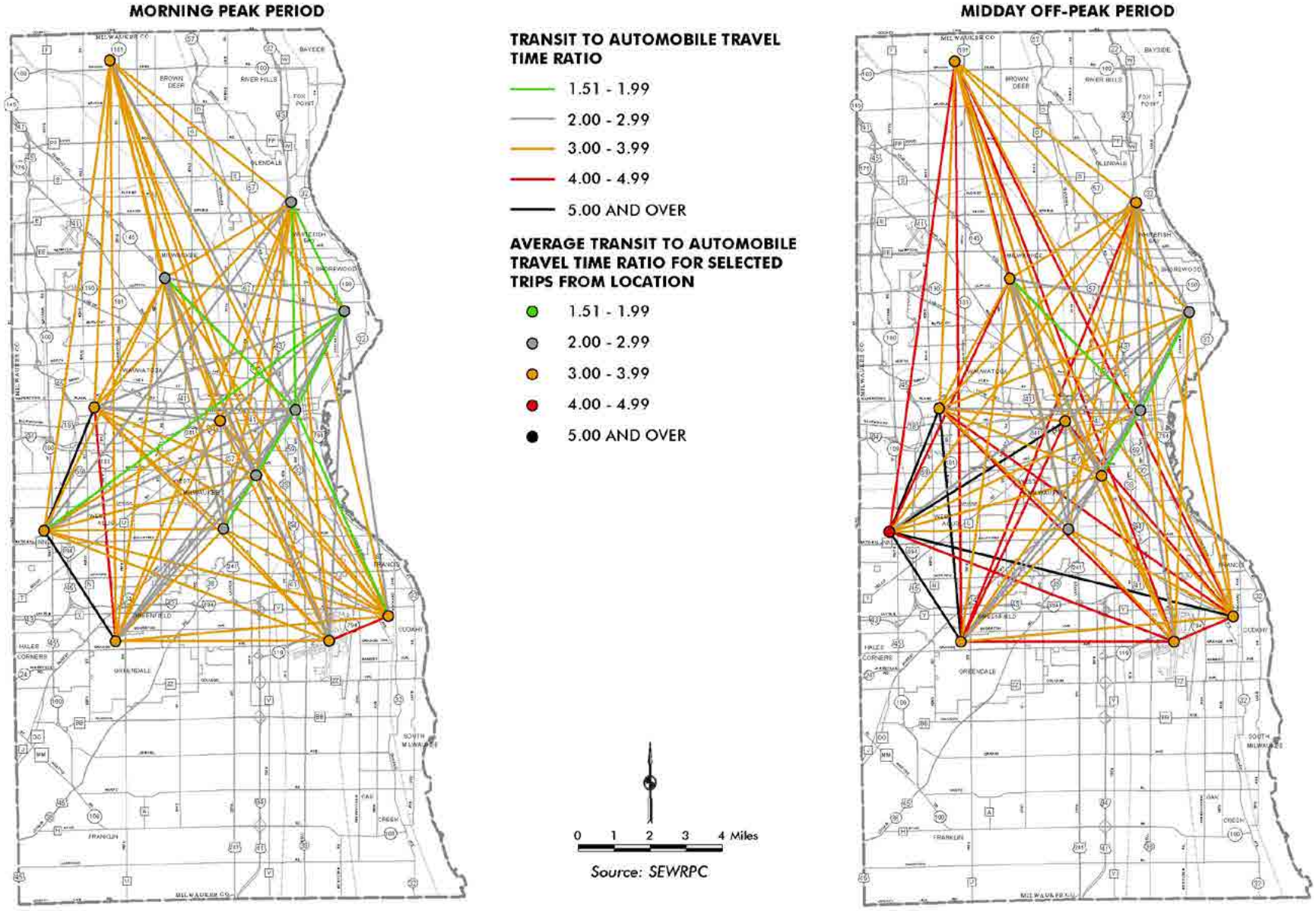


Table 4.23
Estimated Southeastern Wisconsin Region Transportation System
Air Pollutant Emissions and Fuel Consumption: 2001 and 2010

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

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

Source: SEWRPC

to 160 miles in 1972, even though traffic grew during that period by over 50 percent. The decline in traffic congestion may be attributed to the completion of the freeway system during that period. Between 1972 and 1991, the miles of congested arterials are estimated to have increased from 160 miles to 273 miles, as traffic grew by nearly 65 percent, regional employment and households increased by about 30 percent, and vehicle occupancy and carpooling significantly declined. The decline in vehicle occupancy from an average of 1.39 people per vehicle to 1.22 people per vehicle is estimated to have resulted in nearly a 15 percent increase in vehicle traffic. In addition, only limited transportation system improvement and expansion was completed between 1972 and 1991 in the Region. The miles of congested arterials are estimated to have increased modestly from 273 miles in 1991 to 290 miles in 2001. During that period, traffic is estimated to have increased by about 21 percent. The modest increase in traffic congestion from 1991 to 2001 may be attributed to implementing an extensive number of significant arterial street and highway widening and new construction projects in that time period. The estimated modest increase in congestion between 1991 and 2011 is not uniform systemwide, as for example, the extent and severity of congestion on the Milwaukee-area freeway system is estimated to have substantially increased between 1991 and 2011.

4. Review of a five-year history—2008 through 2012—of traffic crashes on the regional freeway and state trunk highway surface arterial system determined that the average crash rate was 72.5 crashes per 100 million VMT on freeways and 265.0 crashes per 100 million VMT on state trunk highway surface arterials. Countywide freeway system crash rates ranged from a low of 33.7 to a high of 120.2 crashes per 100 million VMT for the seven counties in Southeastern Wisconsin. Countywide state trunk highway surface arterial crash rates ranged from a low of 119.0 to a high of 372.8 crashes per 100 million VMT for the seven counties. During that period, only Milwaukee County's freeway and state trunk highway surface arterial crash rates exceeded the regional average crash rates.

5. The level of fixed-route public transit service in the Region significantly decreased from 2001 to 2011, from 5,600 vehicle-hours and 79,600 vehicle-miles of service on an average weekday to 4,700 vehicle-hours and 61,100 vehicle-miles, decreases of about 16 percent and

22 percent, respectively. Vehicle-hours of service in 2011 were also 8 percent less than those provided in 1991, 10 percent less than in 1972, and 32 percent less than in 1963. Vehicle-miles of service in 2011 were 2 percent less than those provided in 1991, 3 percent less than in 1972, and 27 percent less than in 1963. The continued decrease in fixed-route public transit service since 2001 is due to reduced Federal funds and State and local budget constraints. Demand-responsive transit service in the Region increased from 2001 to 2011, from 220 revenue-hours and 7,700 vehicle-miles of service on an average weekday to 360 revenue-hours and 10,300 vehicle-miles.

6. Public transit ridership measured in terms of transit passenger trips made from origin to destination on an average weekday has declined from 320,500 trips, representing 8 percent of regional internal personal travel in 1963, to 184,200 trips and 4 percent of travel in 1972, 172,200 trips and 3 percent in 1991, 142,200 trips and 2 percent in 2001, and 129,100 trips and 2 percent in 2011.

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

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

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

10. Of the Region's 3,300 miles of surface arterial streets and highways, it is estimated that 882 miles accommodate bicycles through paved shoulders, exclusive bicycle lanes, and physically separate parallel off-street paths. Also, 283 miles of regional off-street bicycle paths exist on former railway right-of-ways and in parkways. These off-street paths provide particularly safe and aesthetically attractive routes

separate from motor vehicle traffic and connect—though with gaps—the Region's urban centers and communities.

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

12. Pavement conditions of state trunk highways are assessed every three years, and counties and municipalities are required by State law to rate the pavement condition of their arterial street and highway system every two years. In 2013, slightly over 85 percent of the state trunk highway system in the Region was determined to have few or no ride problems, a proportion that increased from 2006 to 2013. From 2005 to 2013, the collective number of miles of county and local arterials with PASER ratings one or two—those classifications that indicate severe deterioration and a need for reconstruction—decreased from about 6 percent of all county and local arterials in 2005 to about 2 percent in 2013.

TRAVEL HABITS AND PATTERNS 5

Credit: SEWRPC Staff

5.1 INTRODUCTION

This chapter describes existing travel behavior and patterns within the seven-county Southeastern Wisconsin Region, as determined by travel inventories conducted by the Commission in 2011. The forces shaping regional travel habits and patterns are also described, and the findings of the 2011[37] regional travel inventory are compared with those of the previous 2001, 1991, 1972, and 1963 regional travel inventories. A description of the major elements of the 2011 travel inventory along with the accuracy checks performed on the expanded survey data are documented in Appendix C to this report. The findings of the 1963, 1972, 1991, and 2001 regional inventories of travel were described in SEWRPC Planning Report No. 7, Volume One, *The Land Use Transportation Study: Inventory Findings: 1963,* May 1965; SEWRPC Planning Report No. 25, *A Regional Land Use Plan and a Regional Transportation Plan for Southeastern Wisconsin: 2000,* Volume One, *Inventory Findings,* April 1975; SEWRPC Planning Report No. 41, *A Regional Transportation Plan for Southeastern Wisconsin: 2010,* December, 1994; and SEWRPC Planning Report No. 49, *A Regional Transportation System Plan for Southeastern Wisconsin: 2035,* June 2006, respectively.

This chapter focuses on the Region's travel behavior and patterns, comparing the Commission's most recent travel survey to past surveys dating back to 1963.

[37] *Although the most recent regional travel inventory was conducted from 2011 to 2012, this inventory has been designated the "2011" inventory for purposes of reference and of comparison to the 1963, 1972, 1991, and 2001 inventories.*

5.2 INVENTORY FINDINGS

About 6.65 million person trips were made within the Region on an average weekday in 2011, 60% more than were made in 1963. Households and jobs increased at similar rates, but population only increased by 23%.

Quantity of Total Travel

An estimated 6.65 million person trips were made within the Region on an average weekday in 2011, as shown in Table 5.1.[38] This represents an increase of about 2.49 million person trips per weekday, or an increase of about 60 percent, since 1963; an increase of 1.52 million person trips per weekday, or 30 percent, since 1972; an increase of 0.49 million person trips per weekday, or 8 percent, since 1991; and a decrease of 0.10 million person trips per weekday, or 2 percent, since 2001. Of these 6.65 million person trips, about 6.24 million, or 94 percent, were internal person trips. Internal trips have both trip origin and trip destination within the Region. The 6.24 million internal person trips in 2011 represent an increase of 2.28 million trips, or 57 percent, since 1963; an increase of 1.30 million trips, or 26 percent, since 1972; an increase of 0.41 million trips, or 7 percent, since 1991; and a decrease of 0.11 million trips, or 2 percent, since 2001.

In 2011, an estimated 5.24 million vehicle trips, consisting of personal vehicle and commercial truck trips, were made within the Region on an average weekday. This represents an increase of 2.67 million vehicle trips, or 104 percent, since 1963, an increase of 1.84 million vehicle trips, or 54 percent, since 1972, an increase of 0.36 million trips or 8 percent since 1991, and a decrease of 0.23 million trips or 4.2 percent since 2001. Of the 5.24 million vehicle trips, about 4.87 million, or 93 percent, were internal vehicle trips. Internal vehicle trips increased by 2.41 million, or 98 percent, since 1963, by 1.60 million, or 49 percent, since 1972, by 0.27 million trips or 6 percent since 1991, and decreased by 0.24 million trips or 5 percent since 2001. Between 1963 and 2001, vehicle trips made within the Region increased faster than person trips, particularly between 1972 and 1991, principally as a result of a decline in automobile occupancy and carpooling. The percentage increase in vehicle trips between 1972 and 1991 was 44 percent, compared with 20 percent for person trips. Between 2001 and 2011 vehicle trips within the Region decreased faster than person trips, 5 percent versus 2 percent respectively, principally as a result of a modest increase in vehicle occupancy.

Table 5.1 also shows that an estimated 403,800 external person trips and 363,800 external vehicle trips were made in 2011. External trips have one end or both ends located outside of the Region. From 1963 to 2011, external travel increased by 212,100 person trips, or by about 111 percent; and by 262,200 vehicle trips, or by about 258 percent.

Over the past 50 years internal person trips have increased at pace with the number of households and jobs within the Region. Also affecting the level of internal person trips is household income, personal vehicle availability, age, and lifestyles. As shown in Table 5.2, between 1963 and 2011 internal person tripmaking increased by 56 percent, households increased by 67 percent, and employment increased by 68 percent. Between 2001 and 2011 employment declined 1.0 percent and internal person trips declined 2.8

[38] A person trip is defined as a one-way journey between a point of origin and a point of destination by a person five years of age or older traveling by public transit, school bus, bicycle, or walking or as a driver or as a passenger in a personal vehicle (automobile, van, pickup truck, sport utility vehicle), taxi, or motorcycle. To be considered, the trip must have been at least the equivalent of one full city block in length. The 1963, 1972, and 1991 surveys did not inventory walk and bicycle trips for non-work purposes. The 2001 and 2011 surveys did inventory walk and bicycle trips for all purposes, both work and non-work.

Table 5.1
Average Weekday Person and Vehicle Trips by Trip Type: 1963, 1972, 1991, 2001, and 2011[a]

	Person Trips									
	1963		1972		1991		2001		2011	
Trip Type	Number	Percent of Total	Number	Percent of Total	Number	Percent of Total	Number	Percent of Total	Number	Percent of Total
Region Resident Internal Person Trips	3,969,700	95.4	4,947,500	96.5	5,839,100	94.8	6,355,200	94.1	6,244,800	93.9
External Person Trips	191,700	4.6	176,900	3.5	317,400	5.2	394,900	5.9	403,800	6.1
Total	4,161,400	100.0	5,124,400	100.0	6,156,500	100.0	6,750,100	100.0	6,648,600	100.0

	Vehicle Trips									
	1963		1972		1991		2001		2011	
Trip Type	Number	Percent of Total	Number	Percent of Total	Number	Percent of Total	Number	Percent of Total	Number	Percent of Total
Region Resident Personal Vehicle and Commercial Truck Trips	2,459,400	96.0	3,268,000	96.3	4,597,600	94.4	5,109,200	93.5	4,871,500	93.1
External Personal Vehicle and Commercial Truck Trips	101,600	4.0	125,700	3.7	273,300	5.6	357,500	6.5	363,800	6.9
Total	2,561,000	100.0	3,393,700	100.0	4,870,900	100.0	5,466,700	100.0	5,235,300	100.0

	Change in Person Trips							
	1963-2011		1972-2011		1991-2011		2001-2011	
Trip Type	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Region Resident Internal Person Trips	2,275,100	57.3	1,297,300	26.2	405,700	6.9	-110,400	-1.7
External Person Trips	212,100	110.6	226,900	128.3	86,400	27.2	8,900	2.3
Total	2,487,200	59.8	1,524,200	29.7	492,100	8.0	-101,500	-1.5

	Change in Vehicle Trips							
	1963-2011		1972-2011		1991-2011		2001-2011	
Trip Type	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Region Resident Personal Vehicle and Commercial Truck Trips	2,412,100	98.1	1,603,500	49.1	273,900	6.0	-237,700	-4.7
External Personal Vehicle and Commercial Truck Trips	262,200	258.1	238,100	189.4	90,500	33.1	6,300	1.8
Total	2,674,300	104.4	1,841,600	54.3	364,400	7.5	-231,400	-4.2

[a] *Internal person trips as shown in this table include trips made internal to the Region on an average weekday by the resident households and group-quartered persons of the Region. They include trips made by personal vehicle—automobile, van, truck, or sport utility vehicle—either as a driver or passenger, public transit, school bus, motorcycle, taxi, bicycle, and walking. All trips shown in this table were estimated from Commission travel surveys with the exception of trips by bicycle and walking for other than work purposes for the years 1963, 1972, and 1991. Only the 2001 and 2011 survey gathered data on all bicycle and walking trips, with previous surveys in 1963, 1972, and 1991 gathering data only for work trips. In 2011, the estimated number of Region resident internal person trips made by bicycle or walking on an average weekday within Southeastern Wisconsin totaled 520,600 trips, including 72,100 trips to and from work. In 2001, they totaled 297,300 trips, including 40,200 trips to and from work. Estimates of average weekday internal trips made by the Region's households by bicycle or walking for work trip purposes totaled 33,600 trips in 1991, 58,800 in 1972, and 47,000 in 1963. Bicycle and walking non-work trips were estimated for the years 1963, 1972, and 1991 assuming that non-work trips would represent 87 percent of all bicycle and walking trips, as estimated in the year 2001 survey.*

The external person trips shown in this table only include trips made by personal vehicle, which have consistently represented 95 percent of estimated total external person trips within Southeastern Wisconsin on an average weekday. Estimated external person trips by other modes of intercity bus and rail, cross-lake ferry, and commercial air carrier totaled on an average weekday 9,800 trips in 1963, 9,100 trips in 1972, 15,700 trips in 1991, 19,500 trips in 2001, and 23,500 trips in 2011.

Source: SEWRPC

Table 5.2
Comparison of Historical Regional Internal Person Trips, Households, Employment, Population, and Income: 1963, 1972, 1991, 2001, and 2011[a]

Internal Person Trips	1963	1972	1991	2001	2011	Percent Change 1963-2011	Percent Change 1972-2011	Percent Change 1991-2011	Percent Change 2001-2011
Internal Person Trips	3,933,100	4,917,300	5,755,700	6,327,000	6,152,900	56.4	25.1	6.9	-2.8
Households	481,200	557,300	676,100	759,500	802,000	66.7	43.9	18.6	5.6
Employment (jobs)	706,600	802,500	1,058,200	1,197,000	1,184,500	67.6	47.6	11.9	-1.0
Population[b]	1,636,300	1,750,500	1,780,300	1,899,300	2,011,300	22.9	14.9	13.0	5.9
Median Family Income (2010 Dollars)[c]	--	66,100	66,800	73,500	65,400	--	-1.1	-2.1	-11.0

[a] *Internal person trips as shown in this table include trips made internal to the Region on an average weekday by the resident households of the Region. They include trips made by personal vehicle—automobile, van, truck, or sport utility vehicle—either as a driver or passenger, public transit, school bus, motorcycle, taxi, bicycle, and walking. All trips shown in this table were estimated from Commission travel surveys with the exception of trips by bicycle and walking for other than work purposes for the year 1963, 1972, and 1991. Only the 2001 and 2011 surveys gathered data on all bicycle and walking trips, with previous surveys in 1963, 1972, and 1991 gathering this data only for work trips. In 2011, the estimated number of resident household internal person trips made by bicycle or walking on an average weekday within southeastern Wisconsin totaled 463,500 trips, including 69,300 trips to and from work. In 2001, they totaled 295,700 trips, including 40,000 trips to and from work. Estimates of average weekday internal trips made by the Region's households by bicycle or walking for work trip purposes totaled 33,600 trips in 1991, 58,800 in 1972, and 47,000 in 1963. Bicycle and walking non-work trips were estimated for the years 1963, 1972, and 1991 assuming that non-work trips would represent 87 percent of all bicycle and walking trips, as estimated in the year 2001 survey.*

The internal person trips shown in this table also only include trips made by the Region's households, and not by group-quartered people in the Region. Group-quartered person trips within the Region were estimated to total 36,600 trips in 1963, 30,200 trips in 1972, 83,400 trips in 1991, 28,200 trips in 2001, and 91,900 trips in 2011, or only about 1 percent or less of the total internal person trips made by the residents of the Region on an average weekday.

[b] *Does not include regional group-quartered population.*

[c] *Median family income estimate for the year 1969 applied to the year 1972, for the year 1989 applied to the year 1991, for the year 1999 applied to the year 2001, and the year 2010 applied to the year 2011.*

Source: SEWRPC

percent. This reduction in person trips occurred even though the number of households and population each increased by 6 percent. Through 2001, the number of internal person trips per household in the Region had remained relatively constant at about eight trips per household. Between 2001 and 2011, the number of trips per household declined to about seven trips per household. The decline in employment and in median family income likely contributed to this reduction.

Overall, the increase in person trips far exceeded the 23 percent increase in population between 1963 and 2011. The number of internal trips per person in the Region increased from 2.4 trips per person in 1963 to 3.1 trips per person in 2011. The Region's population has changed over the past 50 years, including the substantial increase in the proportion of the Region's population in the labor force—principally due to the increase of women in the labor force—and the significant changes that occurred in household formation and composition.

Internal Person Travel

The number of internal person trips made on an average weekday by the resident households of the Region may be correlated with household vehicle availability, size, and income.

Relationship of Vehicle Availability

A strong correlation exists between person trip production and the number of vehicles available to households. The 2011 survey findings indicated that about 1,371,900 vehicles were available in the Region. This represents an average of 1.71 vehicles per household, as compared to 1.07 vehicles per household in 1963, 1.24 vehicles per household, in 1972, 1.60 vehicles per household in 1991, and 1.73 vehicles per household in 2001.

The number of vehicles available is strongly correlated with person trip production. In 2011, there were about 1.37 million vehicles available in the Region.

Table 5.3 shows the relationship of vehicle availability to person trip production in the Region. Household person trip production increases sharply in relation to increased vehicle availability. From 1963 to 1991, household vehicle availability increased substantially. From 1963 to 1991, the percentage of households with two or more automobiles increased from 24 percent to 56 percent of all households, the percentage of households with zero automobiles declined from 17 percent to 9 percent of all households, and the percentage with one automobile declined from 59 percent to 35 percent of all households. From 1991 to 2011, the percentage of households with zero, one, or two or more vehicles available experienced minimal change. The increase in household vehicle availability from 1963 to 2011 likely contributed to the increase in person trips generated within the Region since 1963.

Relationship of Household Size

Person trip production within the Region is also strongly related to the number of people comprising the household. Table 5.4 indicates that in 2011 one-person households averaged about three weekday internal person trips per household, two-person households averaged about six such trips per household, three-person households averaged about nine such trips per household, four-person households averaged about 11 such trips per household, and five- or more-person households averaged about 14 such trips per household. The distribution of the number of households by household size changed markedly from 1963 to 1991 with one-person households increasing from 11 percent of all households in 1963 to 25 percent in 1991, and five- or more-person households decreasing from 25 percent to 11 percent of all households during the same period. The distribution of

Table 5.3
Average Weekday Internal Person Trips per Household in the Region by Vehicle Availability: 1963, 1972, 1991, 2001, and 2011[a]

	Vehicles Available	Households		Person Trips		Person Trips per Household
		Number	Percent of Total	Number	Percent of Total	
1963	None	83,400	17.3	188,200	5.2	2.3
	One	282,000	58.6	2,097,000	58.5	7.4
	Two	102,700	21.4	1,120,800	31.3	10.9
	Three or More	13,100	2.7	177,400	5.0	13.5
	Total	481,400	100.0	3,583,400	100.0	7.4
1972	None	88,500	15.9	171,400	3.8	1.9
	One	276,300	49.6	1,953,300	43.6	7.1
	Two	160,900	28.9	1,848,700	41.3	11.5
	Three or More	316,000	5.6	506,400	11.3	16.0
	Total	557,300	100.0	4,479,800	100.0	8.0
1991	None	61,900	9.1	156,300	2.8	2.5
	One	233,800	34.6	1,292,000	23.5	5.5
	Two	281,200	41.6	2,801,800	50.9	10.0
	Three or More	99,300	14.7	1,255,600	22.8	12.6
	Total	676,100	100.0	5,505,600	100.0	8.1
2001	None	64,300	8.5	161,000	2.7	2.5
	One	267,500	35.2	1,588,300	26.3	5.9
	Two	294,200	38.7	2,787,000	46.2	9.5
	Three or More	133,500	17.6	1,495,000	24.8	11.2
	Total	759,500	100.0	6,031,300	100.0	7.9
2011	None	71,800	9.0	205,900	3.6	2.9
	One	283,200	35.3	1,389,000	24.4	4.9
	Two	313,700	39.1	2,670,700	46.9	8.5
	Three or More	133,300	16.6	1,423,800	25.0	10.7
	Total	802,000	100.0	5,689,400	100.0	7.1

[a] *Trips made by bicycle and walking are not included in this analysis, as they were not surveyed for non-work trip purposes in 1963, 1972, and 1991.*

Source: SEWRPC

the number of households by household size changed minimally between 1991 and 2011, with continuing small increases in the percentages of one- and two-person households and small decreases in the percentages of households with three or more people. The decline in household size from 1963 to 2011 likely contributed to the increase in internal person trips in the Region over the same period, as the attendant increase in households outweighed the decline in the number of households of larger sizes.

Internal travel on an average weekday in 2011 was mostly by personal vehicle (86%), followed by walk and bicycle (8%), school bus (3%), public transit (2%), and other (<1%).

Mode of Internal Person Trips

The year 2011 survey findings as shown in Table 5.5 indicate that internal travel within Southeastern Wisconsin by resident households on an average weekday in 2011 is predominately by personal vehicle, representing 86 percent of weekday travel. Walk and bicycle travel represent the next largest percentage of internal weekday travel by resident households of the Region at about 8 percent, followed by travel by school bus of about 3 percent, public transit of about 2 percent, and other travel modes including taxi and motorcycle of less than 1 percent.

The proportion of travel by mode changed significantly between 1963 and 2011. The most significant change in personal vehicle travel occurred between 1963 and 1991, as personal vehicle travel increased from 80 to 89 percent of all travel, and travel by personal vehicle drivers increased from 55 to 71 percent of all travel. Also, travel by walking and bicycle declined from 9 percent of all travel in 1972 to 4 percent of all travel in 1991. Travel by

Table 5.4
Average Weekday Internal Person Trips per Household in the Region by Household Size: 1963, 1972, 1991, 2001, and 2011[a]

	Household Size	Households		Person Trips		Person Trips per Household
		Number	Percent of Total	Number	Percent of Total	
1963	One	52,000	10.8	106,500	3.0	2.0
	Two	135,100	28.1	681,400	19.0	5.0
	Three	87,500	18.2	666,000	18.6	7.6
	Four	83,700	17.4	805,900	22.5	9.6
	Five or More	122,900	25.5	1,323,600	36.9	10.8
	Total	481,200	100.0	3,583,400	100.0	7.4
1972	One	93,800	16.8	223,500	5.0	2.4
	Two	159,500	28.6	892,900	19.9	5.6
	Three	91,900	16.5	760,200	17.0	8.3
	Four	86,300	15.5	903,100	20.1	10.5
	Five or More	125,800	22.6	1,700,100	38.0	13.5
	Total	557,300	100.0	4,479,800	100.0	8.0
1991	One	168,700	24.9	565,500	10.3	3.4
	Two	214,100	31.7	1,526,100	27.7	7.1
	Three	116,100	17.2	1,075,700	19.5	9.3
	Four	104,300	15.4	1,282,900	23.3	12.3
	Five or More	72,900	10.8	1,055,500	19.2	14.5
	Total	676,100	100.0	5,505,700	100.0	8.1
2001	One	211,100	27.8	810,100	13.4	3.8
	Two	247,300	32.6	1,769,800	29.3	7.2
	Three	118,900	15.7	1,104,600	18.3	9.3
	Four	106,400	14.0	1,249,300	20.7	11.7
	Five or More	75,800	10.0	1,097,500	18.2	14.5
	Total	759,500	100.0	6,031,300	100.0	7.9
2011	One	233,400	29.1	736,200	12.9	3.2
	Two	265,900	33.2	1,623,600	28.5	6.1
	Three	123,700	15.4	1,057,100	18.6	8.5
	Four	102,900	12.8	1,173,300	20.6	11.4
	Five or More	76,100	9.5	1,099,200	19.3	14.4
	Total	802,000	100.0	5,689,400	100.0	7.1

[a] *Trips made by bicycle and walking are not included in this analysis, as they were not surveyed for non-work trip purposes in 1963, 1972, and 1991.*

Source: SEWRPC

walking and bicycling showed an increase in 2001 to 5 percent of all travel, and increased again by 2011 to 8 percent of all travel.

The largest change in public transit travel occurred between 1963 and 1972, as public transit travel declined from 8 percent to 4 percent of total weekday internal travel by resident households. Since 1972 travel by transit continued to decline modestly, representing 2 percent of personal travel in 2011.

The proportion of total weekday internal travel by the Region's households by school bus has remained relatively constant from 1963 to 2011 at 3 to 4 percent, and also for other modes including taxi and motorcycle at less than 1 percent.

Public Transit Trip Production

The relationships of public transit trip-making to vehicle ownership and household size, are shown in Tables 5.6 and 5.7. In 1963, 1972, 1991, and 2001 households without a personal vehicle for travel accounted for 39 to 44 percent of all trips made on public transit on an average weekday. In 2011, households without a personal vehicle for travel accounted for over 64 percent of weekday transit travel. Households owning one or two personal

Table 5.5
Distribution of Average Weekday Internal Person Trips by Households in the Region by Mode of Travel: 1963, 1972, 1991, 2001, and 2011

	Person Trips									
	1963		1972		1991		2001		2011	
Mode of Travel	Number	Percent of Total	Number	Percent of Total	Number	Percent of Total	Number	Percent of Total	Number	Percent of Total
Auto Driver	2,156,700	54.8	2,884,900	58.7	4,060,800	70.6	4,507,400	71.2	4,153,300	67.5
Auto Passenger	978,100	24.9	1,217,100	24.8	1,029,800	17.9	1,130,800	17.9	1,160,200	18.9
Public Transit	320,500	8.1	184,200	3.7	172,200	3.0	142,200	2.2	129,100	2.1
School Bus	119,900	3.1	173,600	3.5	228,600	4.0	227,400	3.6	205,900	3.3
Walk and Bicycle	349,700	8.9	437,500	8.9	250,000	4.3	295,700	4.7	463,500	7.5
Other[a]	8,200	0.2	20,000	0.4	14,300	0.2	23,500	0.4	40,900	0.7
Total	3,933,100	100.0	4,917,300	100.0	5,755,700	100.0	6,327,000	100.0	6,152,900	100.0

	Person Trips							
	Change: 1963-2011		Change: 1972-2011		Change: 1991-2011		Change: 2001-2011	
Mode of Travel	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Auto Driver	1,996,600	92.6	1,268,400	44.0	92,500	2.3	-354,100	-7.9
Auto Passenger	182,100	18.6	-56,900	-4.7	130,400	12.7	29,400	2.6
Public Transit	-191,400	-59.7	-55,100	-29.9	-43,100	-25.0	-13,100	-9.2
School Bus	86,000	71.7	32,300	18.6	-22,700	-9.9	-21,500	-9.5
Walk and Bicycle	113,800	32.5	26,000	5.9	213,500	85.4	167,800	56.7
Other[a]	32,700	398.8	20,900	104.5	26,600	186.0	17,400	74.0
Total	2,219,800	56.4	1,235,600	25.1	397,200	6.9	-174,100	-2.8

[a] *Includes motorcycle and taxi.*

Source: SEWRPC

Table 5.6
Average Weekday Internal Transit Person Trips per Household in the Region by Vehicle Availability: 1963, 1972, 1991, 2001, and 2011

	Vehicles Available	Households		Transit Person Trips		Transit Person Trips per Household	Percent of Total Trips Made on Public Transit[a]
		Number	Percent of Total	Number	Percent of Total		
1963	None	83,400	17.3	124,100	38.7	1.49	65.9
	One	282,000	58.6	154,800	48.3	0.55	7.4
	Two	102,700	21.4	37,600	11.7	0.37	3.4
	Three or More	13,100	2.7	4,000	1.3	0.31	2.3
	Total	481,200	100.0	320,500	100.0	0.67	8.9
1972	None	88,500	15.9	73,000	39.6	0.82	42.6
	One	276,300	49.6	73,800	40.1	0.27	3.8
	Two	160,900	28.9	30,600	16.6	0.19	1.7
	Three or More	31,600	5.6	6,800	3.7	0.22	1.3
	Total	557,300	100.0	184,200	100.0	0.27	4.1
1991	None	61,900	9.1	74,700	43.4	1.21	47.8
	One	233,800	34.6	46,400	26.9	0.19	3.6
	Two	281,100	41.6	36,100	21.0	0.13	1.3
	Three or More	99,300	14.7	15,000	8.7	0.15	1.2
	Total	676,100	100.0	172,200	100.0	0.25	3.1
2001	None	64,300	8.5	63,000	44.3	0.98	39.1
	One	267,500	35.2	37,000	26.0	0.14	2.3
	Two	294,200	38.7	29,300	20.6	0.10	1.1
	Three or More	133,500	17.6	12,900	9.1	0.10	0.9
	Total	759,500	100.0	142,200	100.0	0.19	2.4
2011	None	71,800	9.0	82,700	64.1	1.15	40.2
	One	283,200	35.3	25,500	19.8	0.09	1.8
	Two	313,700	39.1	12,400	9.6	0.04	0.5
	Three or More	133,300	16.6	8,500	6.6	0.06	0.6
	Total	802,000	100.0	129,100	100.0	0.16	2.3

[a] *Trips made by bicycle and walking are not included in this analysis, as they were not surveyed for non-work trip purposes in 1963, 1972, and 1991.*

Source: SEWRPC

vehicles accounted for 47 to 60 percent of total weekday transit trips from 1963 to 2001, but only 29 percent in 2011.

The percent of transit trips by households without access to a car increased significantly from 2001 (44%) to 2011 (64%).

Household size is not nearly as strongly correlated with transit trip-making as household vehicle ownership. The average number of transit trips per household generally increases with household size, but the average number of transit trips per person generally is greater for smaller household sizes.

Purposes of Internal Trips

Table 5.8 displays by trip purpose the current and historical internal trips made by resident households of the Region on an average weekday. Most trips made on an average weekday are home-based trips, with home being either the origin or destination of the trips.

The percentage distributions of the purposes of weekday internal person trips have remained stable from 1963 to 2011. During this period, home-based work trips comprised between 22 and 25 percent of all such trips; home-based shopping trips, between 11 and 15 percent; home-based trips in other categories, between 30 and 34 percent; nonhome-based trips, between 18 and 23 percent; and school trips, between 9 and 13 percent. These percentage distributions remained stable over five decades despite substantial increases in the absolute numbers of trips in all categories. Home-based trips, typically used for work, shopping and other purposes, declined between 11 and 15 percent between 2001 and 2011; however, nonhome-

Table 5.7
Average Weekday Internal Transit Person Trips per Household in the Region by Household Size: 1963, 1972, 1991, 2001, and 2011

	Household Size	Households		Transit Person Trips		Transit Person Trips per Household	Average Transit Trips per Person	Percent of Total Trips Made on Public Transit[a]
		Number	Percent of Total	Number	Percent of Total			
1963	One	52,000	10.8	31,800	9.9	0.61	0.61	29.9
	Two	135,100	28.1	77,900	24.3	0.58	0.29	11.4
	Three	87,500	18.2	64,300	20.1	0.73	0.24	9.7
	Four	83,700	17.4	51,700	16.1	0.62	0.15	6.4
	Five or More	122,900	25.5	94,800	29.6	0.77	0.13	7.2
	Total	481,200	100.0	320,500	100.0	0.67	0.09	8.9
1972	One	93,800	16.8	27,300	14.8	0.29	0.29	12.2
	Two	159,500	28.6	37,500	20.3	0.24	0.12	4.2
	Three	91,900	16.5	27,200	14.8	0.30	0.15	3.6
	Four	86,300	15.5	30,700	16.7	0.36	0.09	3.4
	Five or More	125,800	22.6	61,500	33.4	0.49	0.08	3.6
	Total	557,300	100.0	184,200	100.0	0.33	0.04	4.1
1991	One	168,700	25.0	26,900	15.6	0.16	0.16	4.8
	Two	214,100	31.7	26,700	15.5	0.12	0.06	1.7
	Three	116,100	17.2	34,200	19.9	0.29	0.09	3.2
	Four	104,300	15.4	36,100	21.0	0.35	0.09	2.8
	Five or More	72,900	10.8	48,300	28.0	0.66	0.12	4.6
	Total	676,100	100.0	172,200	100.0	0.25	0.03	3.1
2001	One	211,100	27.8	36,200	25.4	0.17	0.17	4.5
	Two	247,300	32.5	36,100	25.4	0.15	0.07	2.0
	Three	118,900	15.7	25,400	17.9	0.21	0.07	2.3
	Four	106,400	14.0	18,700	13.2	0.18	0.04	1.5
	Five or More	75,800	10.0	25,800	18.1	0.34	0.06	2.3
	Total	759,500	100.0	142,200	100.0	0.19	0.08	2.4
2011	One	233,400	29.1	34,200	26.5	0.15	0.15	4.6
	Two	265,900	33.2	28,700	22.2	0.11	0.06	1.8
	Three	123,700	15.4	20,500	15.9	0.17	0.06	1.9
	Four	102,900	12.8	21,000	16.3	0.20	0.05	1.8
	Five or More	76,100	9.5	24,700	19.1	0.32	0.05	2.2
	Total	802,000	100.0	129,100	100.0	0.16	0.06	2.3

[a] *Trips made by bicycle and walking are not included in this analysis, as they were not surveyed for non-work trip purposes in 1963, 1972, and 1991.*

Source: SEWRPC

based and school tripmaking (including nonhome-based school) increased between 8 and 15 percent. The decreases in home-based tripmaking are likely attributed to the loss in employment and household income, and increased trip chaining, as indicated by increases in nonhome-based travel including nonhome-based school trips.

Residents drive nearly twice as far for an average work trip as they did 50 years ago—6.1 miles in 1963 compared to 11.0 miles in 2011.

Trip Length

As shown in Table 5.9, the average length of trips made within the Region on an average weekday by the Region's resident households, measured in terms of distance, increased between 2001 and 2011 by about 4 percent. Between 1963 and 1972—a period of just less than 10 years—the increase in average trip length was about 15 percent and between 1972 and 2001 average trip length increased by about 8 percent per decade. From 2001 to 2011 the increase in trip length was almost entirely due to the increase in the length of work trips of 12 percent.

With respect to trip length measured in terms of travel time, a decline of about 9 percent was estimated to have occurred between 1963 and 1972, followed by a modest decline of 2 percent between 1972 and 1991, an increase of 11 percent between 1991 and 2001, and a modest decline of

Table 5.8
Distribution of Average Weekday Internal Household Person Trips in the Region by Trip Purpose: 1963, 1972, 1991, 2001, and 2011[a]

	Person Trips									
	1963		1972		1991		2001		2011	
Trip Purpose[b]	Number	Percent of Total	Number	Percent of Total	Number	Percent of Total	Number	Percent of Total	Number	Percent of Total
Home-Based Work	890,700	24.9	1,062,600	23.7	1,269,000	23.1	1,435,300	23.8	1,273,600	22.4
Home-Based Shopping	543,800	15.2	675,000	15.1	797,900	14.5	761,600	12.6	651,100	11.4
Home-Based Other	1,188,600	33.1	1,541,200	34.4	1,687,300	30.6	1,962,500	32.5	1,701,400	29.9
Nonhome-Based	647,600	18.1	783,500	17.5	1,125,900	20.4	1,215,000	20.2	1,307,400	23.0
School	312,700	8.7	417,500	9.3	625,500	11.4	656,900	10.9	755,900	13.3
Total	3,583,400	100.0	4,479,800	100.0	5,505,800	100.0	6,031,300	100.0	5,689,400	100.0

	Change in Person Trips							
	1963-2011		1972-2011		1991-2011		2001-2011[c]	
Trip Purpose[b]	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Home-Based Work	382,900	43.0	211,000	19.9	4,500	0.4	-161,700	-11.3
Home-Based Shopping	107,300	19.7	-23,900	-3.5	-146,900	-18.4	-110,500	-14.5
Home-Based Other	512,700	43.1	160,100	10.4	14,000	0.8	-261,200	-13.3
Nonhome-Based	659,800	101.9	523,900	66.9	181,500	16.1	92,400	7.6
School	443,200	141.7	338,400	81.1	130,500	20.9	99,000	15.1
Total	2,105,900	58.8	1,209,500	27.0	183,600	3.3	-342,000	-5.7

[a] *Trips made by bicycle and walking are not included in this analysis, as they were not surveyed for non-work trip purposes in 1963, 1972, and 1991.*

[b] *A home-based trip is a trip with either the origin or destination being the traveler's home. A nonhome-based trip has neither the origin nor destination being the home. A school trip is any trip by a student for which the purpose of the trip at its origin or destination is to attend school.*

[c] *The decline in tripmaking from 2001 to 2011 is overstated in this table as it does not include bicycle and walking trips, which increased from an estimated 295,700 trips in 2001 to 463,500 trips in 2011.*

Source: SEWRPC

Table 5.9
Average Trip Lengths and Times for Internal Household Person Trips in the Region by Trip Purpose: 1963, 1972, 1991, 2001, and 2011

Trip Purpose	1963 Trip Length		1972 Trip Length		1991 Trip Length		2001 Trip Length		2011 Trip Length	
	Minutes	Miles	Minutes	Miles	Minutes	Miles	Minutes	Miles	Minutes	Miles
Home-Based Work	18.5	6.1	16.1	7.5	16.9	9.1	19.1	9.8	19.6	11.0
Home-Based Shopping	9.7	3.3	9.6	4.0	9.1	4.3	9.6	4.7	9.8	4.8
Home-Based Other	12.7	4.6	11.6	4.9	10.9	5.4	11.6	6.0	11.3	5.9
Nonhome-Based	13.0	4.0	12.4	4.9	11.6	5.7	12.3	5.9	11.7	6.2
Average	13.8	4.7	12.6	5.4	12.3	6.3	13.7	6.8	13.3	7.1

Trip Purpose	Percent Change							
	1963-2011		1972-2011		1991-2011		2001-2011	
	Minutes	Miles	Minutes	Miles	Minutes	Miles	Minutes	Miles
Home-Based Work	5.7	79.8	21.5	46.3	15.7	20.5	2.4	11.9
Home-Based Shopping	0.5	46.1	1.6	20.5	7.1	12.1	1.6	2.6
Home-Based Other	-11.4	28.0	-3.0	20.2	3.2	9.1	-3.0	-1.8
Nonhome-Based	-10.2	54.8	-5.9	26.3	0.6	8.6	-5.1	4.9
Average	-3.6	51.9	5.6	32.2	8.2	13.3	-2.8	5.0

Source: SEWRPC

Table 5.10
Average Personal Vehicle Occupancy of Average Weekday Household Internal Trips in the Region by Selected Trip Purpose: 1963, 1972, 1991, 2001, and 2011

Year	Vehicle Occupancy (Number of People)				
	Home-Based Work	Home-Based Shopping	Home-Based Other	Nonhome-Based	Total Travel
1963	1.21	1.53	1.58	1.34	1.42
1972	1.17	1.47	1.54	1.38	1.39
1991	1.06	1.27	1.34	1.20	1.22
2001	1.05	1.22	1.32	1.18	1.19
2011	1.06	1.25	1.31	1.19	1.20

Source: SEWRPC

3 percent between 2001 and 2011. The reduction in travel time may be attributed to capacity improvements implemented since 2001 as well as modest decline in congestion due to the decline in internal personal travel.

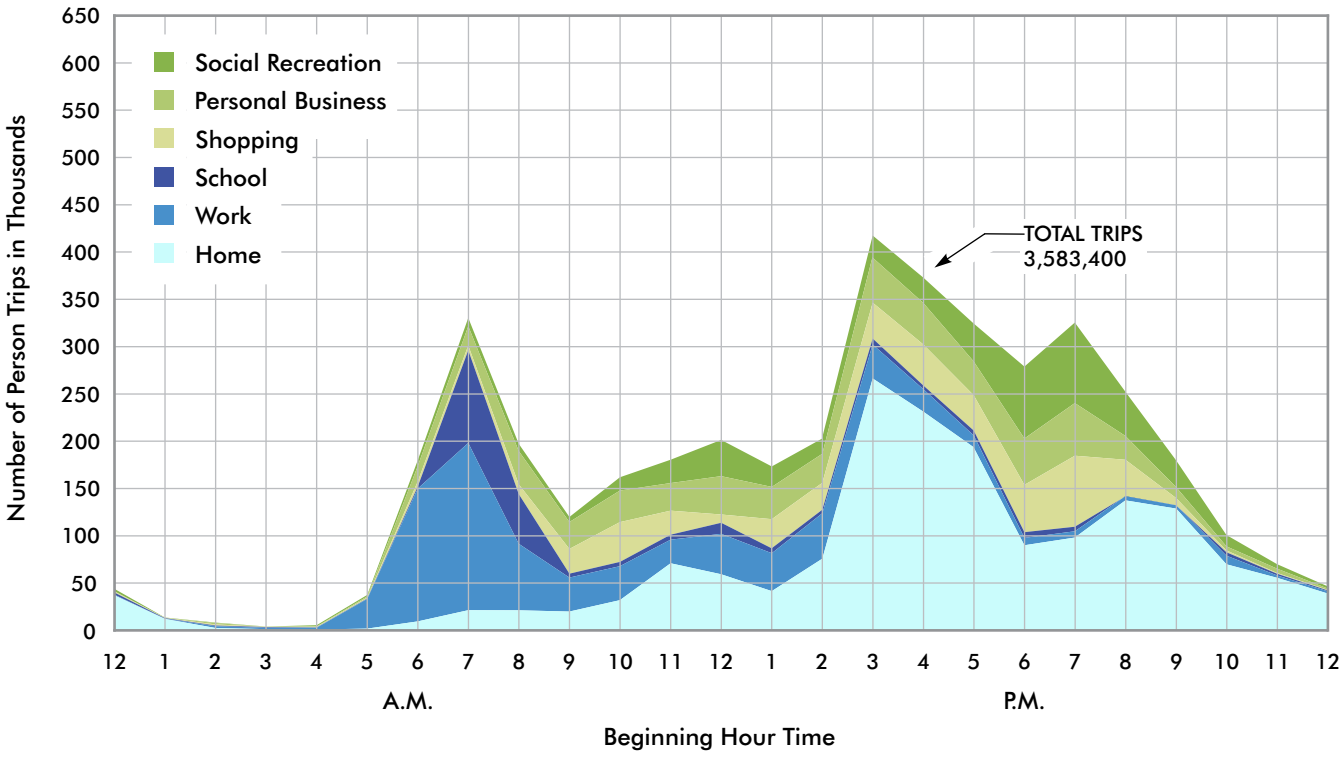
Average Personal Vehicle Occupancy by Selected Trip Purpose
Average personal vehicle occupancy represents the number of people per vehicle for vehicle trips. Declines in vehicle occupancy represent corresponding increases in vehicle trips. The overall average number of people per vehicle, including the driver, declined slightly from 1963 to 1972, from 1.42 to 1.39, as shown in Table 5.10. From 1972 to 1991, however, the overall occupancy rate decreased substantially by 12 percent, from 1.39 to 1.22 people per vehicle, with significant declines in every trip purpose. From 1991 to 2001 average personal vehicle occupancy experienced another slight decline of about 3 percent from 1.22 to 1.19 people per vehicle. From 2001 to 2011 average personal vehicle occupancy experienced a modest increase of approximately 1 percent from 1.19 to 1.20 people per vehicle.

Hourly Patterns of Internal Person Travel
The hourly distributional patterns of internal person trips indicated that although total person trip volumes increased substantially on an average weekday from 1963 to 2011, the regular ebb and flow of travel remained very similar both in the proportion of trips by trip purpose and in the proportion and times of peak periods (see Figures 5.1, 5.2, 5.3, 5.4, and 5.5). Approximately 35 percent of daily travel within the Region occurred in the two morning and two afternoon peak hours of the day in each survey year. Of these peak hour movements, trips to and from work comprised 47 percent of the total in 1963, 44 percent in 1972, and 41 percent in 1991, 39 percent in 2001, and 39 percent in 2011. These findings continue to indicate that one of the primary transportation problems within the Region continues to be meeting the peak demand of the journeys to and from work.

About 35% of daily travel in each survey year has occurred in the morning and afternoon peak periods.

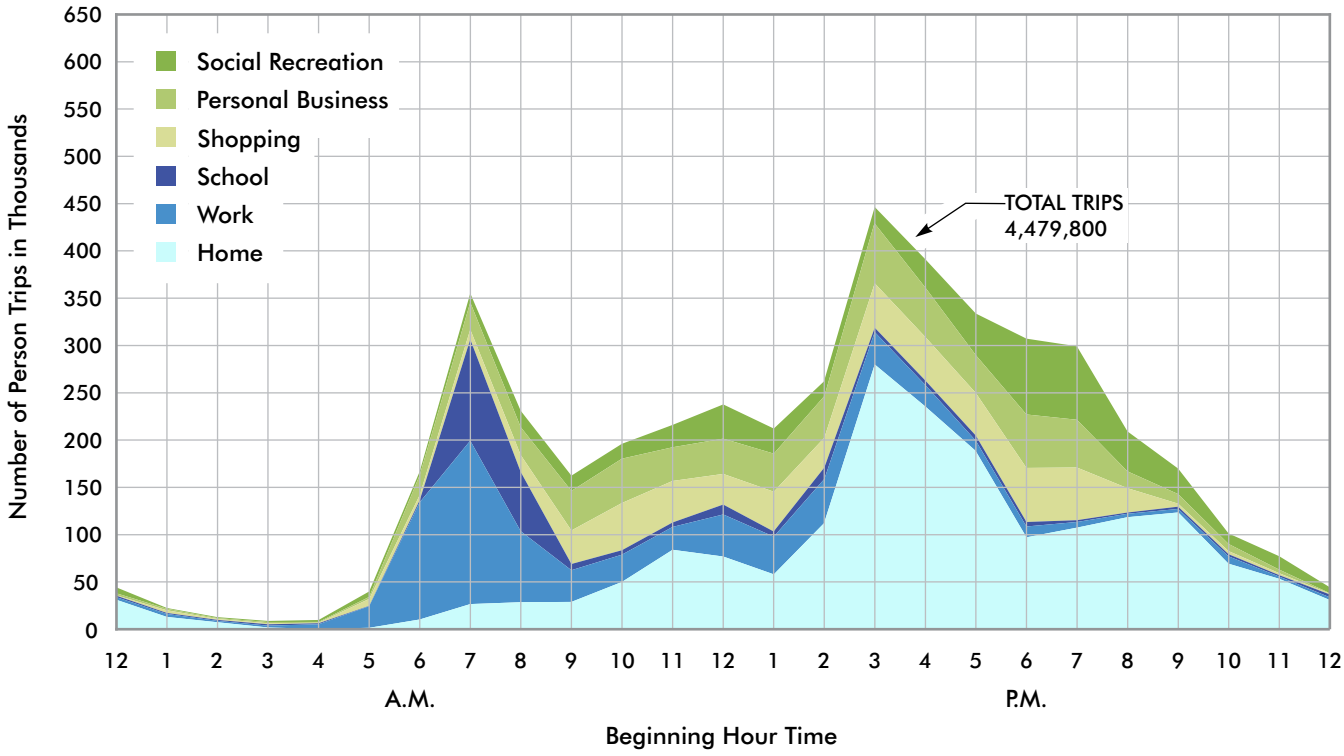
County-to-County Trip Patterns
Map 5.1 and Table 5.11 show the magnitude of intra- and inter-county travel within the Region, excluding school trips, on an average weekday in 1963, 1972, 1991, 2001, and 2011. Trips are shown in produced-attracted format—that is, from area of production to area of attraction. The production county for a trip having one end at "home", that is either beginning at or ending at home, is the county location of the "home" and the attraction county is the "non-home" end county location for that trip. The production county for trips having neither end at "home" is the county location of the trip origin and the attraction county is the county location of the trip destination. Thus, the trips shown on Map 5.1 and in Table 5.11 largely indicate the trips made by residents of each county of the Region on an average weekday to and from each other county.

Figure 5.1
Hourly Variation of Average Weekday Internal Person Trips in the Region by Trip Purpose at Destination: 1963



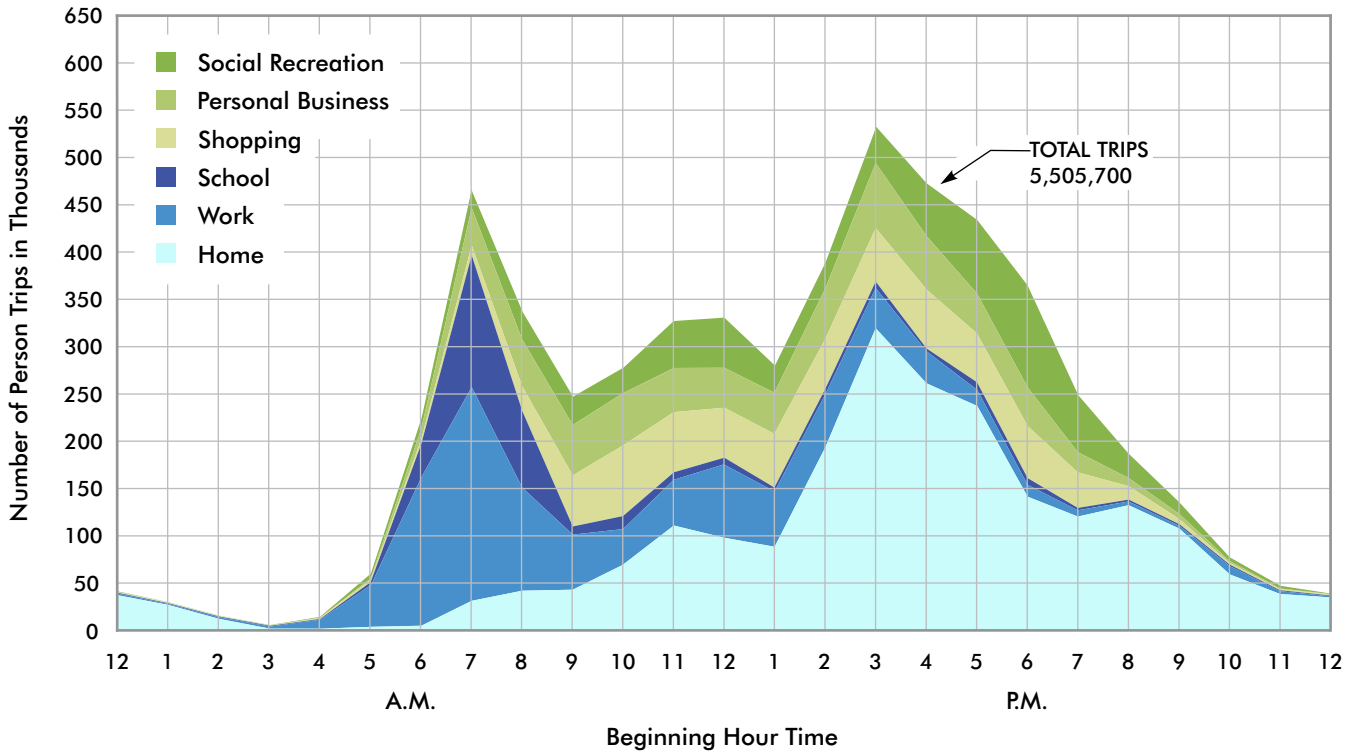
Source: SEWRPC

Figure 5.2
Hourly Variation of Average Weekday Internal Person Trips in the Region by Trip Purpose at Destination: 1972



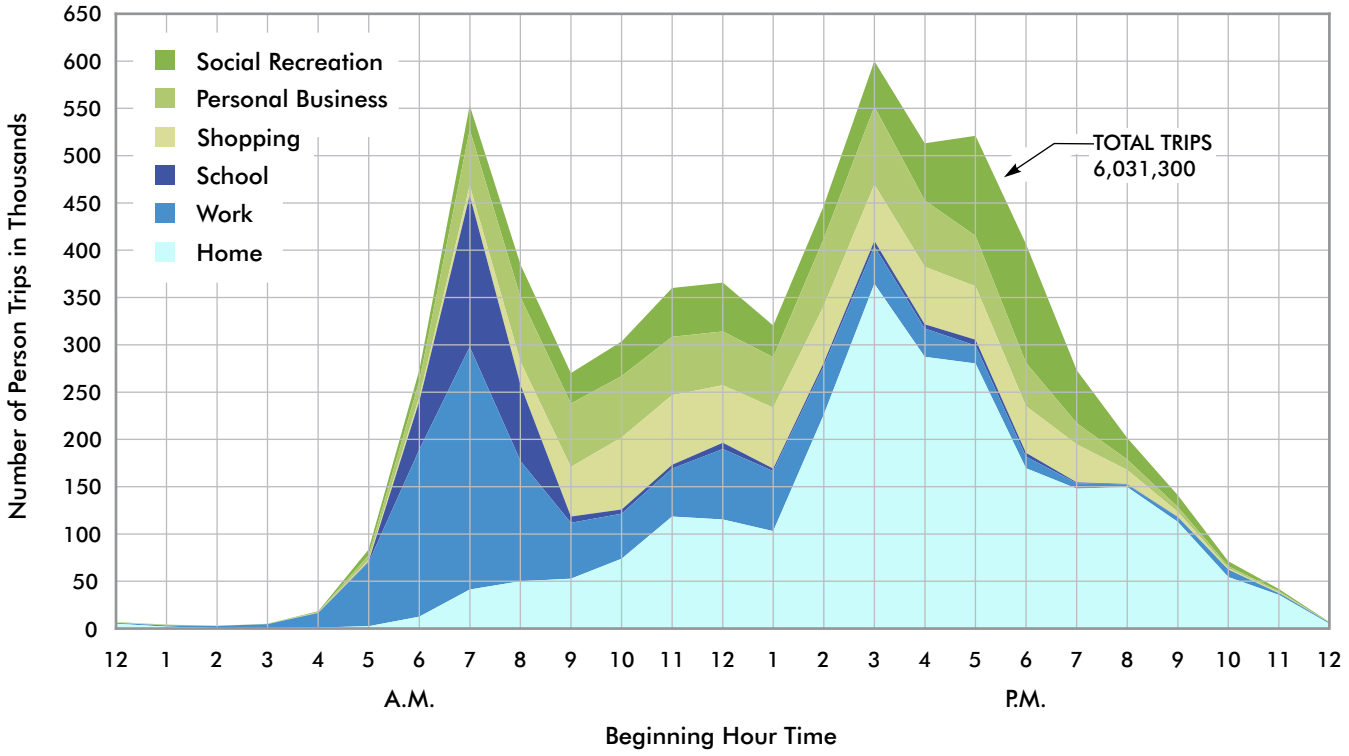
Source: SEWRPC

Figure 5.3
Hourly Variation of Average Weekday Internal Person Trips in the Region by Trip Purpose at Destination: 1991



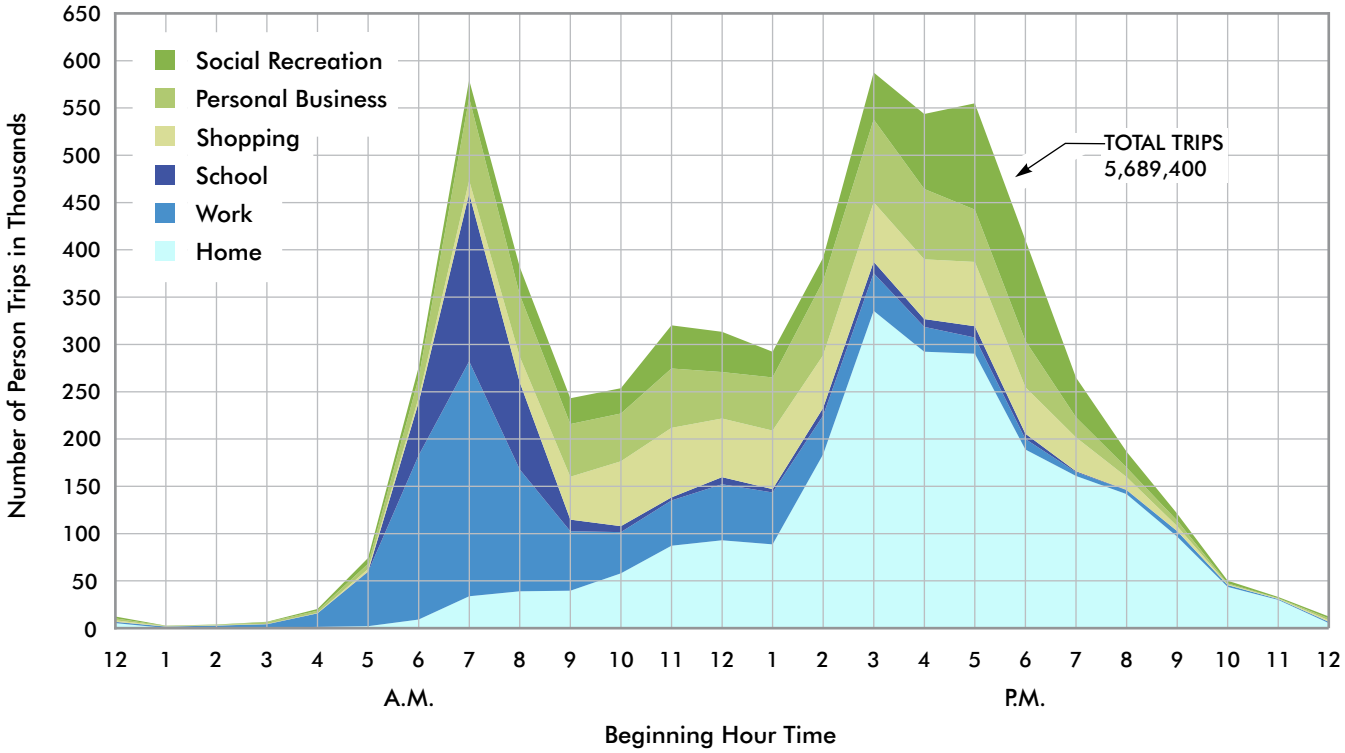
Source: SEWRPC

Figure 5.4
Hourly Variation of Average Weekday Internal Person Trips in the Region by Trip Purpose at Destination: 2001



Source: SEWRPC

Figure 5.5
Hourly Variation of Average Weekday Internal Person Trips in the Region by Trip Purpose at Destination: 2011



Source: SEWRPC

Several important conclusions can be drawn from these data. First, travel internal to counties dominates total travel within the Region. However, there has been a small shift over time away from intra-county travel toward increased inter-county travel. In 1963, 91 percent of trips, excluding school trips, were intra-county, that is, they had both origin and destination within the same county, while 9 percent of trips were inter-county. In 1972, 88 percent of trips were intra-county, while 12 percent were inter-county. In 1991, 85 percent of the trips were intra-county, while 15 percent were inter-county. In 2001, 82 percent of the trips were intra-county, while 18 percent were inter-county. In 2011, 81 percent of the trips were intra-county, while 19 percent were inter-county.

Second, the proportion of travel internal to the three urbanized counties—Kenosha, Milwaukee, and Racine—relative to total regional travel has decreased. As shown in Table 5.11, travel internal to the urbanized counties has decreased from 80 percent of all travel in 1963, to 70 percent in 1972, to 60 percent in 1991, 56 percent in 2001, and 52 percent in 2011.

Third, the number of trips to and within Milwaukee County has decreased from 67 percent of all trips in 1963 to 59 percent in 1972, to 52 percent in 1991, to 49 percent in 2001, and to 45 percent in 2011. Historically, a majority of the travel between Milwaukee and Waukesha Counties has been to Milwaukee County. In 2001, travel between the two counties was fairly balanced, and in 2011 the majority of travel between Milwaukee and Waukesha Counties was to Waukesha County.

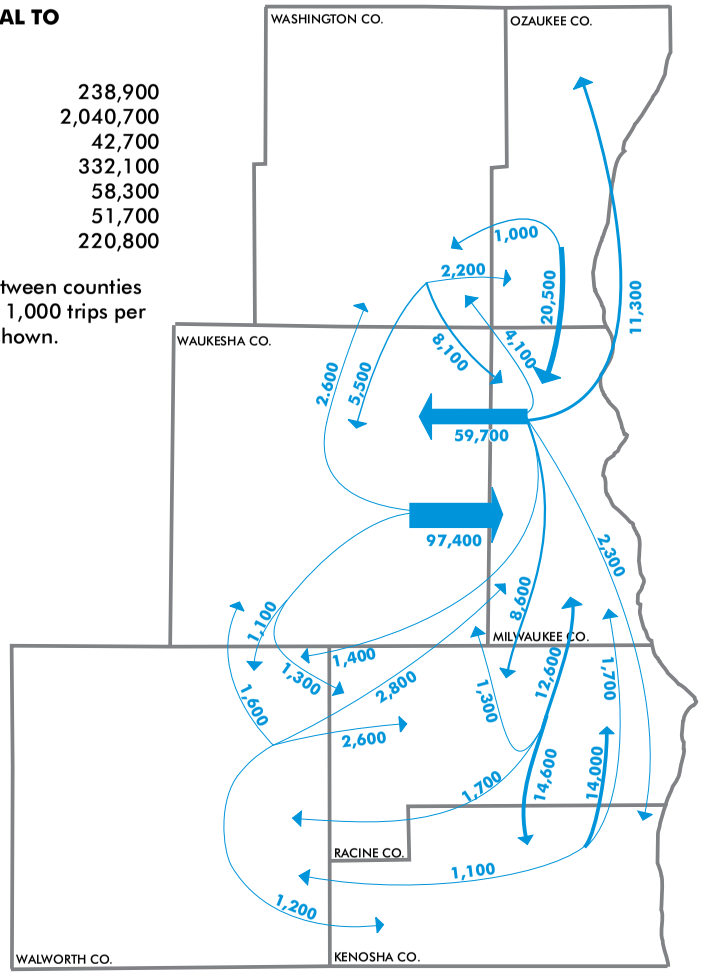
Map 5.1
Average Weekday Person Trips Between Counties in the Region: 1963, 1972, 1991, 2001, and 2011

1963

TRIPS INTERNAL TO COUNTIES[a]

KENOSHA	238,900
MILWAUKEE	2,040,700
OZAUKEE	42,700
RACINE	332,100
WALWORTH	58,300
WASHINGTON	51,700
WAUKESHA	220,800

Note: Travel between counties less than 1,000 trips per day not shown.

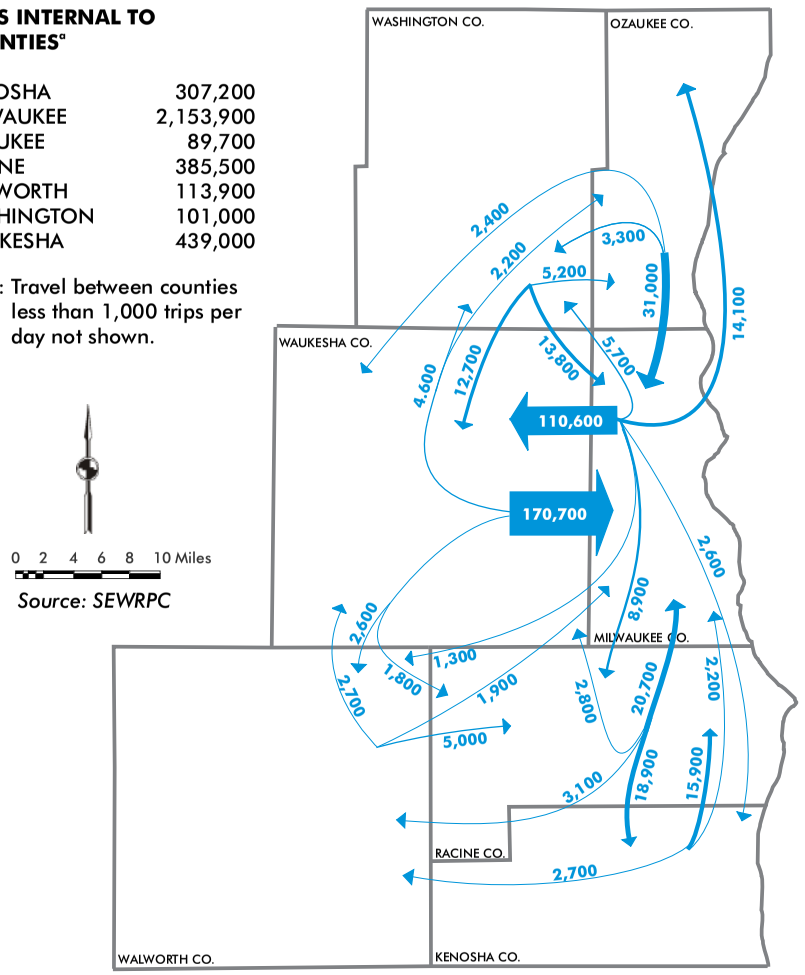


1972

TRIPS INTERNAL TO COUNTIES[a]

KENOSHA	307,200
MILWAUKEE	2,153,900
OZAUKEE	89,700
RACINE	385,500
WALWORTH	113,900
WASHINGTON	101,000
WAUKESHA	439,000

Note: Travel between counties less than 1,000 trips per day not shown.



Source: SEWRPC

[a]Trips are based on the resident household survey and include all trip purposes except school. Trips are shown in produced-attracted format—that is, from area of production to area of attraction. The production county for a trip having one end at "home"—that is, either beginning at or ending at home—is the county location of the "home" and the attraction county is the "non-home" end county location for that trip. The production county for trips having neither end at "home" is the county location of the trip origin and the attraction county is the county location of the trip destination. Thus, the trips shown in the table largely indicate the trips made by residents of each county of the Region on an average weekday to and from each other county.

Trips made by bicycle and walking are not included in this analysis, as they were not surveyed for non-work trip purposes in 1963, 1972, and 1991.

Source: SEWRPC

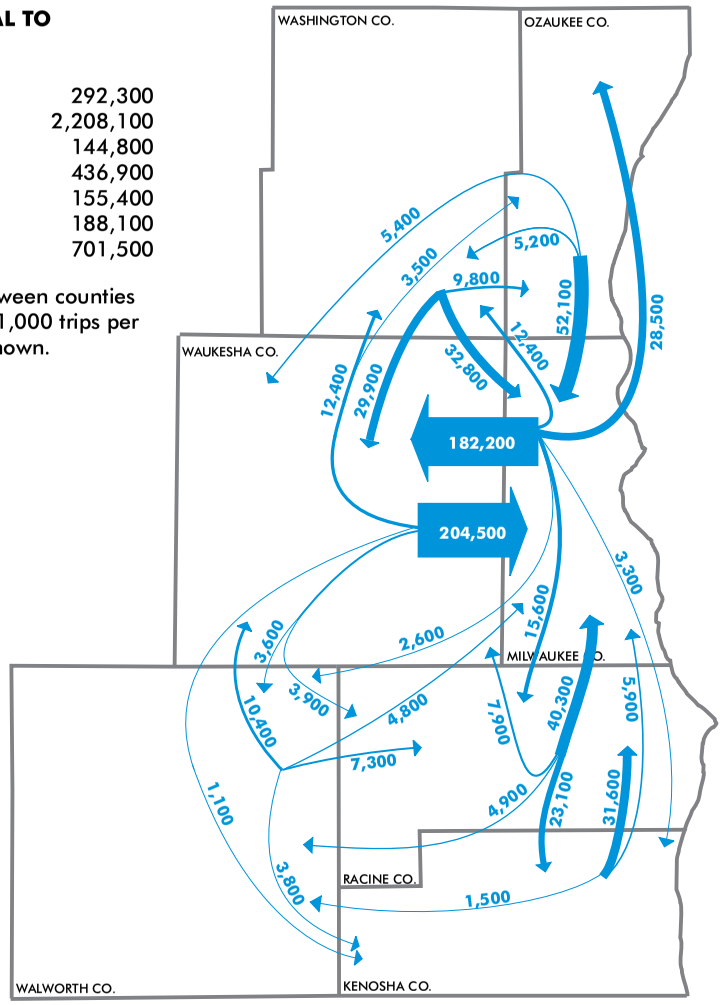
Map 5.1 (Continued)

1991

TRIPS INTERNAL TO COUNTIES[a]

KENOSHA	292,300
MILWAUKEE	2,208,100
OZAUKEE	144,800
RACINE	436,900
WALWORTH	155,400
WASHINGTON	188,100
WAUKESHA	701,500

Note: Travel between counties less than 1,000 trips per day not shown.

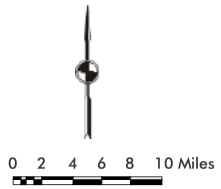


2001

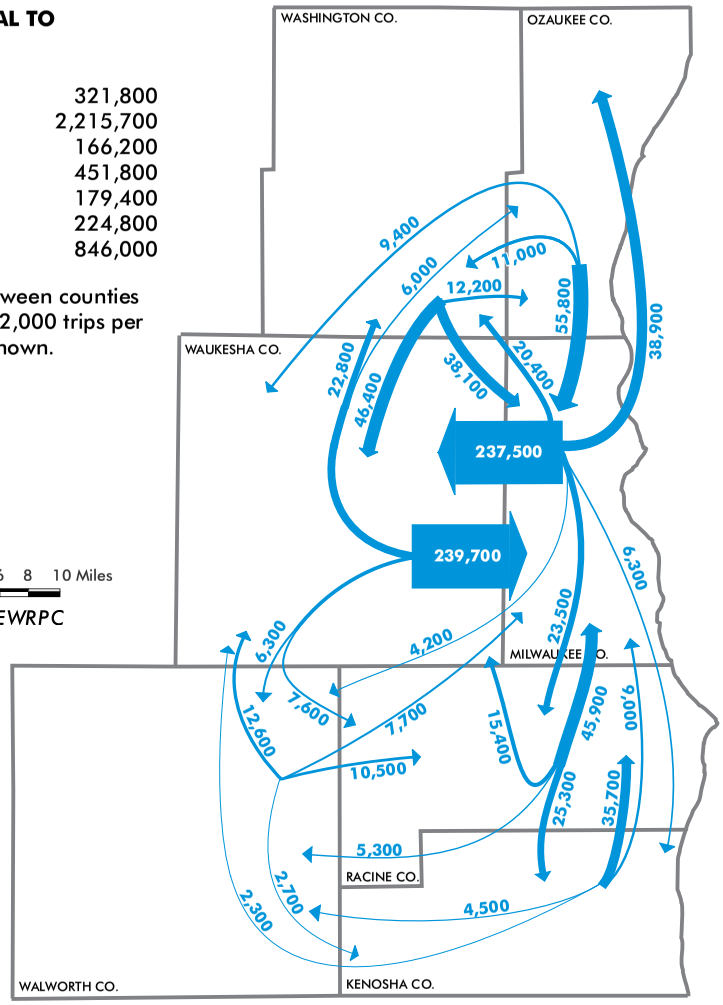
TRIPS INTERNAL TO COUNTIES[a]

KENOSHA	321,800
MILWAUKEE	2,215,700
OZAUKEE	166,200
RACINE	451,800
WALWORTH	179,400
WASHINGTON	224,800
WAUKESHA	846,000

Note: Travel between counties less than 2,000 trips per day not shown.



Source: SEWRPC

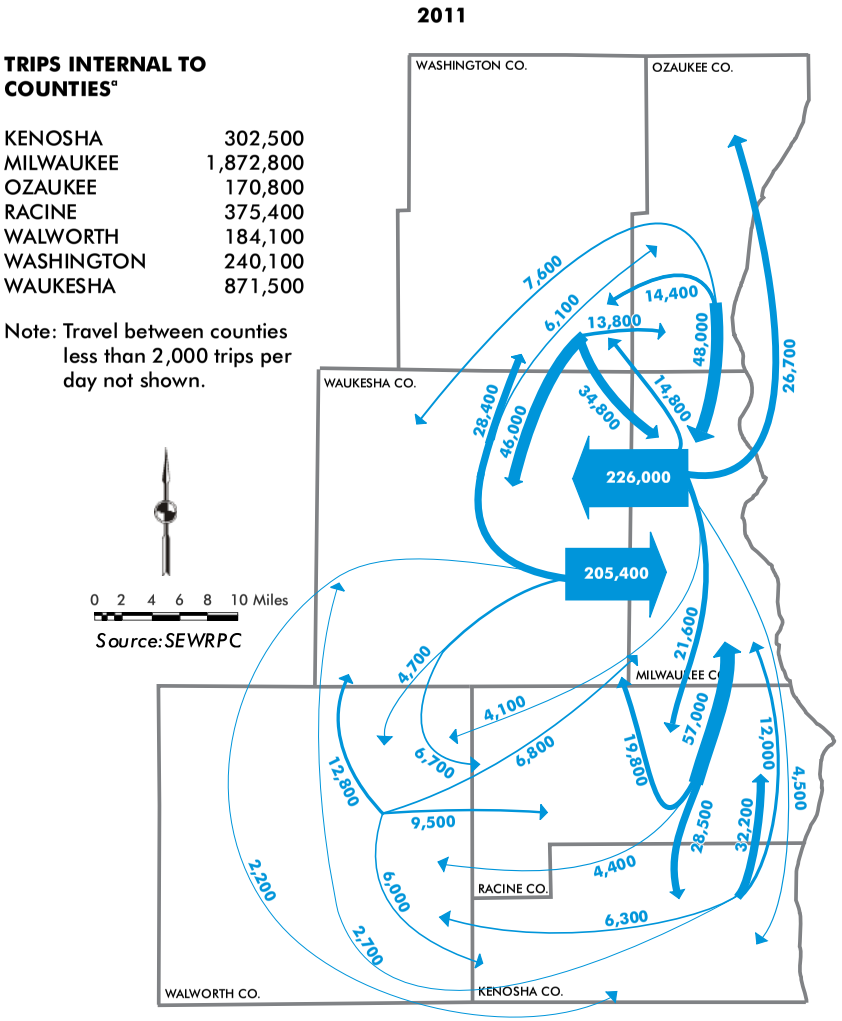


[a]*Trips are based on the resident household survey and include all trip purposes except school. Trips are shown in produced-attracted format—that is, from area of production to area of attraction. The production county for a trip having one end at "home"—that is, either beginning at or ending at home—is the county location of the "home" and the attraction county is the "non-home" end county location for that trip. The production county for trips having neither end at "home" is the county location of the trip origin and the attraction county is the county location of the trip destination. Thus, the trips shown in the table largely indicate the trips made by residents of each county of the Region on an average weekday to and from each other county.*

Trips made by bicycle and walking are not included in this analysis, as they were not surveyed for non-work trip purposes in 1963, 1972, and 1991.

Source: SEWRPC

Map 5.1 (Continued)



°*Trips are based on the resident household survey and include all trip purposes except school. Trips are shown in produced-attracted format—that is, from area of production to area of attraction. The production county for a trip having one end at "home"—that is, either beginning at or ending at home—is the county location of the "home" and the attraction county is the "non-home" end county location for that trip. The production county for trips having neither end at "home" is the county location of the trip origin and the attraction county is the county location of the trip destination. Thus, the trips shown in the table largely indicate the trips made by residents of each county of the Region on an average weekday to and from each other county.*

Trips made by bicycle and walking are not included in this analysis, as they were not surveyed for non-work trip purposes in 1963, 1972, and 1991.

Source: SEWRPC

Table 5.11
Average Weekday Person Trips (Excluding School Trips) Between, and Within, Counties in the Region: 1963, 1972, 1991, 2001, and 2011[a]

Production County	Attraction County: 1963							
	Kenosha	Milwaukee	Ozaukee	Racine	Walworth	Washington	Waukesha	Total
Kenosha	238,900	1,700	--	14,000	1,100	--	100	255,800
Milwaukee	2,300	2,040,700	11,300	8,600	1,400	4,100	59,700	2,128,100
Ozaukee	--	20,500	42,700	--	--	1,000	600	64,800
Racine	14,600	12,600	--	332,100	1,700	--	1,300	362,300
Walworth	1,200	2,800	--	2,600	58,300	200	1,600	66,700
Washington	300	8,100	2,200	--	200	51,700	5,500	68,000
Waukesha	300	97,400	900	1,300	1,100	2,600	220,800	324,400
Region	257,600	2,183,800	57,100	358,600	63,800	59,600	289,600	3,270,100

Production County	Attraction County: 1972							
	Kenosha	Milwaukee	Ozaukee	Racine	Walworth	Washington	Waukesha	Total
Kenosha	307,200	2,200	100	15,900	2,700	--	100	328,200
Milwaukee	2,600	2,153,900	14,100	8,900	1,300	5,700	110,600	2,297,100
Ozaukee	--	31,000	89,700	--	--	3,300	2,400	126,400
Racine	18,900	20,700	--	385,500	3,100	100	2,800	431,100
Walworth	800	1,900	--	5,000	113,900	--	2,700	124,300
Washington	100	13,800	5,200	100	--	101,000	12,700	132,900
Waukesha	100	170,700	2,200	1,800	2,600	4,600	439,000	621,000
Region	329,700	2,394,200	111,300	417,200	123,600	114,700	570,300	4,061,000

Production County	Attraction County: 1991							
	Kenosha	Milwaukee	Ozaukee	Racine	Walworth	Washington	Waukesha	Total
Kenosha	292,300	5,900	100	31,600	1,500	--	700	332,100
Milwaukee	3,300	2,208,100	28,500	15,600	2,600	12,400	182,200	2,452,700
Ozaukee	200	52,100	144,800	200	100	5,200	5,400	208,000
Racine	23,100	40,300	500	436,900	4,900	300	7,900	513,900
Walworth	3,800	4,800	100	7,300	155,400	--	10,400	181,800
Washington	100	32,800	9,800	300	100	188,100	29,900	261,100
Waukesha	1,100	204,500	3,500	3,900	3,600	12,400	701,500	930,500
Region	323,900	2,548,500	187,300	495,800	168,200	218,400	938,000	4,880,100

Production County	Attraction County: 2001							
	Kenosha	Milwaukee	Ozaukee	Racine	Walworth	Washington	Waukesha	Total
Kenosha	321,800	9,000	100	35,700	4,500	300	2,300	373,700
Milwaukee	6,300	2,215,700	38,900	23,500	4,200	20,400	237,500	2,546,500
Ozaukee	--	55,800	166,200	500	--	11,000	9,400	242,900
Racine	25,300	45,900	1,600	451,800	5,300	700	15,400	546,800
Walworth	2,700	7,700	100	10,500	179,400	300	12,600	213,300
Washington	300	38,100	12,200	300	100	224,800	46,400	322,200
Waukesha	1,400	239,700	6,000	7,600	6,300	22,800	846,000	1,129,800
Region	357,800	2,611,900	225,100	529,900	199,800	280,300	1,169,600	5,374,400

Production County	Attraction County: 2011							
	Kenosha	Milwaukee	Ozaukee	Racine	Walworth	Washington	Waukesha	Total
Kenosha	302,500	12,000	300	32,200	6,300	100	2,700	356,100
Milwaukee	4,500	1,872,800	26,700	21,600	4,100	14,800	226,000	2,170,500
Ozaukee	200	48,000	170,800	500	--	14,400	7,600	241,500
Racine	28,500	57,000	100	375,400	4,400	600	19,800	485,800
Walworth	6,000	6,800	--	9,500	184,100	--	12,800	219,200
Washington	200	34,800	13,800	500	--	240,100	46,000	335,400
Waukesha	2,200	205,400	6,100	6,700	4,700	28,400	871,500	1,125,000
Region	344,100	2,236,800	217,800	446,400	203,600	298,400	1,186,400	4,933,500

[a] *Trips are based on the resident household survey and include all trip purposes except school. Trips are shown in produced-attracted format—that is, from area of production to area of attraction. The production county for a trip having one end at "home"—that is, either beginning at or ending at home—is the county location of the "home" and the attraction county is the "non-home" end county location for that trip. The production county for trips having neither end at "home" is the county location of the trip origin and the attraction county is the county location of the trip destination. Thus, the trips shown in the table largely indicate the trips made by residents of each county of the Region on an average weekday to and from each other county.*

Trips made by bicycle and walking are not included in this analysis, as they were not surveyed for non-work trip purposes in 1963, 1972, and 1991.

Source: SEWRPC

Generational Differences in Internal Personal Travel

Tables 5.12 through 5.15 compare generational differences in tripmaking between the 1991, 2001, and 2011 household travel inventories with regard to vehicle availability, household size, mode of travel, and trip purpose. Household data were quantified based on the age of the head of household. Each age grouping was selected to best represent each generation at the time of the 2011 household inventory: Millennials (ages 16 through 26), Generation X (ages 27 through 46), Baby Boomers (ages 47 through 66), and the Greatest Generation (ages 67 and older). The generations in 2011 were compared to similar age brackets in the 2001 and 1991 household inventory in an attempt to determine whether the current generations are behaving differently than in the past.

Table 5.12 shows the distribution of households and person trips by vehicle availability and age category. This comparison shows that across age categories there is a strong correlation between vehicle availability and person trips per household, with the number of trips per household increasing with the number of vehicles available. Household tripmaking peaks in the 27 to 46 age category and tripmaking decreases as households age.

Table 5.13 shows the distribution of households and person trips by household size and age group. This comparison shows that across age categories there is a strong correlation between household size and person trips per household, with the number of trips per household increasing with household size.

Table 5.14 shows the distribution of trips by mode of travel in 2001 and 2011. Travel in 1991 was excluded from this table since walk and bike trips were not collected for non-work travel. Auto trips are significantly lower, and bicycle and walking and public transit trips are significantly higher, as a proportion of all trips for households with head of household of ages 16 to 26. Between 2001 and 2011 bicycle and walking trips increased for all households regardless of age.

Table 5.15 shows the distribution of trips by purpose by age category. As was indicated by Table 5.8, Table 5.15 shows travel by purpose to be down since 2001 across all age categories with the exception of nonhome-based and school trips, which showed slight increases from 2001 to 2011.

Overall, this analysis indicates there has been a general decrease in household tripmaking occurring across all age groups since 1991. This analysis indicates that household tripmaking peaks in the 27 to 46 age category and average household trip rates decline as households age. In general, the changes seen in the data are present across all age groups, and the trends associated with a particular age group relative to another age group are very similar from 1991 to 2011. While the number of trips generated by a household do change as a household ages, this analysis does not indicate that generations, like the Millennials, are behaving significantly differently than their predecessors in similar age categories in 1991 and 2001. This analysis of travel behavior by different generations does indicate that there has been a general decrease in household travel since 1991, but it does not indicate that one generation is significantly driving the change as compared to other generations.

While survey data show a general decrease in household travel since 1991, analysis indicates that generations, like the Millennials, are not behaving significantly differently than their predecessors in similar age categories.

Internal Commercial Truck Travel

The number of trucks available within the Region increased from 58,500 in 1963 to 77,250 in 1972, to 87,500 in 1991, and to 129,500 in 2001,

Table 5.12
Average Weekday Internal Person Trips Per Household in the Region by Age of Head of Household and Vehicle Availability: 1991, 2001, and 2011[a]

	Vehicles Available	Households by Age of Head of Household				Person Trips by Age of Head of Household				Person Trips per Household by Age of Head of Household			
		16 to 26	27 to 46	47 to 66	67+	16 to 26	27 to 46	47 to 66	67+	16 to 26	27 to 46	47 to 66	67+
1991	None	7,900	17,800	10,900	25,300	24,600	77,300	24,200	30,200	3.1	4.3	2.2	1.2
	One	13,700	89,700	60,400	69,900	73,200	550,800	315,000	352,800	5.3	6.1	5.2	5.0
	Two	13,300	156,600	84,700	26,500	101,100	1,729,800	757,300	213,500	7.6	11.0	8.9	8.1
	Three or More	2,600	44,400	47,000	5,300	21,800	584,100	593,600	56,000	8.4	13.2	12.6	10.6
	Total	37,500	308,500	203,000	127,000	220,700	2,942,000	1,690,100	652,400	5.9	9.5	8.3	5.1
2001	None	5,700	19,200	23,800	15,600	18,300	62,300	53,600	26,800	3.2	3.2	2.3	1.7
	One	20,600	91,600	88,300	67,000	99,500	610,800	490,100	388,000	4.8	6.7	5.6	5.8
	Two	12,000	142,900	108,300	31,100	81,800	1,506,600	942,800	255,900	6.8	10.5	8.7	8.2
	Three or More	4,200	59,000	64,500	5,800	38,800	695,200	704,400	56,500	9.2	11.8	10.9	9.7
	Total	42,500	312,700	284,900	119,500	238,400	2,874,900	2,190,900	727,200	5.6	9.2	7.7	6.1
2011	None	7,600	19,400	26,000	18,800	22,100	86,900	69,600	27,400	2.9	4.5	2.7	1.5
	One	24,400	96,900	92,200	69,500	93,000	553,300	453,400	289,300	3.8	5.7	4.9	4.2
	Two	15,800	139,100	114,100	44,800	115,100	1,353,500	923,600	278,300	7.3	9.7	8.1	6.2
	Three or More	3,400	44,700	75,800	9,500	26,700	494,800	828,000	74,400	7.9	11.1	10.9	7.8
	Total	51,200	300,100	308,100	142,600	256,900	2,488,500	2,274,600	669,400	5.0	8.3	7.4	4.7

[a] *Trips made by bicycle and walking are not included in this analysis, as they were not surveyed for non-work trip purposes in 1991.*

Source: SEWRPC

Table 5.13
Average Weekday Internal Person Trips Per Household in the Region by Age of Head of Household and Household Size: 1991, 2001, and 2011[a]

	Household Size	Households by Age of Head of Household				Person Trips by Age of Head of Household				Person Trips per Household by Age of Head of Household			
		16 to 26	27 to 46	47 to 66	67+	16 to 26	27 to 46	47 to 66	67+	16 to 26	27 to 46	47 to 66	67+
1991	One	9,700	56,600	44,900	57,400	37,600	217,800	156,400	153,800	3.9	3.8	3.5	2.7
	Two	12,600	57,200	86,100	58,200	80,400	404,800	651,500	389,000	6.4	7.1	7.6	6.7
	Three	7,900	60,000	39,600	8,600	52,100	535,900	411,400	76,200	6.6	8.9	10.4	8.9
	Four	4,500	79,100	18,800	2,000	29,000	969,300	260,700	24,000	6.4	12.3	13.9	12.0
	Five or More	2,800	55,600	13,600	800	21,600	814,200	210,100	9,500	7.7	14.6	15.4	11.9
	Total	37,500	308,500	203,000	127,000	220,700	2,942,000	1,690,100	652,500	5.9	9.5	8.3	5.1
2001	One	12,700	57,800	84,100	56,600	42,400	221,700	329,700	216,300	3.3	3.8	3.9	3.8
	Two	12,300	60,200	119,500	55,300	75,200	380,700	883,100	430,900	6.1	6.3	7.4	7.8
	Three	7,800	60,700	45,100	5,300	47,800	532,100	473,500	51,200	6.1	8.8	10.5	9.7
	Four	5,900	75,300	23,500	1,600	41,600	886,800	300,400	20,400	7.1	11.8	12.8	12.8
	Five or More	3,800	58,700	12,700	700	31,400	853,600	204,200	8,400	8.3	14.5	16.1	12.0
	Total	42,500	312,700	284,900	119,500	238,400	2,874,900	2,190,900	727,200	5.6	9.2	7.7	6.1
2011	One	18,700	59,800	94,300	60,500	56,400	203,600	302,900	173,200	3.0	3.4	3.2	2.9
	Two	18,800	59,400	114,400	73,200	113,200	356,600	733,100	421,000	6.0	6.0	6.4	5.8
	Three	9,800	59,400	47,700	7,000	52,100	462,700	486,300	55,900	5.3	7.8	10.2	8.0
	Four	3,500	66,000	32,000	1,400	33,700	685,100	440,700	13,800	9.6	10.4	13.8	9.9
	Five or More	400	55,500	19,700	500	1,500	780,500	311,600	5,500	3.8	14.1	15.8	11.0
	Total	51,200	300,100	308,100	142,600	256,900	2,488,500	2,274,600	669,400	5.0	8.3	7.4	4.7

[a] *Trips made by bicycle and walking are not included in this analysis, as they were not surveyed for non-work trip purposes in 1991.*

Table 5.14
Distribution of Average Weekday Internal Person Trips by Households in the Region by Mode of Travel and Age of Head of Household: 2001 and 2011

		Person Trips by Age of Head of Household							
		16 to 26		27 to 46		47 to 66		67+	
	Mode of Travel	Number	Percent	Number	Percent	Number	Percent	Number	Percent
2001	Auto Driver	178,700	63.3	1,970,900	64.8	1,782,700	78.9	575,100	77.1
	Auto Passenger	39,900	14.1	640,500	21.1	311,700	13.8	138,700	18.6
	Public Transit	11,800	4.2	70,200	2.3	50,500	2.3	9,700	1.3
	School Bus	6,800	2.4	181,200	6.0	38,500	1.7	1,000	0.1
	Walk and Bicycle	43,900	15.6	164,500	5.4	68,400	3.0	18,800	2.5
	Other[a]	1,200	0.4	12,100	0.4	7,500	0.3	2,700	0.4
	Total	282,300	100.0	3,039,400	100.0	2,259,300	100.0	746,000	100.0
2011	Auto Driver	203,000	65.1	1,668,900	61.7	1,760,300	72.6	521,000	73.5
	Auto Passenger	35,300	11.3	598,700	22.1	388,500	16.0	137,800	19.4
	Public Transit	15,600	5.0	55,300	2.0	51,600	2.1	6,700	0.9
	School Bus	1,800	0.6	149,500	5.5	53,500	2.2	1,200	0.2
	Walk and Bicycle	54,700	17.6	218,000	8.1	150,900	6.2	39,900	5.6
	Other[a]	1,200	0.4	16,100	0.6	20,700	0.9	2,700	0.4
	Total	311,600	100.0	2,706,500	100.0	2,425,500	100.0	709,300	100.0

[a] *Includes motorcycle and taxi.*

Source: SEWRPC

Table 5.15
Average Weekday Internal Person Trips per Household in the Region by Age of Head of Household and Trip Purpose: 1991, 2001, and 2011[a]

		Person Trips by Age of Head of Household				Person Trips per Household by Age of Head of Household			
	Trip Purpose	16 to 26	27 to 46	47 to 66	67+	16 to 26	27 to 46	47 to 66	67+
1991	Home-Based Work	65,400	713,400	440,600	49,500	1.7	2.3	2.2	0.4
	Home-Based Shopping	26,700	344,300	257,400	169,400	0.7	1.1	1.3	1.3
	Home-Base Other	56,700	845,200	498,100	287,300	1.5	2.7	2.5	2.3
	Nonhome-Based	48,800	564,800	373,900	138,300	1.3	1.8	1.8	1.1
	School	23,100	474,300	120,100	8,000	0.6	1.5	0.6	0.1
	Total	220,700	2,942,000	1,690,100	652,500	5.9	9.5	8.3	5.1
2001	Home-Based Work	79,400	732,000	574,800	49,100	1.9	2.3	2.0	0.4
	Home-Based Shopping	27,900	273,700	300,500	159,400	0.7	0.9	1.1	1.3
	Home-Base Other	64,400	897,000	668,000	333,100	1.5	2.9	2.3	2.8
	Nonhome-Based	39,000	496,000	498,600	181,500	0.9	1.6	1.8	1.5
	School	27,700	476,200	149,000	4,100	0.7	1.5	0.5	<0.1
	Total	238,400	2,874,900	2,190,900	727,200	5.6	9.2	7.7	6.1
2011[b]	Home-Based Work	88,300	565,800	570,300	49,200	1.7	1.9	1.9	0.3
	Home-Based Shopping	24,100	224,100	265,100	137,800	0.5	0.7	0.9	1.0
	Home-Base Other	54,900	720,500	645,500	280,400	1.1	2.4	2.1	2.0
	Nonhome-Based	50,200	516,500	543,600	197,200	1.0	1.7	1.8	1.4
	School	39,400	461,600	250,100	4,800	0.8	1.5	0.8	<0.1
	Total	256,900	2,488,500	2,274,600	669,400	5.0	8.3	7.4	4.7

[a] *Trips made by bicycle and walking are not included in this analysis, as they were not surveyed for non-work trip purposes in 1991.*

[b] *The decline in tripmaking from 2001 to 2011 is overstated in this table as it does not include bicycle and walking trips, which increased from an estimated 295,700 trips in 2001 to 463,500 trips in 2011.*

Source: SEWRPC

Table 5.16
Commercial-Use Truck Availability and Average Weekday Internal Truck Trips in the Region by Type: 1963, 1972, 1991, 2001, and 2011

Type of Truck	Year	Trucks			Truck Trips			
		Number	Percent of Total	Percent Change	Number	Percent of Total	Percent Change	Trips per Truck
Light	1963	33,800	57.8	--	169,500	57.8	--	5.0
	1972	51,000	66.0	50.9	185,800	50.1	9.6	3.6
	1991	49,100	56.1	-3.7	214,300	41.1	15.3	4.4
	2001	79,600	61.5	62.1	319,100	54.8	48.9	4.0
	2011	67,300	55.3	-15.5	327,000	53.2	2.5	4.9
Medium	1963	20,500	35.0	--	110,900	37.8	--	5.4
	1972	22,850	29.6	11.5	173,500	46.8	56.4	7.6
	1991	28,400	32.5	24.3	259,700	49.8	49.7	9.1
	2001	35,600	27.5	25.4	196,200	33.7	-24.5	5.5
	2011	37,900	31.2	6.5	196,400	32.0	0.1	5.2
Heavy	1963	4,200	7.2	--	13,000	4.4	--	3.1
	1972	3,400	4.4	-19.0	11,700	3.1	-10.0	3.4
	1991	3,100	3.5	-8.8	17,500	3.6	49.6	5.6
	2001	6,600	5.1	112.9	41,200	7.1	135.4	6.2
	2011	5,700	4.7	-13.6	30,500	4.9	-26.0	5.4
Municipal	1963[a]	--	--	--	--	--	--	--
	1972[a]	--	--	--	--	--	--	--
	1991	6,900	7.9	--	28,600	5.5	--	4.1
	2001	7,700	5.9	11.6	26,000	4.4	-9.1	3.4
	2011	10,700	8.8	39.0	60,600	9.9	133.1	5.7
Total	1963	58,500	100.0	--	293,400	100.0	--	5.0
	1972	77,250	100.0	32.1	371,000	100.0	26.4	4.8
	1991	87,500	100.0	13.3	520,100	100.0	40.2	5.9
	2001	129,500	100.0	48.0	582,500	100.0	12.0	4.5
	2011	121,600	100.0	-6.1	614,500	100.0	5.5	5.1

[a] *Data for Municipal Trucks for 1963 and 1972 were not collected.*

Source: SEWRPC

and then declined to 121,600 in 2011, as shown in Table 5.16. Due to the substantial increase in the use of light trucks as personal vehicles rather than as commercial vehicles, the 1991, 2001, and 2011 commercial truck totals exclude trucks employed primarily for personal use. Such personal-use trucks were included in 1991, 2001, and 2011 with automobiles as personal-use vehicles. In 1963, personal-use trucks represented 5,100, or only about 9 percent, of the total 58,500 trucks available. In 1972 they represented 18,100, or about 23 percent, of the total 77,250 trucks available. By 1991, personal-use trucks were estimated to total about 80,600 trucks, or about 48 percent of the total 168,100 trucks available. This trend continued in 2001 and 2011. In 2001, personal-use trucks were estimated to total 132,900 trucks, or about 51 percent of the total 261,000 trucks available; in 2011, personal-use trucks were estimated to total 114,500 trucks, or about 48 percent of the 236,100 trucks available. Most of the reduction in the total trucks available between 2001 and 2011 is associated with a change in preference away from personal-use trucks toward more fuel-efficient passenger cars. This coincides with the increase in fuel price experienced over the last decade.

Together, the 121,600 light, medium, heavy, and municipal trucks in commercial use in 2011 made an estimated total of 614,500 trips on an average weekday in 2011, representing an increase of 32,000 trips, or 5.5 percent, from 2001; an increase of 62,400 trips, or 12 percent, from 1991; an increase of 211,500 trips, or 57 percent, since 1972; and, an increase of 289,100 trips, or 99 percent, since 1963. The average number of trips

Table 5.17
Selected Tripmaking Characteristics of Commercial-Use Trucks Garaged in the Region: 1963, 1972, 1991, 2001, and 2011

Trip Characteristics	1963	1972	1991	2001	2011
Average Weekday Trips per Truck	5.0	4.8	5.9	4.5	5.1
Average Trip Length (miles)	4.9	7.3	8.4	8.7	7.8

	Change							
	1963-2011		1972-2011		1991-2011		2001-2011	
Trip Characteristics	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Average Weekday Trips per Truck	0.1	1.1	0.3	5.3	-0.8	-14.3	0.6	12.3
Average Trip Length (miles)	2.9	59.8	0.5	7.3	-0.6	-6.8	-0.9	-10.0

Source: SEWRPC

per weekday for all trucks in commercial use has been fairly stable over the last five decades and was an estimated 5.1 trips per truck in 2011, 4.5 in 2001, 5.9 in 1991, 4.8 in 1972, and 5.0 in 1963. As shown in Table 5.17, the average miles traveled per truck trip increased from 4.9 miles per trip in 1963, to 7.3 in 1972, to 8.4 in 1991, and to 8.7 in 2001, and then declined to 7.8 in 2011.

External Trip Production

In addition to the 6.24 million internal person trips and 4.87 million internal vehicle trips made within the Region on an average weekday in 2011, there were 403,800 personal vehicle person trips and 363,800 total vehicle trips—including personal vehicle and commercial truck trips—entering, leaving, or passing through the Region. In each of the survey years, as indicated in Table 5.18, the numbers of external personal vehicle person and total vehicle trips entering the Region were very similar to the respective numbers of such trips leaving the Region, ranging from 47 to 48 percent in the case of total external personal vehicle person trips and from 46 to 47 percent of total external vehicle trips. External personal vehicle person and total vehicle trips that passed through the Region remained at about 8 percent of all external trips between 1963 and 1972, decreased to about 5 percent of all external trips in 1991 and 2001, and increased to about 6 percent of all external personal vehicle person trips and 8 percent of total vehicle trips in 2011.

As shown in Table 5.18, external travel both in terms of person and vehicle trips by county varies widely but is greatest in Kenosha County, which represented approximately 23 percent of inbound and outbound person trips and 22 percent of inbound and outbound vehicle trips in 2011. Kenosha County's share of external travel has been declining since 1991. In comparison, Waukesha County has seen continual growth in external travel both in terms of person trips and vehicle trips since 1991. In 2011, Waukesha County represented 21 percent of external person trips and 21 percent of external vehicle trips.

External personal vehicle person trips decreased from 191,700 in 1963 to 176,900 in 1972, a decrease of 8 percent. External personal vehicle person trips then increased to 317,400 in 1991 (79 percent), to 394,900 trips in 2001 (24 percent), and to 403,800 trips in 2011(2 percent). External personal vehicle trips, however, exhibited uniform increases, from 85,600 in 1963 to 100,800 in 1972 (18 percent), to 229,000 in 1991 (127 percent), to 290,900 in 2001 (27 percent), and to 298,000 in 2011 (2 percent). As shown

Table 5.18
Average Weekday External Person and Vehicle Trips in the Region by Direction by County: 1963, 1972, 1991, 2001, and 2011

	Direction	Year	Personal Vehicle Driver Trips[a]		Personal Vehicle Passenger Trips[a]		Personal Vehicle Person Trips			Commercial Truck Trips		Total Vehicle Trips		
			Number	Percent Change	Number	Percent Change	Number	Percent Change	Percent of All Directions	Number	Percent Change	Number	Percent Change	Percent of All Directions
Kenosha County	Inbound	1963	--	--	--	--	--	--	--	--	--	--	--	--
		1972	--	--	--	--	--	--	--	--	--	--	--	--
		1991	29,300	--	8,500	--	37,800	--	48.5	2,500	--	31,800	--	48.3
		2001	35,800	22.2	10,200	20.0	46,000	21.7	48.6	3,200	28.0	39,000	22.6	49.6
		2011	36,200	1.1	9,600	-5.9	45,800	-0.4	52.9	3,000	-6.3	39,200	0.5	52.6
	Outbound	1963	--	--	--	--	--	--	--	--	--	--	--	--
		1972	--	--	--	--	--	--	--	--	--	--	--	--
		1991	31,400	--	8,900	--	40,300	--	51.5	2,700	--	34,100	--	51.7
		2001	36,600	16.6	11,900	33.7	48,500	20.3	51.4	3,000	11.1	39,600	16.1	50.4
		2011	32,200	-12.0	8,600	-27.7	40,800	-15.9	47.1	3,100	3.3	35,300	-10.9	47.4
	All Directions	1963	--	--	--	--	--	--	--	--	--	--	--	--
		1972	--	--	--	--	--	--	--	--	--	--	--	--
		1991	60,700	--	17,400	--	78,100	--	100.0	5,200	--	65,900	--	100.0
		2001	72,400	19.3	22,100	27.0	94,500	21.0	100.0	6,200	19.2	78,600	19.3	100.0
		2011	68,400	-5.5	18,200	-17.6	86,600	-8.4	100.0	6,100	-1.6	74,500	-5.2	100.0
Milwaukee County	Inbound	1963	--	--	--	--	--	--	--	--	--	--	--	--
		1972	--	--	--	--	--	--	--	--	--	--	--	--
		1991	21,800	--	11,700	--	33,500	--	49.5	5,800	--	27,600	--	49.3
		2001	24,200	11.0	11,700	0.0	35,900	7.2	53.7	7,800	34.5	32,000	15.9	52.4
		2011	25,400	5.0	12,500	6.8	37,900	5.6	52.9	6,000	-23.1	31,400	-1.9	51.2
	Outbound	1963	--	--	--	--	--	--	--	--	--	--	--	--
		1972	--	--	--	--	--	--	--	--	--	--	--	--
		1991	22,400	--	11,800	--	34,200	--	50.5	6,000	--	28,400	--	50.7
		2001	22,400	0.0	8,600	-27.1	31,000	-9.4	46.3	6,700	11.7	29,100	2.5	47.6
		2011	23,300	4.0	10,400	20.9	33,700	8.7	47.1	6,600	-1.5	29,900	2.7	48.8
	All Directions	1963	--	--	--	--	--	--	--	--	--	--	--	--
		1972	--	--	--	--	--	--	--	--	--	--	--	--
		1991	44,200	--	23,500	--	67,700	--	100.0	11,800	--	56,000	--	100.0
		2001	46,600	5.4	20,300	-13.6	66,900	-1.2	100.0	14,500	22.9	61,100	9.1	100.0
		2011	48,700	4.5	22,900	12.8	71,600	7.0	100.0	12,600	-13.1	61,300	0.3	100.0

[a] *Includes personal-use trucks.*

Table continued on next page.

Table 5.18 (Continued)

	Direction	Year	Personal Vehicle Driver Trips[a]		Personal Vehicle Passenger Trips[a]		Personal Vehicle Person Trips			Commercial Truck Trips		Total Vehicle Trips		
			Number	Percent Change	Number	Percent Change	Number	Percent Change	Percent of All Directions	Year	Number	Percent Change	Number	Percent of All Directions
Ozaukee County	Inbound	1963	--	--	--	--	--	--	--	--	--	--	--	--
		1972	--	--	--	--	--	--	--	--	--	--	--	--
		1991	4,400	--	1,500	--	5,900	--	48.4	1,200	--	5,600	--	48.3
		2001	7,000	59.1	2,300	53.3	9,300	57.6	47.4	2,500	108.3	9,500	69.6	49.0
		2011	8,600	22.9	3,100	34.8	11,700	25.8	55.5	1,500	-40.0	10,100	6.3	55.5
	Outbound	1963	--	--	--	--	--	--	--	--	--	--	--	--
		1972	--	--	--	--	--	--	--	--	--	--	--	--
		1991	4,700	--	1,600	--	6,300	--	51.6	1,300	--	6,000	--	51.7
		2001	7,600	61.7	2,700	68.8	10,300	63.5	52.6	2,300	76.9	9,900	65.0	51.0
		2011	7,300	-3.9	2,100	-22.2	9,400	-8.7	44.5	800	-65.2	8,100	-18.2	44.5
	All Directions	1963	--	--	--	--	--	--	--	--	--	--	--	--
		1972	--	--	--	--	--	--	--	--	--	--	--	--
		1991	9,100	--	3,100	--	12,200	--	100.0	2,500	--	11,600	--	100.0
		2001	14,600	60.4	5,000	61.3	19,600	60.7	100.0	4,800	92.0	19,400	67.2	100.0
		2011	15,900	8.9	5,200	4.0	21,100	7.7	100.0	2,300	-52.1	18,200	-6.2	100.0
Racine County	Inbound	1963	--	--	--	--	--	--	--	--	--	--	--	--
		1972	--	--	--	--	--	--	--	--	--	--	--	--
		1991	6,600	--	2,400	--	9,000	--	47.4	1,100	--	7,700	--	47.8
		2001	6,400	-3.0	2,400	0.0	8,800	-2.2	48.4	2,000	81.8	8,400	9.1	50.9
		2011	8,100	26.6	2,500	4.2	10,600	20.5	46.3	5,70w0	185.0	13,800	64.3	53.5
	Outbound	1963	--	--	--	--	--	--	--	--	--	--	--	--
		1972	--	--	--	--	--	--	--	--	--	--	--	--
		1991	7,300	--	2,700	--	10,000	--	52.6	1,100	--	8,400	--	52.2
		2001	7,000	-4.1	2,400	-11.1	9,400	-6.0	51.6	1,100	0.0	8,100	-3.6	49.1
		2011	9,300	32.9	3,000	25.0	12,300	30.9	53.7	2,700	145.5	12,000	48.1	46.5
	All Directions	1963	--	--	--	--	--	--	--	--	--	--	--	--
		1972	--	--	--	--	--	--	--	--	--	--	--	--
		1991	13,900	--	5,100	--	19,000	--	100.0	2,200	--	16,100	--	100.0
		2001	13,400	-3.6	4,800	-5.9	18,200	-4.2	100.0	3,100	40.9	16,500	2.5	100.0
		2011	17,400	29.9	5,500	14.6	22,900	25.8	100.0	8,400	171.0	25,800	56.4	100.0

[a] *Includes personal-use trucks.*

Table continued on next page.

Table 5.18 (Continued)

	Direction	Year	Personal Vehicle Driver Trips[a]		Personal Vehicle Passenger Trips[a]		Personal Vehicle Person Trips			Commercial Truck Trips		Total Vehicle Trips		
			Number	Percent Change	Number	Percent Change	Number	Percent Change	Percent of All Directions	Year	Number	Percent Change	Number	Percent of All Directions
Walworth County	Inbound	1963	--	--	--	--	--	--	--	--	--	--	--	--
		1972	--	--	--	--	--	--	--	--	--	--	--	--
		1991	17,300	--	6,400	--	23,700	--	49.1	2,500	--	19,800	--	49.3
		2001	25,400	46.8	8,200	28.1	33,600	41.8	49.9	4,500	80.0	29,900	51.0	50.6
		2011	21,300	-16.1	7,300	-11.0	28,600	-14.9	48.8	3,400	-24.4	24,700	-17.4	47.9
	Outbound	1963	--	--	--	--	--	--	--	--	--	--	--	--
		1972	--	--	--	--	--	--	--	--	--	--	--	--
		1991	17,700	--	6,900	--	24,600	--	50.9	2,700	--	20,400	--	50.7
		2001	25,900	46.3	7,900	14.5	33,800	37.4	50.1	3,300	22.2	29,200	43.1	49.4
		2011	23,200	-10.4	6,800	-13.9	30,000	-11.2	51.2	3,700	12.1	26,900	-7.9	52.1
	All Directions	1963	--	--	--	--	--	--	--	--	--	--	--	--
		1972	--	--	--	--	--	--	--	--	--	--	--	--
		1991	35,000	--	13,300	--	48,300	--	100.0	5,200	--	40,200	--	100.0
		2001	51,300	46.6	16,100	21.1	67,400	39.5	100.0	7,800	50.0	59,100	47.0	100.0
		2011	44,500	-13.3	14,100	-12.4	58,600	-13.1	100.0	7,100	-9.0	51,600	-12.7	100.0
Washington County	Inbound	1963	--	--	--	--	--	--	--	--	--	--	--	--
		1972	--	--	--	--	--	--	--	--	--	--	--	--
		1991	9,000	--	3,400	--	12,400	--	51.0	2,500	--	11,500	--	50.4
		2001	13,800	53.3	4,800	41.2	18,600	50.0	47.3	5,200	108.0	19,000	65.2	49.1
		2011	14,500	5.1	4,300	-10.4	18,800	1.1	46.9	3,500	-32.7	18,000	-5.3	49.9
	Outbound	1963	--	--	--	--	--	--	--	--	--	--	--	--
		1972	--	--	--	--	--	--	--	--	--	--	--	--
		1991	8,900	--	3,000	--	11,900	--	49.0	2,400	--	11,300	--	49.6
		2001	14,600	64.0	6,100	103.3	20,700	73.9	52.7	5,100	112.5	19,700	74.3	50.9
		2011	14,900	2.1	6,400	4.9	21,300	2.9	53.1	3,200	-37.3	18,100	-8.1	50.1
	All Directions	1963	--	--	--	--	--	--	--	--	--	--	--	--
		1972	--	--	--	--	--	--	--	--	--	--	--	--
		1991	17,900	--	6,400	--	24,300	--	100.0	4,900	--	22,800	--	100.0
		2001	28,400	58.7	10,900	70.3	39,300	61.7	100.0	10,300	110.2	38,700	69.7	100.0
		2011	29,400	3.5	10,700	-1.8	40,100	2.0	100.0	6,700	-35.0	36,100	-6.7	100.0

[a] *Includes personal-use trucks.*

Table continued on next page.

Table 5.18 (Continued)

	Direction	Year	Personal Vehicle Driver Trips[a]		Personal Vehicle Passenger Trips[a]		Personal Vehicle Person Trips			Commercial Truck Trips		Total Vehicle Trips		
			Number	Percent Change	Number	Percent Change	Number	Percent Change	Percent of All Directions	Number	Percent Change	Number	Percent Change	Percent of All Directions
Waukesha County	Inbound	1963	--	--	--	--	--	--	--	--	--	--	--	--
		1972	--	--	--	--	--	--	--	--	--	--	--	--
		1991	18,900	--	6,400	--	25,300	--	48.9	3,700	--	22,600	--	49.5
		2001	24,900	31.7	8,100	26.6	33,000	30.4	47.2	6,800	83.8	31,700	40.3	47.9
		2011	28,500	14.5	9,300	14.8	37,800	14.5	47.7	4,700	-30.9	33,200	4.7	48.1
	Outbound	1963	--	--	--	--	--	--	--	--	--	--	--	--
		1972	--	--	--	--	--	--	--	--	--	--	--	--
		1991	19,500	--	6,900	--	26,400	--	51.1	3,600	--	23,100	--	50.5
		2001	28,100	44.1	8,800	27.5	36,900	39.8	52.8	6,400	77.8	34,500	49.4	52.1
		2011	30,600	8.9	10,900	23.9	41,500	12.5	52.3	5,200	-18.8	35,800	3.8	51.9
	All Directions	1963	--	--	--	--	--	--	--	--	--	--	--	--
		1972	--	--	--	--	--	--	--	--	--	--	--	--
		1991	38,400	--	13,300	--	51,700	--	100.0	7,300	--	45,700	--	100.0
		2001	53,000	38.0	16,900	27.1	69,900	35.2	100.0	13,200	80.8	66,200	44.9	100.0
		2011	59,100	11.5	20,200	19.5	79,300	13.4	100.0	9,900	-25.0	69,000	4.2	100.0
Region	Inbound	1963	39,700	--	47,900	--	87,600	--	45.7	7,100	--	46,800	--	46.1
		1972	46,700	17.6	33,500	-30.1	80,200	-8.4	45.3	10,900	53.5	57,600	23.1	45.8
		1991	107,300	129.8	40,300	20.3	147,600	84.0	46.5	19,300	77.1	126,600	119.8	46.3
		2001	137,500	28.1	47,700	18.4	185,200	25.5	46.9	32,000	65.8	169,500	33.9	47.4
		2011	142,600	3.7	48,600	1.9	191,200	3.2	47.4	27,800	-13.1	170,400	0.5	46.8
	Outbound	1963	40,000	--	48,100	--	88,100	--	46.0	7,200	--	47,200	--	46.5
		1972	47,500	18.8	35,900	-25.4	83,400	-5.3	47.1	10,700	48.6	58,200	23.3	46.3
		1991	111,900	135.6	41,800	16.4	153,700	84.3	48.4	19,800	85.0	131,700	126.3	48.2
		2001	142,200	27.1	48,400	15.8	190,600	24.0	48.3	27,900	40.9	170,100	29.2	47.6
		2011	140,800	-1.0	48,200	-0.4	189,000	-0.8	46.8	25,300	-9.3	166,100	-2.4	45.7
	Through	1963	5,900	--	10,100	--	16,000	--	8.3	1,700	--	7,600	--	7.5
		1972	6,600	11.9	6,700	-33.7	13,300	-16.9	7.5	3,300	94.1	9,900	30.3	7.9
		1991	10,000	51.5	6,100	-9.0	16,100	21.1	5.1	5,000	51.5	15,000	51.5	5.5
		2001	11,200	12.0	7,900	29.5	19,100	18.6	4.8	6,700	34.0	17,900	19.3	5.0
		2011	14,600	30.4	9,000	13.9	23,600	23.6	5.8	12,700	89.6	27,300	52.5	7.5
	All Directions	1963	85,600	--	106,100	--	191,700	--	100.0	16,000	--	101,600	--	100.0
		1972	100,800	17.8	76,100	-28.3	176,900	-7.7	100.0	24,900	55.6	125,700	23.7	100.0
		1991	229,200	127.4	88,200	15.9	317,400	79.4	100.0	44,100	77.1	273,300	117.4	100.0
		2001	290,900	26.9	104,000	17.9	394,900	24.4	100.0	66,600	51.0	357,500	30.8	100.0
		2011	298,000	2.4	105,800	1.7	403,800	2.3	100.0	65,800	-1.2	363,800	1.8	100.0

[a] *Includes personal-use trucks.*

Source: SEWRPC

in Table 5.19, the vehicle occupancy of external personal vehicle person trips has declined from 2.24 people per vehicle in 1963, to 1.75 in 1972, to 1.38 in 1991, and to 1.36 in 2001. Vehicle occupancy of external personal vehicle trips remained unchanged between 2001 and 2011 at 1.36.

Through 2001, growth in external person trips occurred across all trip purposes, with the greatest growth in external person trips occurring with respect to work and school trips. The 2011 inventory, while showing an overall increase in total person trips, showed a 10 percent decline in home-based work trips and a 13 percent decline in nonhome-based trips. The volume of external commercial truck trips, as shown in Table 5.20, increased from 15,300 trips per day in 1963 to 22,500 trips per day in 1972, an increase of 47 percent. From 1972 to 1991, such trips increased from 22,500 trips per day to 44,100 trips per day, an increase of 96 percent. From 1991 to 2001, such trips increased from 44,100 trips per day to 66,600 trips per day, an increase of 51 percent. From 2001 to 2011, trips modestly decreased from 66,600 trips per day 65,800 trips per day, a decrease of 1 percent. This decline in commercial external travel is likely related to the economic downturn that occurred between 2001 and 2011.

Mass Transit User Survey

The Commission conducted special surveys of transit passengers on the public transit systems operated by the Cities of Kenosha, Racine, and Waukesha, and Counties of Milwaukee, Ozaukee, Washington, and Waukesha. Transit passengers on the commuter transit route between the Cities of Milwaukee, Racine, and Kenosha were also surveyed. The principal purpose of these surveys was to obtain descriptions of the socioeconomic and travel characteristics of the ridership of the overall regional mass transit system.

As Table 5.21 shows, overall, home-based work, and school trips constituted the majority of passenger travel on the transit systems in 2011, similar to 2001, 1991, and 1972. Between 2001 and 2011, school trips as a proportion of total transit passenger trips declined in each of the transit systems while the proportion of home-based work trips increased.

Table 5.22 presents the distribution of passenger travel on the transit systems as reported in the 1972, 1991, 2001, and 2011 surveys by sex, age, annual household income, and race.

- Female passengers made the majority of trips on all systems in all years with the exception of the Milwaukee-Racine-Kenosha transit service in 2001 and 2011, the Ozaukee County transit system in 2001 and 2011, and the Washington County transit system in 2001. From 1972 to 2011, the percentage of male passengers has generally been increasing and approaching 50 percent.

- The largest portion of 2011 passenger trips consisted of passengers 16 through 24 years of age on all transit systems, with the exception of the Ozaukee, Washington, and Waukesha County transit systems. On the Ozaukee and Washington County systems, the largest portion of bus passenger trips in 2011 was made by passengers 45 to 54 years of age. On the Waukesha County system, the largest portion of bus passenger trips in 2011 was made by passengers 55 to 64 years of age.

- With respect to household income, in each of the surveys—1972, 1991, 2001, and 2011—the largest portion of public transit passengers are

Table 5.19
Average Weekday External Personal Vehicle Trips and Vehicle Occupancy in the Region by Trip Purpose: 1963, 1972, 1991, 2001, and 2011

	Trip Purpose	Personal Vehicle Driver Trips		Total Personal Vehicle Person Trips		Vehicle Occupancy
		Number	Percent of Total	Number	Percent	
1963	Home-Based Work	24,600	28.7	36,900	19.2	1.50
	Home-Based Shopping	5,200	6.1	12,300	6.4	2.37
	Home-Base Other	45,000	52.6	121,600	63.5	2.70
	Nonhome-Based	9,400	11.0	18,200	9.5	1.94
	School	1,400	1.6	2,700	1.4	1.93
	Total	85,600	100.0	191,700	100.0	2.24
1972	Home-Based Work	36,700	36.4	49,400	27.9	1.35
	Home-Based Shopping	7,200	7.1	15,100	8.5	2.10
	Home-Base Other	41,000	40.7	87,900	49.7	2.14
	Nonhome-Based	12,300	12.2	18,700	10.6	1.52
	School	3,600	3.6	5,800	3.3	1.61
	Total	100,800	100.0	176,900	100.0	1.75
1991	Home-Based Work	112,900	49.3	129,600	40.8	1.15
	Home-Based Shopping	15,700	6.8	26,200	8.2	1.67
	Home-Base Other	59,800	26.1	106,300	33.5	1.78
	Nonhome-Based	33,200	14.5	44,300	14.0	1.33
	School	7,600	3.3	11,000	3.5	1.45
	Total	229,200	100.0	317,400	100.0	1.38
2001	Home-Based Work	152,200	52.4	170,800	43.3	1.12
	Home-Based Shopping	17,200	5.9	27,200	6.9	1.58
	Home-Base Other	82,100	28.2	140,600	35.6	1.71
	Nonhome-Based	27,100	9.3	38,000	9.6	1.40
	School	12,300	4.2	18,300	4.6	1.49
	Total	290,900	100.0	394,900	100.0	1.36
2011	Home-Based Work	138,900	46.6	153,500	38.0	1.11
	Home-Based Shopping	21,700	7.3	31,600	7.8	1.46
	Home-Base Other	101,600	34.1	167,300	41.5	1.65
	Nonhome-Based	25,400	8.5	33,200	8.2	1.31
	School	10,400	3.5	18,200	4.5	1.75
	Total	298,000	100.0	403,800	100.0	1.36

Source: SEWRPC

Most passengers on the Region's major transit systems in 2011 were minority (about 60%) and from households with incomes under $30,000 (about 70-80%).

in the lowest range of income, with the exception of the Waukesha, Ozaukee, and Washington County transit systems.

- With respect to race, public transit passengers in 2011 were about 60 percent minority on the City of Kenosha, Milwaukee County, City of Racine, and Milwaukee-Racine-Kenosha transit systems. The percentages of minority passengers on the City of Waukesha, Ozaukee County, Washington County, and Waukesha County transit systems were 32, 13, 7, and 13 percent, respectively. The proportion of public transit passengers that are minorities has increased since 1991, and particularly since 1972 when less than 5 to 15 percent of transit passengers were minorities.

Interregional Passenger Travel

Table 5.23 displays an estimate of existing and historical interregional person trips, including personal vehicle travel as presented earlier in this chapter and travel on other modes. Other modes include intercity rail and bus, commercial air carrier, and car ferry. Interregional travel by personal vehicle has consistently accounted for about 95 percent of Southeastern Wisconsin's total interregional travel over the past 50 years.

Table 5.20
Distribution of Average Weekday External Commercial Truck Trips in the Region by Destination Trip Purpose: 1963, 1972, 1991, 2001, and 2011

	1963		1972		1991		2001		2011	
Trip Purpose	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Base of Operations	4,200	27.5	9,400	41.8	17,600	39.9	13,500	20.3	17,700	26.9
Work-Connected Business	700	4.6	3,200	14.2	9,700	22.0	26,200	39.3	10,400	15.8
Pick-Up/Delivery of Goods	10,100	66.0	9,800	43.6	15,300	34.7	25,600	38.4	36,100	54.9
Customer Service	300	2.0	100	0.4	1,500	3.4	1,300	2.0	1,600	2.4
Total	15,300	100.0	22,500	100.0	44,100	100.0	66,600	100.0	65,800	100.0

	Change: 1963-2011		Change: 1972-2011		Change: 1991-2011		Change: 2001-2011	
Trip Purpose	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Base of Operations	13,500	321.4	8,300	88.3	100	0.6	4,200	31.1
Work-Connected Business	9,700	1,385.7	7,200	225.0	700	7.2	-15,800	-60.3
Pick-Up/Delivery of Goods	26,000	257.4	26,300	268.4	20,800	135.9	10,500	41.0
Customer Service	--	--	1,500	1,500.0	100	6.7	300	23.1
Total	50,500	330.1	43,300	192.4	21,700	49.2	-800	-1.2

Source: SEWRPC

Table 5.21
Percentage Distribution of Average Weekday Transit Passenger Trips in the Region by Trip Purpose and Transit System: 1972, 1991, 2001, and 2011

	Milwaukee						
	Percent of Trips				Percent Change		
Trip Purpose	1972	1991	2001	2011[a]	1972-2011	1991-2011	2001-2011
Home-Based Work	56.8	26.4	42.8	68.9	21.3	160.9	60.9
Home-Based Shopping	6.5	9.6	8.4	6.1	-6.0	-36.4	-27.3
Home-Based Other	12.5	17.3	16.8	5.8	-53.4	-66.3	-65.3
Nonhome-Based	4.7	7.0	7.9	7.5	59.4	7.0	-5.2
School	19.5	39.7	24.1	11.7	-40.0	-70.5	-51.5
Total	100.0	100.0	100.0	100.0	--	--	--
	Racine						
	Percent of Trips				Percent Change		
Trip Purpose	1972	1991	2001	2011	1972-2011	1991-2011	2001-2011
Home-Based Work	42.2	25.0	39.4	61.7	63.2	175.5	74.8
Home-Based Shopping	11.2	8.6	9.6	10.4	-45.4	-29.0	-36.4
Home-Based Other	19.9	23.3	21.1	9.5	-70.7	-75.0	-72.4
Nonhome-Based	3.9	10.6	5.2	8.8	92.1	-29.3	44.1
School	22.8	32.5	24.7	9.5	-48.7	-64.0	-52.7
Total	100.0	100.0	100.0	100.0	--	--	--
	Waukesha						
	Percent of Trips				Percent Change		
Trip Purpose	1972	1991	2001	2011	1972-2011	1991-2011	2001-2011
Home-Based Work	35.5	29.0	34.6	62.8	77.0	116.6	81.6
Home-Based Shopping	10.3	5.7	14.1	12.5	21.6	119.8	-11.2
Home-Based Other	13.1	10.0	12.5	5.8	-55.5	-41.7	-53.3
Nonhome-Based	0.0	4.4	9.7	6.5	--	46.6	-33.5
School	41.1	50.9	29.1	12.4	-69.9	-75.7	-57.5
Total	100.0	100.0	100.0	100.0	--	--	--
	Kenosha						
	Percent of Trips				Percent Change		
Trip Purpose	1972[b]	1991	2001	2011[a]	1972-2011	1991-2011	2001-2011
Home-Based Work	26.5	16.4	15.8	38.2	137.0	283.0	297.6
Home-Based Shopping	12.3	8.0	6.6	3.5	1.8	56.6	89.8
Home-Based Other	19.8	13.7	8.4	3.0	-70.5	-57.4	-30.6
Nonhome-Based	3.7	5.1	4.4	3.2	74.3	26.5	46.6
School	37.7	56.8	64.8	52.1	-67.2	-78.2	-80.9
Total	100.0	100.0	100.0	100.0	--	--	--

Table continued on next page.

5.3 SUMMARY AND CONCLUSIONS

The Commission's comprehensive inventories of travel conducted in 1963, 1972, 1991, 2001, and 2011 describe in detail the total travel pattern of the Region and each of its component parts. This chapter has presented, in summary form, the basic findings of the 2011 Commission inventory of travel within the Region. In order to assess any changes occurring in travel habits and patterns within the Region over time, comparisons have been made between the findings of the 2011 inventory and those of earlier Commission travel inventories of 1963, 1972, 1991, and 2001. The Commission travel surveys conducted for 1963, 1972, 1991, 2001, and 2011 demonstrate that travel is an orderly, regular, and measurable occurrence, with recognizable patterns.

- On an average weekday in 2011, about 6.7 million person trips were made within the Region. This represents an increase from 1963 of 2.5 million person trips, or 60 percent. The increase in regional tripmaking reflects the 67 percent increase in the number of households in the Region from 1963 to 2011, as well as the 69 percent increase in employment from 1963 to 2011 (see Figure 5.6). The increase in

Table 5.21 (Continued)

Trip Purpose	Waukesha-Milwaukee						
	Percent of Trips				Percent Change		
	1972	1991	2001	2011	1972-2011	1991-2011	2001-2011
Home-Based Work	72.0	71.2	74.9	93.6	30.0	31.4	24.9
Home-Based Shopping	12.2	6.9	0.0	0.0	-100.0	-100.0	--
Home-Based Other	4.1	4.8	2.2	0.9	-77.0	-80.3	-57.1
Nonhome-Based	4.6	5.4	1.5	4.3	-7.6	-21.3	183.4
School	7.1	11.7	21.4	1.2	-82.7	-89.5	-94.3
Total	100.0	100.0	100.0	100.0	--	--	--

Trip Purpose	Milwaukee-Racine-Kenosha[c]				
	Percent of Trips			Percent Change	
	1991	2001	2011	1991-2011	2001-2011
Home-Based Work	53.8	48.0	80.4	275.3	73.9
Home-Based Shopping	1.4	13.3	0.0	-100.0	-100.0
Home-Based Other	14.0	25.3	6.4	-101.7	-93.3
Nonhome-Based	9.1	9.8	5.6	-97.7	-53.3
School	21.7	3.6	7.7	-101.3	-94.3
Total	100.0	100.0	100.0	--	--

Trip Purpose	Ozaukee[d]			Washington[d]		
	Percent of Trips		Percent Change	Percent of Trips		Percent Change
	2001	2011	2001-2011	2001	2011	2001-2011
Home-Based Work	91.5	99.3	8.6	91.3	96.6	8.8
Home-Based Shopping	0.0	0.0	--	0.4	0.0	-100.0
Home-Based Other	2.8	0.7	-76.2	0.0	0.0	--
Nonhome-Based	1.6	0.0	-100.0	2.6	1.3	-100.0
School	4.1	0.0	-100.0	5.7	2.1	-100.0
Total	100.0	100.0	--	100.0	100.0	--

[a] *Some or all of the school "trippers," or bus runs designed to accommodate school-aged children, were not surveyed. Estimates of travel for the missing school "tripper" routes are accounted for in the school trip purpose utilizing ridership estimates for these routes based on year 2012 National Transit Database data.*

[b] *Excludes school "trippers," or bus runs designed to accommodate school-aged children.*

[c] *Service not provided in 1972.*

[d] *Service not provided in 1972 or in 1991.*

Source: SEWRPC

person trips in the Region was substantially greater than the increase in the resident population of the Region (23 percent from 1963 to 2011). However, the decade between 2001 and 2011 differed from the long-term trend as person trips decreased by 2 percent. The decrease in tripmaking between 2001 and 2011 may in part be attributed to the 1 percent decrease in employment and the 11 percent decrease in median family income, which also occurred over the same time period. Even with the recent modest declines in tripmaking and employment, future levels of households and employment should be considered indicators of potential future travel growth.

- While the number of internal person trips per household in the Region between 1972 and 2001 remained relatively constant at about eight trips per household, the decade between 2001 and 2011 differed from this long-term trend as the number of trips per household declined from about eight trips per household to about seven trips per household (see Figure 5.7). The decline in employment and in median family income may have contributed in part to this reduction. The level of average weekday internal person trips per capita, however, has increased from slightly greater than two trips per capita in 1963 to slightly greater than three trips per capita in 2011. The stability in the household trip rate occurred even with the substantial socioeconomic, land use, and transportation changes that have occurred in the Region over the last 50 years. These changes include the shift from

Table 5.22
Percentage Distribution of Average Weekday Transit Passenger Travel in the Region by Transit System and Selected Characteristics of Transit Users: 1972, 1991, 2001, and 2011

Selected Characteristics	Percent of Trips by Transit System: 1972				
	Milwaukee	Racine	Waukesha[a]	Kenosha[a]	Waukesha-Milwaukee
Sex					
Male	27.7	20.1	7.7	29.1	38.2
Female	72.3	79.9	92.3	70.9	61.8
Total	100.0	100.0	100.0	100.0	100.0
Age					
One to 15	7.2	10.5	4.0	11.2	--
16 to 24	31.8	29.8	43.0	35.7	20.6
25 to 54	38.7	31.5	31.0	21.7	47.8
55 to 64	15.0	14.6	11.7	11.3	24.1
65 or Older	7.3	13.6	10.3	20.1	7.5
Total	100.0	100.0	100.0	100.0	100.0
Household Income (Actual Dollars)					
Under 8,000	50.0	54.7	28.6	54.0	24.9
8,000 to 11,999	26.9	23.3	42.3	19.9	26.8
12,000 to 14,999	12.3	11.0	12.9	14.6	19.9
15,000 or Over	10.8	11.0	16.2	11.5	28.4
Total	100.0	100.0	100.0	100.0	100.0
Race					
Black/African American	12.3	8.8	--	2.4	--
White	85.3	87.6	93.5	96.0	97.5
Other Minority	2.4	3.6	6.5	1.6	2.5
Total	100.0	100.0	100.0	100.0	100.0

Selected Characteristics	Percent of Trips by Transit System: 1991					
	Milwaukee	Racine	Waukesha	Kenosha	Waukesha-Milwaukee	Milwaukee-Racine-Kenosha[b]
Sex						
Male	38.1	38.2	43.3	39.3	37.3	46.9
Female	61.9	61.8	56.7	60.7	62.7	53.1
Total	100.0	100.0	100.0	100.0	100.0	100.0
Age						
One to 15	4.9	15.4	32.4	25.4	3.0	--
16 to 24	31.3	35.9	27.3	33.9	20.7	17.1
25 to 54	52.2	39.1	28.3	26.3	62.3	73.1
55 to 64	6.3	3.9	6.2	5.0	11.8	4.4
65 or Older	5.3	5.7	5.8	9.4	2.2	5.4
Total	100.0	100.0	100.0	100.0	100.0	100.0
Household Income (Actual Dollars)						
Under 20,000	50.3	62.7	54.1	55.6	18.3	33.9
20,000 to 29,999	20.7	15.2	12.3	13.3	17.1	25.1
30,000 to 49,999	20.1	17.2	17.8	18.1	29.7	30.1
50,000 or Over	8.9	6.9	15.8	13.0	34.9	10.9
Total	100.0	100.0	100.0	100.0	100.0	100.0
Race						
Black/African American	30.6	39.9	4.5	13.7	4.2	18.8
White	63.3	49.7	84.1	77.5	90.3	68.8
Other Minority	6.1	10.4	11.4	8.8	5.5	12.4
Total	100.0	100.0	100.0	100.0	100.0	100.0

Table continued on next page.

Table 5.22 (Continued)

Selected Characteristics	Percent of Trips by Transit System: 2001							
	Milwaukee	Racine	Waukesha	Kenosha	Waukesha-Milwaukee	Milwaukee-Racine-Kenosha[b]	Ozaukee[c]	Washington[c]
Sex								
Male	40.2	41.4	48.2	39.1	41.9	54.0	57.2	60.3
Female	59.8	58.6	51.8	60.9	58.1	46.0	42.8	39.7
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Age								
One to 15	4.3	9.2	19.8	39.4	0.5	--	3.0	2.0
16 to 24	35.6	33.2	22.6	27.8	24.4	5.6	13.4	14.6
25 to 54	51.2	47.9	45.0	24.6	62.3	72.4	68.9	77.7
55 to 64	5.5	5.4	6.5	3.0	11.7	15.4	11.4	4.9
65 or Older	3.4	4.3	6.1	5.2	1.1	6.6	3.3	0.8
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Household Income (Actual Dollars)								
Under 30,000	68.4	74.0	66.7	61.3	14.8	62.4	45.6	39.1
30,000 to 49,999	19.0	18.9	19.3	21.1	17.2	12.9	26.7	25.3
50,000 or Over	12.6	7.1	14.0	17.6	68.0	24.7	27.7	35.6
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Race								
Black/African American	49.1	48.6	9.5	18.7	5.6	42.0	38.0	23.2
White	41.4	47.8	78.2	69.5	87.8	48.9	59.7	53.5
Other Minority	9.5	3.6	12.3	11.8	6.6	9.1	2.3	23.3
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Selected Characteristics	Percent of Trips by Transit System: 2011							
	Milwaukee[a]	Racine	Waukesha	Kenosha[a]	Waukesha-Milwaukee	Milwaukee-Racine-Kenosha[b]	Ozaukee[c]	Washington[c]
Sex								
Male	44.0	38.6	45.1	37.5	43.5	65.3	52.4	37.9
Female	56.0	61.4	54.9	62.5	56.5	34.7	47.6	62.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Age								
One to 15	4.0	14.8	8.9	20.9	--	--	0.7	1.3
16 to 24	41.4	28.6	23.3	35.5	11.6	33.9	11.6	10.4
25 to 34	20.9	14.1	18.5	12.0	18.5	16.6	14.2	10.1
35 to 44	10.9	15.1	13.7	12.3	14.2	16.3	17.0	15.0
45 to 54	11.4	15.5	13.4	10.1	23.3	18.2	31.1	33.8
55 to 64	8.3	8.9	15.2	5.8	28.2	15.0	24.4	25.3
65 or Older	3.1	3.0	7.0	3.4	4.2	--	1.0	4.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Household Income (Actual Dollars)								
Under 30,000	68.0	79.8	69.5	76.7	9.6	54.7	15.6	8.0
30,000 to 49,999	17.4	12.4	15.2	9.1	9.5	18.3	8.7	11.3
50,000 or Over	14.6	7.8	15.3	14.2	80.9	40.1	75.7	80.7
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Race								
Black/African American	44.9	45.2	14.2	38.1	2.3	45.5	4.4	0.7
White	39.8	38.6	67.6	41.8	87.4	38.3	86.5	93.2
Other Minority	15.4	16.2	18.1	20.1	10.3	16.2	9.1	6.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

[a] *Excludes school "trippers," or bus runs designed to accommodate school-aged children.*

[b] *Service not provided in 1972.*

[c] *Service not provided in 1972 or 1991.*

Source: SEWRPC

Table 5.23
Number of Average Weekday Interregional Person Trips on Intercity Modes in the Region: 1963, 1972, 1993, 2001, and 2011

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

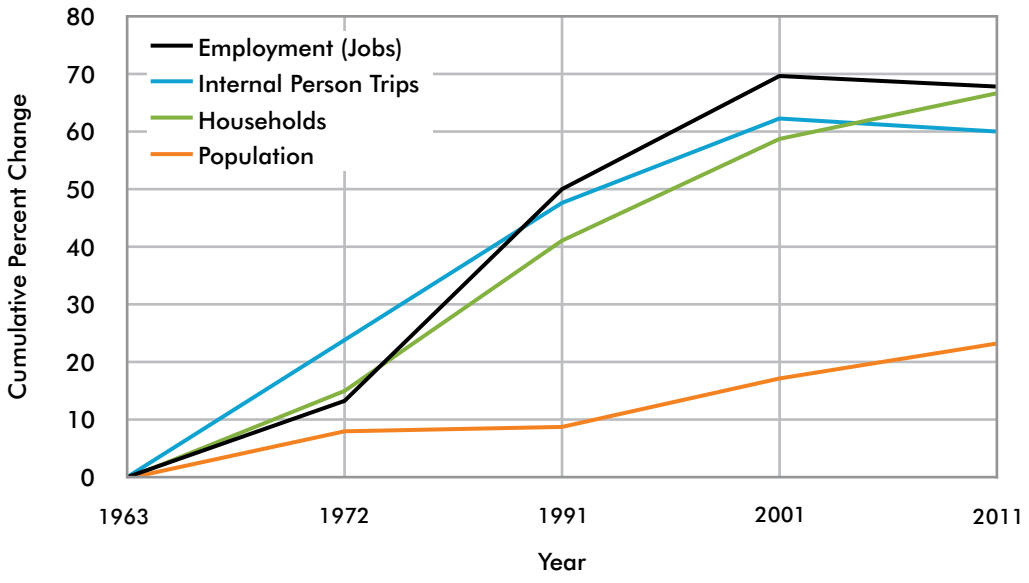
[a] *Survey taken in 1971.*

[b] *Survey taken in 1989.*

[c] *Survey taken in 1991.*

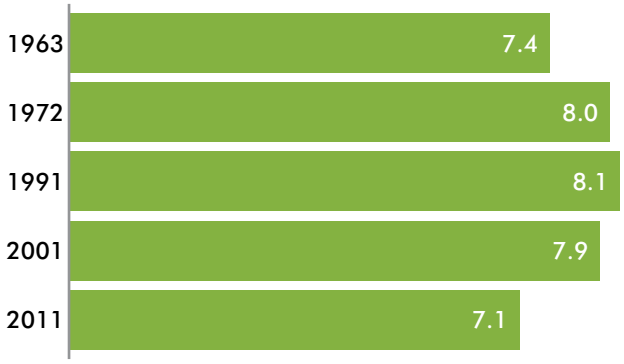
Source: SEWRPC

Figure 5.6
Comparison of Cumulative Changes in Person Trips, Population, Households, and Employment Relative to 1963 Levels in the Region



Source: SEWRPC

Figure 5.7
Total Average Weekday Internal Person Trips per Household in the Region: 1963, 1972, 1991, 2001, and 2011



Source: SEWRPC

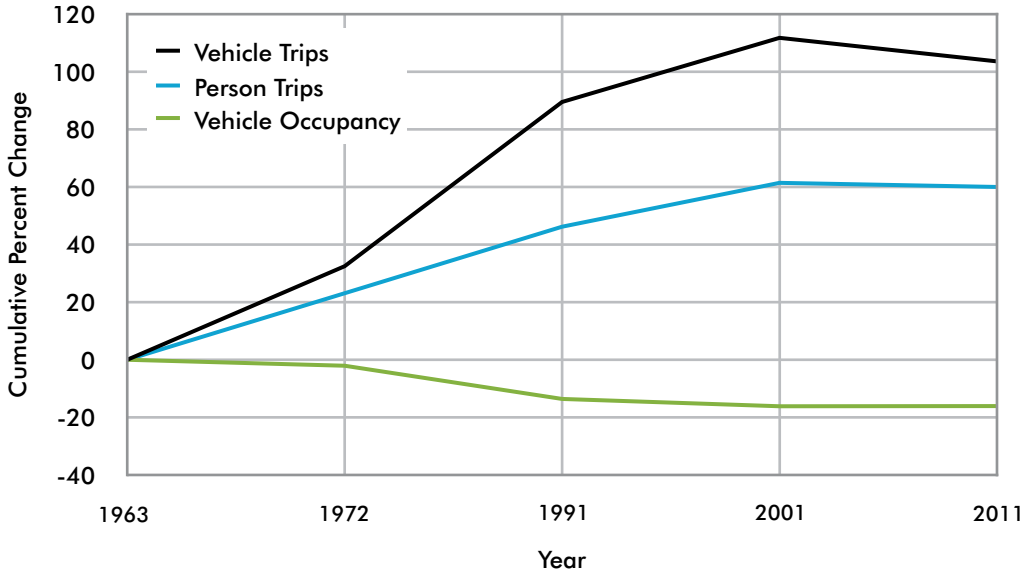
a manufacturing to a service economy, the increase in labor force participation among women, the change in age composition of the Region, the change in average household size in the Region, the increase in vehicle ownership, and the change in land use density of the Region.

- On an average weekday in 2011, nearly 5.2 million vehicle trips were made within the Region. This represents an increase of about 2.7 million vehicle trips, or 104 percent, from 1963 (see Figure 5.8). The increase in vehicle trips from 1963 to 2011 is more substantial than the increase in person trips, specifically, an increase of 2.7 million vehicle trips and of 2.5 million person trips over the 48-year period. The principal factor contributing to the more rapid increase in vehicle trips is the decline in average vehicle occupancy (carpooling) observed in the surveys, from 1.42 people per vehicle in 1963 to 1.20 people per vehicle in 2011 with respect to all trips and from 1.21 people per vehicle in 1963 to 1.06 people per vehicle in 2011 for work trips. However, similar to person trips, the decade between 2001 and 2011 differed from previous decades as the vehicle trips decreased by 4 percent. The average vehicle occupancy also increased slightly from 1.19 to 1.20 people per vehicle over the same time period. Vehicle tripmaking may not be expected to increase significantly faster than person tripmaking in the future as a result of declining vehicle occupancy, because vehicle occupancy is not expected to experience declines of the magnitude exhibited historically.

- There has been a modest decrease in household trip rates since 1991 (see Figure 5.9). Also, there has been a significant increase in pedestrian and bicycling trips since 2001. These changes were experienced across all age categories (see Figure 5.10). Survey data indicate that the behavioral difference in travel between generations appears to be relatively stable over time. As such, there does not appear to be one generation that is significantly driving the changes in travel as compared to other generations. As households age they have exhibited similar travel behaviors as their predecessors.

- On an average weekday in 2011, 40.9 million vehicle-miles of travel (VMT) occurred within the Region as a result of the 5.2 million vehicle

Figure 5.8
Comparison of Cumulative Changes in Vehicle Trips, Person Trips, and Vehicle Occupancy Relative to 1963 in the Region



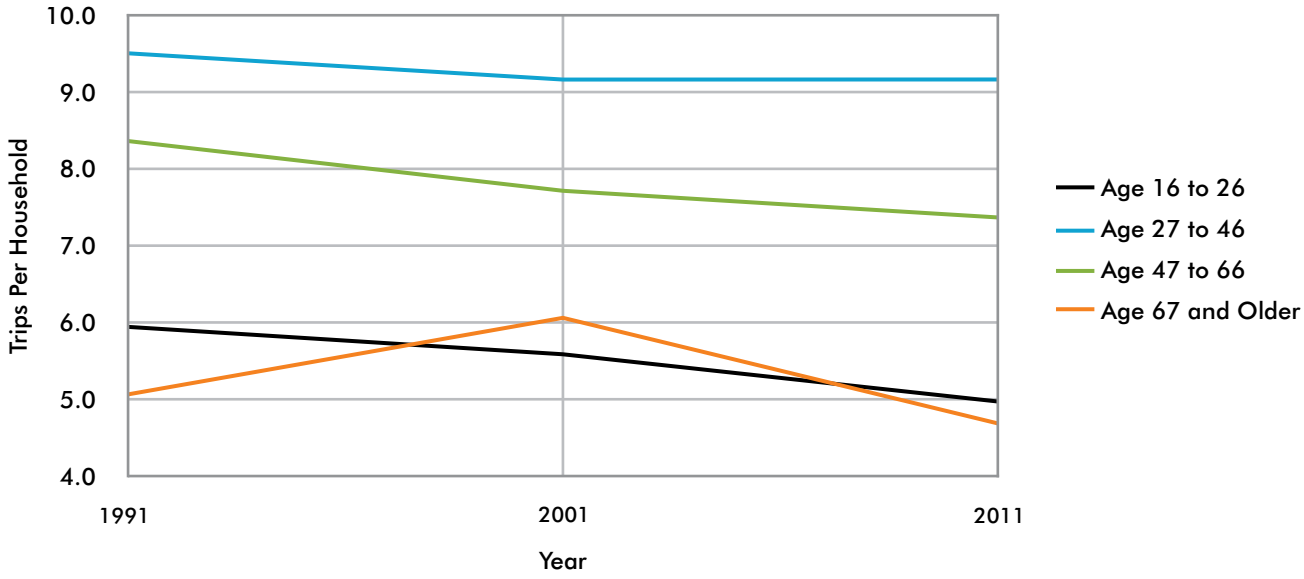
Source: SEWRPC

trips. The historical increases in VMT from 13.1 million in 1963, to 20.1 million in 1972, to 33.1 million in 1991, to 39.7 million in 2001, and to 40.9 million in 2011—a total of 212 percent—have been more rapid than the corresponding historical increases in total person tripmaking and vehicle tripmaking. A contributing factor to the more substantial increases in VMT has been an increase in the average length of internal person trips from 4.7 miles in 1963, to 5.4 miles in 1972, to 6.8 miles in 1991, to 6.8 miles in 2001, and to 7.1 miles in 2011—an increase of about 52 percent from 1963 to 2011. Thus, the 212 percent increase in highway traffic in the Region from 1963 to 2011 has been the result only in part of demographic and economic growth and change and related person tripmaking. Only about 50 percent of the growth in highway traffic over the past 50 years may be attributed to increased tripmaking as a result of demographic and economic growth and change. The remaining 50 percent may be attributed to the decline in vehicle occupancy and carpooling and the increase in trip length.

- In 2011 and in each survey year, about 93 percent of the person and vehicle trips made within the Region on an average weekday were made by residents of the Region. Therefore, the location and capacity of future transportation facilities will largely be based upon the patterns of travel of the Region's residents.

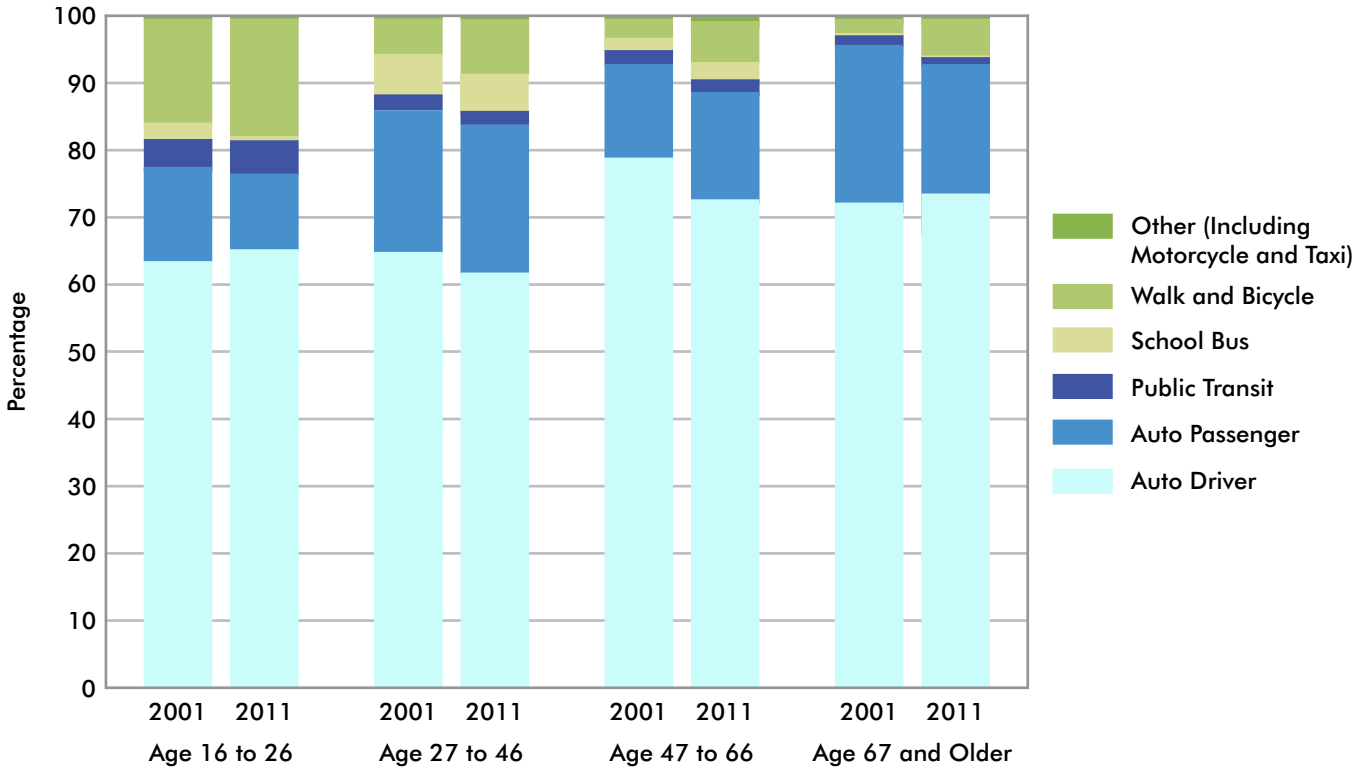
- The number of personal vehicles—automobiles, vans, sport utility vehicles, and pickup trucks—available to residents of the Region increased from about 527,000 in 1963 to 705,000 in 1972, to 1,142,500 in 1991, to 1,313,900 in 2001, and to 1,371,900 in 2011—an increase of 160 percent from 1963 to 2011. The percentage of total households in the Region having two or more personal vehicles available increased from 24 percent in 1963 to 34 percent in 1972,

Figure 5.9
Average Weekday Internal Person Trips per Household in the Region by Age of Head of Household: 1991, 2001, and 2011



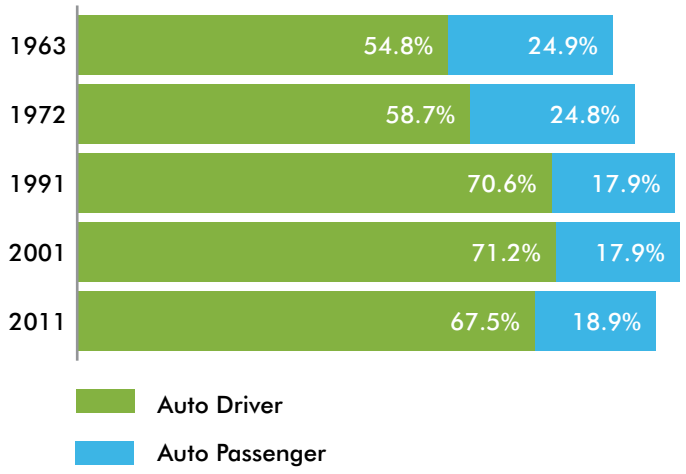
Source: SEWRPC

Figure 5.10
Comparison of the Percentage of Average Weekday Internal Person Trips in the Region by Mode of Travel and by Age of Head of Household: 2001 and 2011



Source: SEWRPC

Figure 5.11
Percentage of Average Weekday Internal Person Trips in the Region by Automobile: 1963-2011



Source: SEWRPC

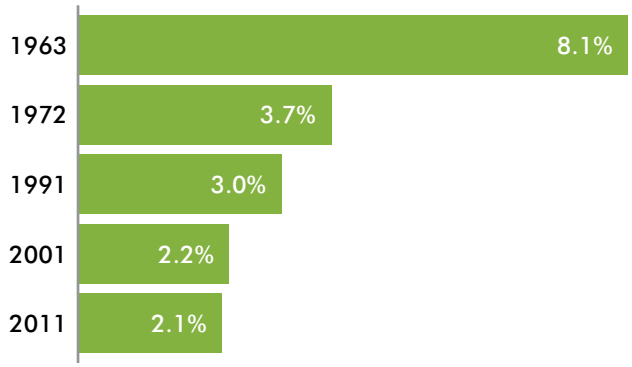
and to 56 percent in 1991, 2001, and 2011, while the percentage of total households having no personal vehicle available decreased from 17 percent in 1963 to 16 percent in 1972, and to 9 percent in 1991, 2001, and 2011. While the percentage of households with no personal vehicle available steadily declined between the 1963 and 2001 travel surveys, the decade between 2001 and 2011 differed from the previous decade as the percentage modestly increased from 8.5 percent to 9.0 percent.

- Automobile travel increased from about 80 percent of all internal person travel in the Region in 1963 to 84 percent in 1972, and to 89 percent in 1991 and 2001. However, the decade between 2001 and 2011 differed from previous decades as automobile travel decreased to 86 percent of all internal person travel (see Figure 5.11).

- Public transit travel decreased from about 8 percent of total internal person travel in 1963 to 4 percent in 1972, 3 percent in 1991, and 2 percent in 2001 and 2011 (see Figure 5.12). Average weekday public transit travel decreased sharply within the Region, from 320,500 trips in 1963 to 184,200 trips in 1972, 172,200 trips in 1991, 142,200 trips in 2001, and 129,100 trips in 2011. As described in more detail in Chapter 3 of this volume, the decline in transit over the last decade is a result of the reduction in transit service—rather than the expansion of the transit system recommended in the year 2035 regional transportation plan—and the increase of transit fares at an amount greater than inflation.

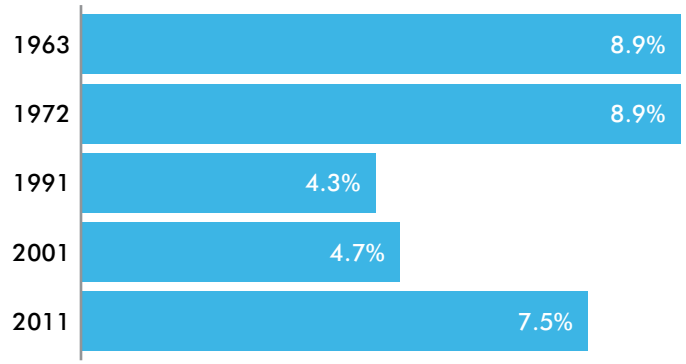
- Travel by walking and bicycle declined from about 9 percent of all travel in 1963 and 1972 to 4 percent of all travel in 1991. However, such travel showed an increase in 2001 to 5 percent of all travel and again in 2011 to 8 percent of all travel. Specifically, the number of internal walk and bicycle trips increased by over 50 percent between 2001 and 2011, even though total internal person trips declined by 3 percent over the same time period (see Figure 5.13).

Figure 5.12
Percentage of Average Weekday Internal Person Trips in the Region by Public Transit: 1963-2011



Source: SEWRPC

Figure 5.13
Percentage of Average Weekday Internal Person Trips in the Region by Walking or Bicycling: 1963-2011



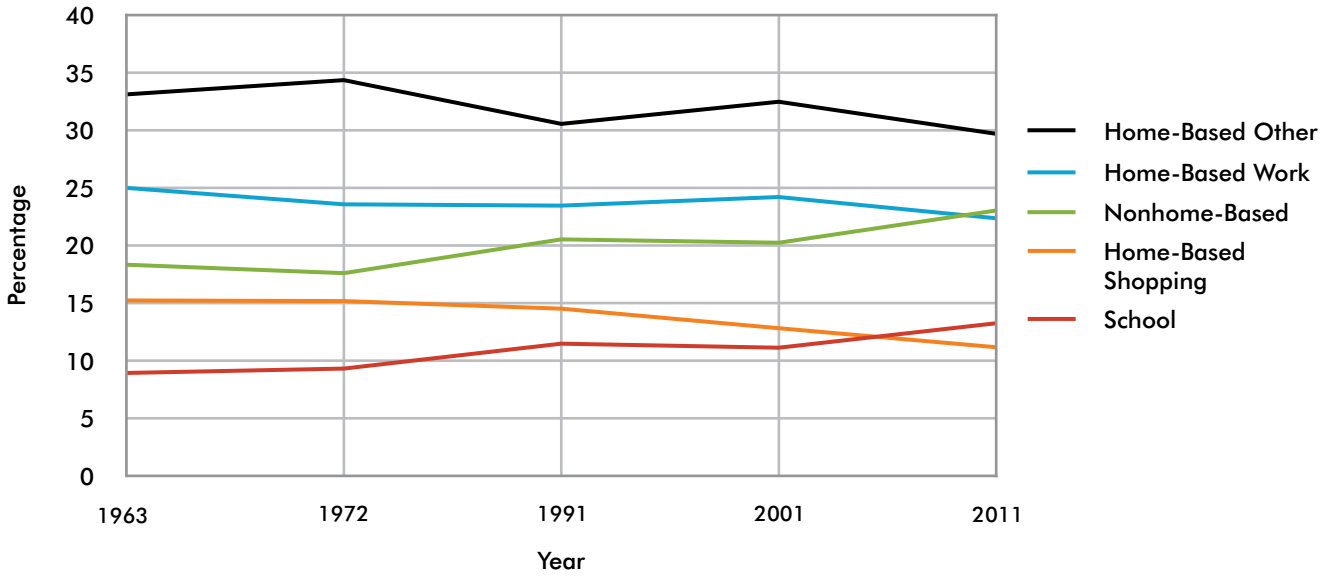
Source: SEWRPC

- In each of the survey years, approximately 87 to 89 percent of total internal vehicle trips were made by personal vehicle and about 11 to 13 percent were made by commercial truck. These findings indicate that with respect to highway facilities, the principal contributor to the transportation problem within the Region is the movement of people rather than goods, particularly since personal vehicle trips display sharp concentrations during peak traffic periods, while commercial truck trips do not.

- Approximately 75 to 80 percent of total internal person trips within the Region on an average weekday in 1963, 1972, 1991, 2001 and 2011 consisted of trips made to or from places of residence. The amount and location of future residential development will affect future travel demands.

- The percentage distributions of internal person trips by trip purpose have remained very stable over the past 50 years with trips between home and work accounting for 22 to 25 percent of all internal person

Figure 5.14
Percentage of Average Weekday Internal Household Person Trips in the Region by Trip Purpose: 1963-2011



Source: SEWRPC

trips; trips between home and shopping accounting for 11 to 15 percent of trips; school trips accounting for 9 to 13 percent of all trips; trips between home and other destinations for social, recreation, and personal business purposes accounting for 30 to 34 percent of all trips; and trips between non-home origins and destinations accounting for about 18 to 23 percent of all trips (see Figure 5.14).

FUTURE POPULATION, HOUSEHOLDS, AND EMPLOYMENT IN THE REGION 6

Credit: Craig Schreiner

6.1 INTRODUCTION

Long-range planning requires projections of future conditions that affect plan design and implementation, but do not lie entirely within the scope of governmental activity. The land use component of the regional plan must seek to accommodate the future demand for land in the Region, which primarily depends on future population, household, and employment levels. The transportation component of the regional plan must seek to accommodate the future travel needs associated with the land use component. Therefore, future population, household, and employment level projections are critical to planning for future land use and transportation for the Region.

The Commission completed projections of population, households, and employment for the period from 2010 to 2050 following the major analysis of regional population and employment summarized in Chapter 2.[39] These projections are intended to provide a basis for preparing VISION 2050 and for updating other elements of the comprehensive plan for the Region. Past trends, the results of the 2010 Census, and the most recent economic base data were considered in preparing the projections. The projections were prepared with the guidance of the Commission's Advisory Committee on Regional Population and Economic Forecasts. The Committee includes individuals from the public and private sectors with expertise in the area of socioeconomic projections and population and economic trends in the Region.

Population, household, and employment projections provide a basis for preparing VISION 2050.

[39] *This represents the sixth set of population and employment projections for the Region prepared by the Commission. The first projections were prepared in the 1960s as a basis for the initial design year 1990 regional land use and transportation plans. Since then the projections have been updated and extended to 2000, 2010, 2020, and 2035—serving as a basis for the preparation of the regional land use and transportation plans with corresponding design years. The projections are typically updated following the release of information from the 10-year Census of population.*

This chapter presents the year 2050 projections and an overview of their underlying methodology and assumptions. The population and household projections are fully documented in SEWRPC Technical Report No. 11 (5th Edition), *The Population of Southeastern Wisconsin*. The employment projections are fully documented in SEWRPC Technical Report No. 10 (5th Edition), *The Economy of Southeastern Wisconsin*. These reports were prepared in tandem to ensure consistency between the Commission's long-range population, household, and employment projections.

The intermediate-growth scenario is considered the most likely to occur for the Region as a whole.

As in previous projection efforts, the Commission has projected a range of future population, household, and employment levels—high, intermediate, and low—for the Region. This approach recognizes the uncertainty in any effort to predict future socioeconomic conditions. The Commission's Advisory Committee on Regional Population and Economic Forecasts considered the intermediate projection the most likely to occur for the Region as a whole. The high and low projections are intended to provide an indication of the range of population, household, and employment levels that could conceivably occur under significantly higher or lower, but nevertheless plausible, growth scenarios for the Region.

VISION 2050 recommendations altered the distribution of population, households, jobs, and urban land uses within the Region to better achieve the long-range vision.

The intermediate projections were used as the basis for VISION 2050, indicating the approximate future population, household, and employment levels in the Region that the plan should be designed to accommodate. It should be noted, however, that the projections were refined at the county level during the planning process because recommendations were made that altered the distribution of population, households, jobs, and urban land use within the Region in order to better achieve the long-range vision for the Region.

This chapter also presents projections of future personal income levels for the Region through the year 2050. Income projections are needed for certain aspects of the land use-transportation planning process. For example, projected future income levels were considered in estimating future automobile availability for households in the Region, as is required for determining future needs for transportation facilities and services.

6.2 PROJECTION METHODOLOGY AND ASSUMPTIONS

This section provides an overview of the methodology and assumptions used to prepare the population, household, and employment projections for the year 2050. The projection methodology and assumptions are documented in detail in the aforementioned technical reports.

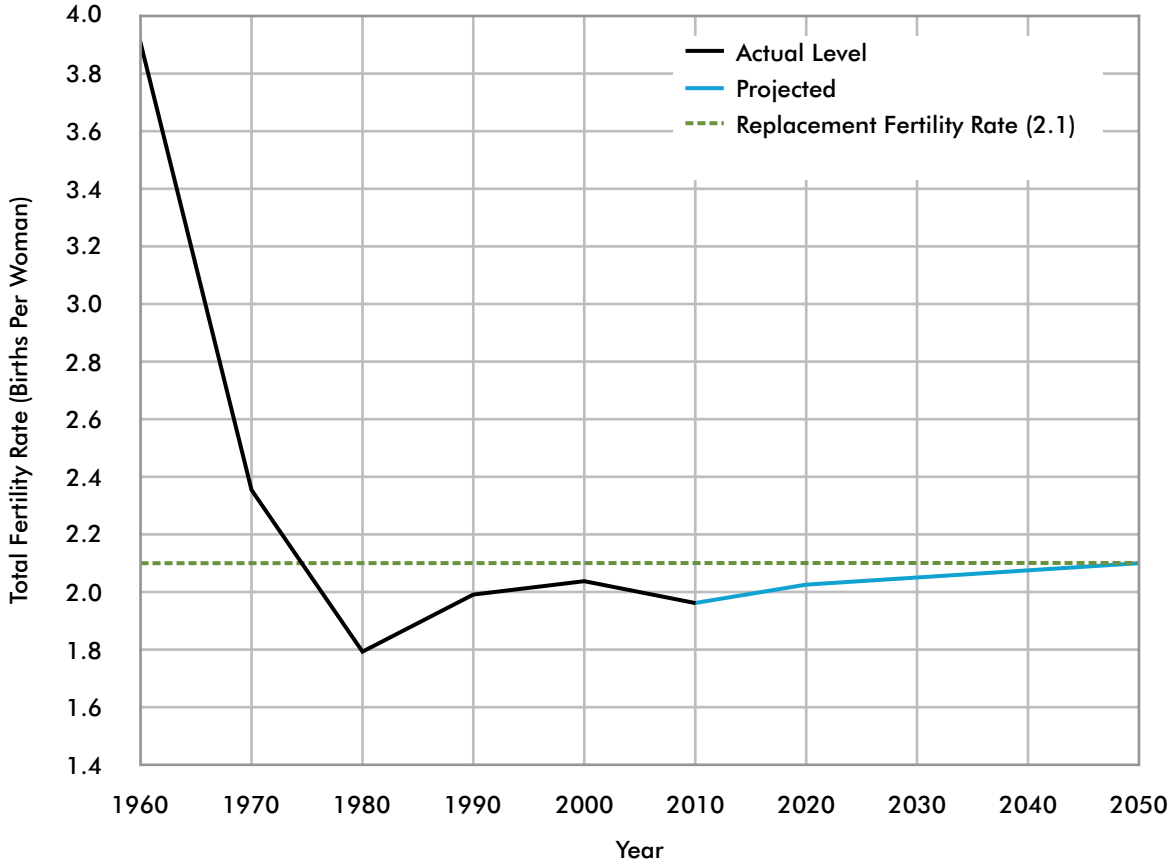
The population projections were developed using a cohort-component model.

Population Projections—Methodology and Assumptions

The population projections were developed using a cohort-component population projection model, with specific assumptions made regarding vital events that affect population levels, including births, deaths, and migration.[40] In general, the intermediate projection envisions a modest increase in fertility rates, a modest improvement in survival rates, and a gradual, modest improvement in net migration for the Region. The same assumptions regarding future fertility rates and survival rates were used for the high-,

[40] *The cohort-component model is a widely used population projection method. Its name reflects the fact that the method involves disaggregating the population into cohorts, or subgroups, based on characteristics such as age and gender, and explicitly considering the three components of population change—births, deaths, and migration—with respect to each cohort.*

Figure 6.1
Historical and Projected Total Fertility Rate for the Region



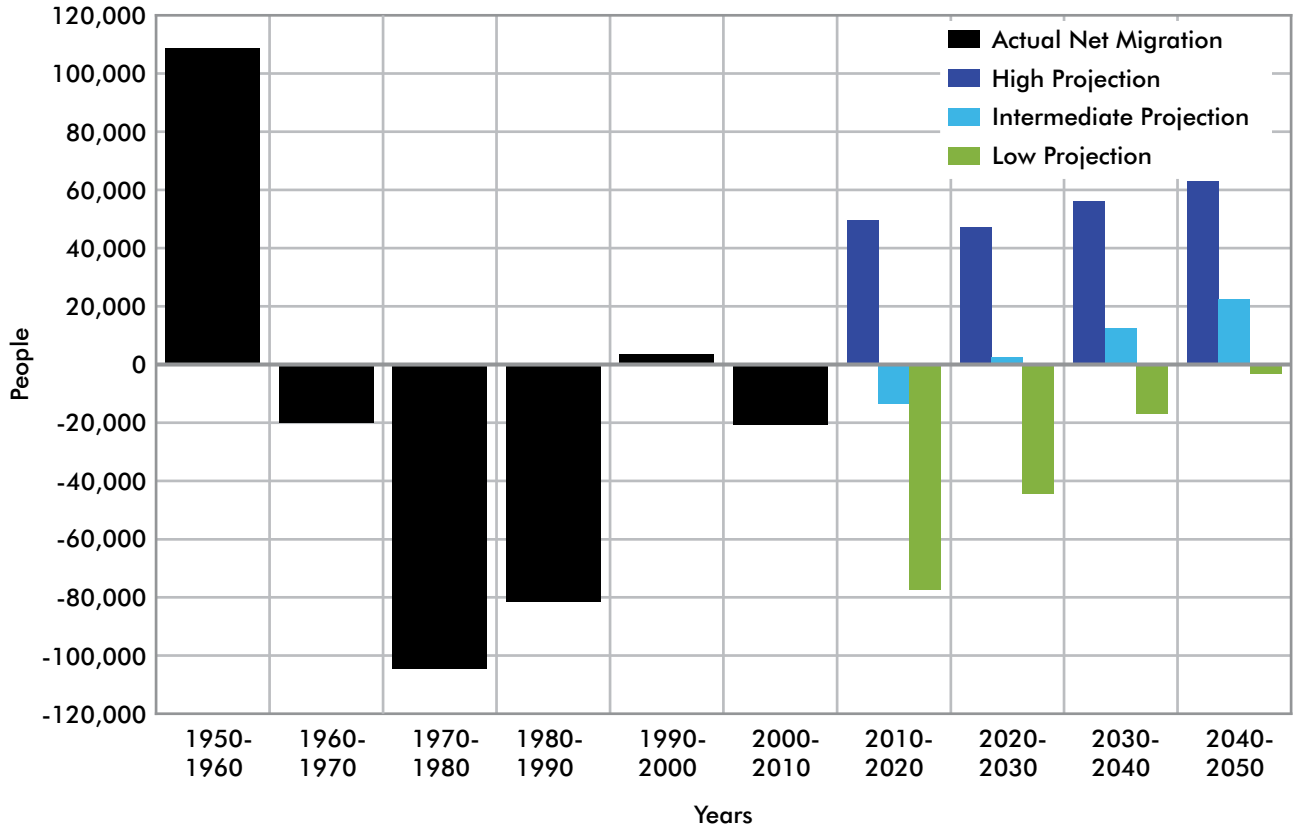
Source: U.S. Bureau of the Census, Wisconsin Department of Health Services, and SEWRPC

intermediate-, and low-growth scenarios. The projections differ primarily in terms of assumed future migration.

Figure 6.1 shows that the Region's total fertility rate decreased dramatically between 1960 and 1980 and has been relatively stable since 1990. The fertility rate did increase somewhat between 1990 and 2000 and then decreased again between 2000 and 2010. The lower total fertility rate in 2010 can be traced in part to reduced births during the economic recession that began in late 2007. The total fertility rate for the Region is projected to rebound from the reduced rate of 2010 and then increase gradually over the projection period to about 2.1 births per childbearing-age female in 2050. The fertility rates of younger females under age 25 are projected to continue to decrease, while the fertility rates of females over age 30 are projected to increase. This is consistent with trends over the past two decades.

There has been a steady increase in survival rates in the Region, a trend that goes back many decades. The new population projections assume a continuation of this long-term trend. For the new projections, current survival rates by age and sex were projected forward based on an assumption that the age and sex specific survival rates for counties in the Region would improve at the same relative rate as projected for the State overall, under State population projections. Male life expectancy in the Region would increase by 5.6 years, from 76.4 years in 2010 to 82.0 years in 2050. Female life expectancy would increase by 4.9 years, from 81.3 years in 2010 to 86.2 years in 2050.

Figure 6.2
Historical and Projected Net Migration for the Region



Source: U.S. Bureau of the Census, Wisconsin Department of Health Services, and SEWRPC

The entire Baby Boomer population will have reached the age of 65 by the year 2030. The need for replacement workers may be expected to impact migration levels as the Baby Boomer population leaves the workforce.

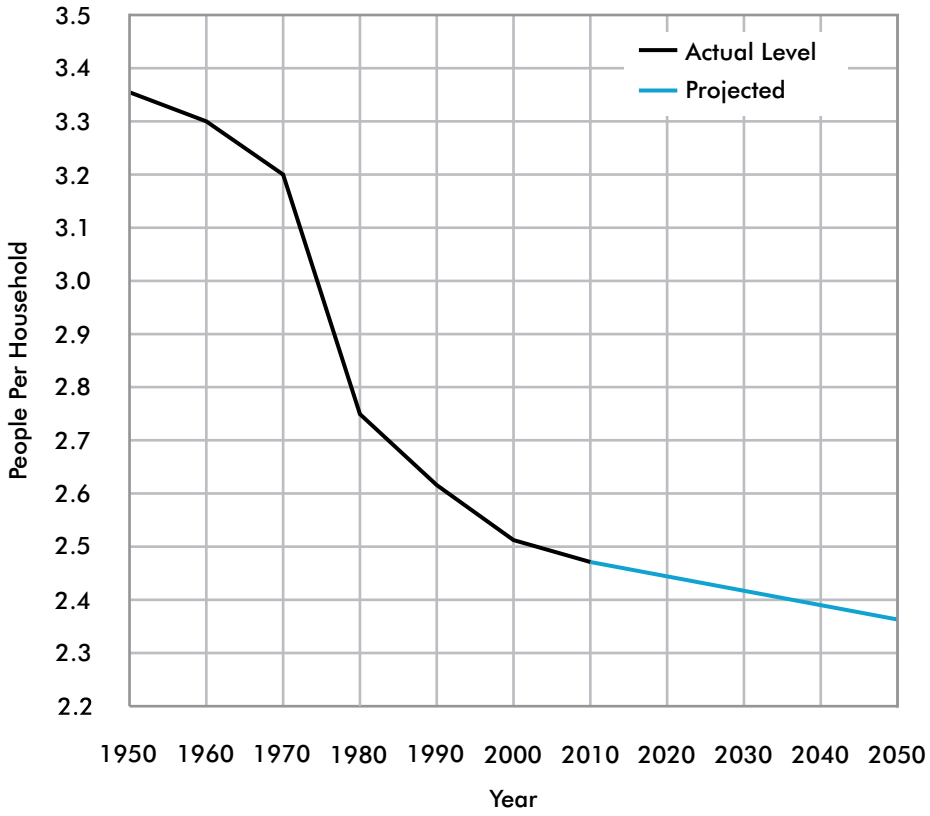
Future migration levels for the Region will depend upon a number of factors including, among others, government immigration policies, the number of employment opportunities (jobs) within the Region, and the need for workers. With the aging of the regional population—in particular, the aging of the large Baby Boomer population, the oldest of whom are now entering retirement age—the future need for workers to accommodate economic growth in the Region is an especially important consideration. The entire Baby Boomer population (those born from 1946 through 1964) will have reached the age of 65 by the year 2030. The need for replacement workers may well be expected to have an impact on migration levels as the Baby Boomer population leaves the workforce.

The pattern of migration for the Region would change from one of modest net out-migration early in the projection period to one of modest net in-migration later in the projection period under the intermediate-growth scenario (see Figure 6.2). This assumes modest economic growth in the Region over the long term and the need for additional workers as Baby Boomers retire from the workforce. There would be relatively steady net migration of population into the Region over the entire projection period under the high-growth scenario. There would be significant net out-migration from the Region under the low-growth scenario.

Household Projections—Methodology and Assumptions

Changes in the number and size of households in the Region will accompany the changes in the size of the resident population. The methodology for

Figure 6.3
Actual and Projected Household Size in the Region: 1950-2050



Source: U.S. Bureau of the Census and SEWRPC

projecting households involved projecting the population residing in households (as opposed to group quarters)[41] and the average household size for each county in the Region. The projected average household size was applied to the projected household population by county and the projected number of households for 2050 was the result.

It was assumed that the relative shares of the population residing in households and group quarters by age group would remain about the same over the projection period under all three growth scenarios. It was also assumed that average household sizes would continue to decrease, although at a reduced rate. The same household sizes were assumed under the three growth scenarios. The projected average household size for the Region overall is shown in Figure 6.3.

Employment Projections—Methodology and Assumptions

The Commission used a disaggregate approach to prepare employment projections for the year 2050, as it has done in past studies. This approach involves the consideration of employment in major industry groups—such as manufacturing, retail trade, service, and government—and the preparation of projections for each group. High, intermediate, and low projections were

[41] *A household includes all people who occupy a housing unit, which is defined by the Census Bureau as a house, apartment, mobile home, group of rooms, or single room that is occupied, or intended for occupancy, as separate living quarters. People not living in households are classified by the Census Bureau as living in group quarters, such as correctional facilities, college dormitories, and military quarters.*

developed for each major industry based on a consideration of historical trends, time series analyses, projections from other agencies, and various economic outlooks. The resulting total employment level for the Region was reviewed in light of the future labor force levels that could be expected under the Commission's population projections. The industry-by-industry employment projections were then adjusted as appropriate to provide general consistency between the total number of jobs and the projected population and labor force.

The Commission's employment projections are long-range projections intended to provide an indication of future trends in employment through 2050 needed as a basis for preparing VISION 2050. The projections do not reflect the fluctuation in employment levels that may be expected to occur as a result of periods of growth and decline in the economy typically associated with shorter-term business cycles because of the focus on long-range future trends.

6.3 POPULATION PROJECTIONS

Commission population projections for the year 2050 are shown in Table 6.1 and Figure 6.4. The Region's population is projected to increase from about 2.02 million people in 2010 to 2.58 million people in 2050 under the high-growth scenario, 2.35 million people under the intermediate-growth scenario, and 2.16 million people under the low-growth scenario. The balance of this section focuses on the intermediate population projection, which is intended to serve as a basis for preparing VISION 2050.

The Region's population is projected to increase to 2,354,000 people by 2050, which is a 17% increase over 2010.

The Region's population would increase by about 334,000 people, or 17 percent, over the 40-year projection period, from 2,020,000 people in 2010 to 2,354,000 people in 2050, under the intermediate-growth scenario. Population growth would range between 40,000 and 51,000 people during each five-year period from 2010 to 2035. Growth would range between 33,000 and 36,000 people during the three five-year periods between 2035 and 2050. While most of the population growth would result from natural increase, the level of natural increase is projected to decline significantly over the projection period. Although the number of births is expected to increase moderately over the projection period, the number of deaths occurring during the period is expected to increase substantially as a result of deaths occurring to the aging Baby Boomer population. This accounts for the projected decline in natural increase.

Each county in the Region would increase in population over the projection period under the intermediate-growth scenario. Kenosha County is projected to have the largest relative increase in population among the seven counties, in part because of its proximity to Northeastern Illinois. This influence is also expected to contribute to population growth in Walworth County. Population increases projected for the seven counties under the intermediate-growth scenario between 2010 and 2050 are as follows:

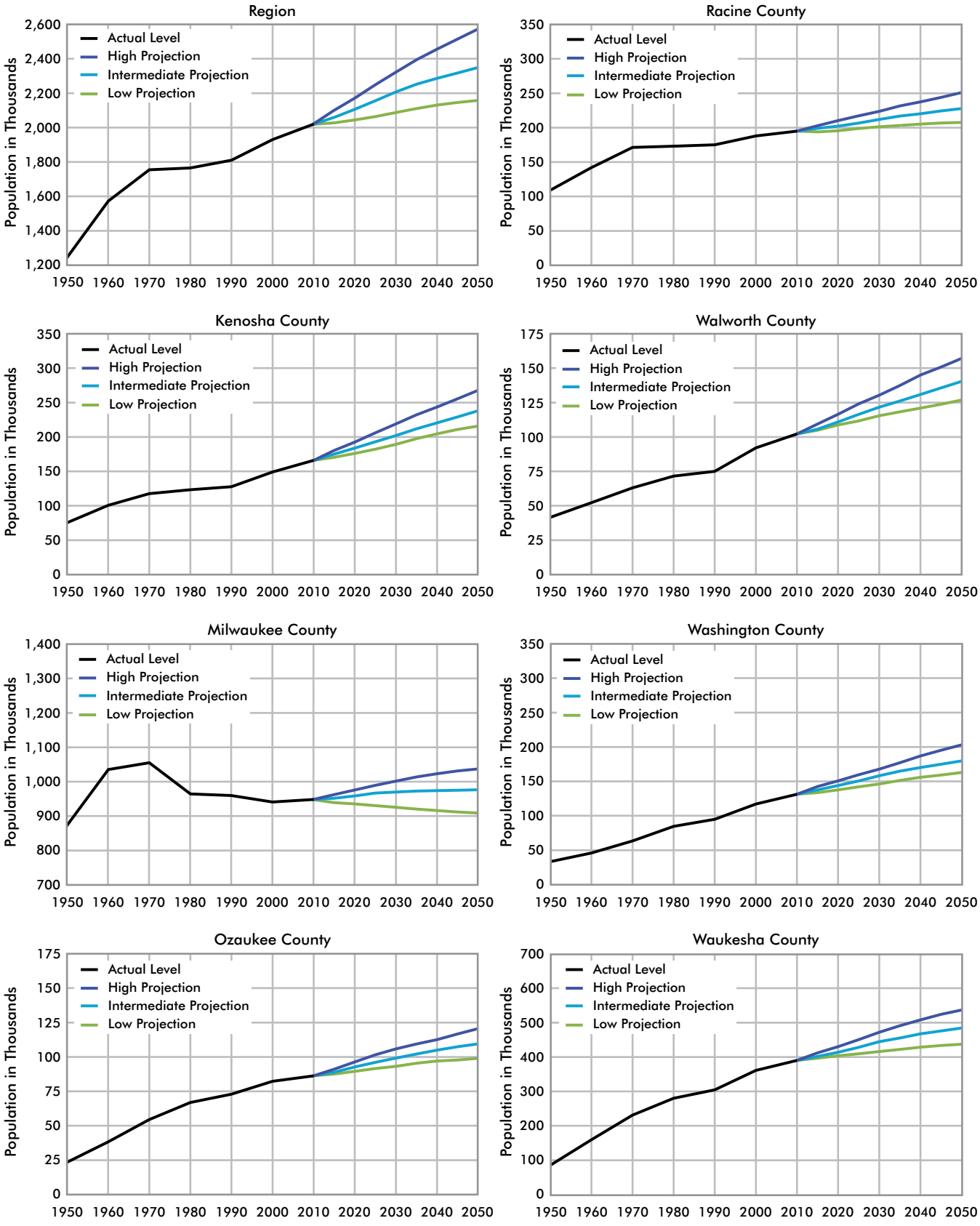
- Kenosha County: 71,600 people (43 percent increase)
- Milwaukee County: 28,900 people (3 percent increase)
- Ozaukee County: 22,700 people (26 percent increase)
- Racine County: 32,300 people (17 percent increase)

Table 6.1
Actual and Projected Population in the Region by County: 2010-2050

Data Item	Kenosha County			Milwaukee County		
Actual Population: 2010		166,400			947,800	
Percent of Region: 2010		8.2			46.9	
Projected Population:	High	Intermediate	Low	High	Intermediate	Low
2015	180,100	174,600	170,700	961,200	952,600	938,400
2020	192,500	183,700	175,500	976,800	959,800	934,300
2025	205,600	193,300	182,700	991,600	966,500	930,000
2030	219,100	202,800	189,800	1,003,800	970,800	923,800
2035	232,500	212,000	197,200	1,013,100	972,600	920,000
2040	244,700	220,700	204,100	1,021,000	973,300	915,300
2045	255,900	229,200	210,900	1,029,100	974,300	910,900
2050	267,400	238,000	216,000	1,038,500	976,700	908,100
Change: 2010-2050						
Population	101,000	71,600	49,600	90,700	28,900	-39,700
Percent	60.7	43.0	29.8	9.6	3.0	-4.2
Percent of Region: 2050	10.4	10.1	10.0	40.3	41.5	42.1
Data Item	**Ozaukee County**			**Racine County**		
Actual Population: 2010		86,400			195,400	
Percent of Region: 2010		4.3			9.7	
Projected Population:	High	Intermediate	Low	High	Intermediate	Low
2015	90,500	88,600	87,700	203,800	198,000	194,900
2020	96,000	92,000	89,600	210,000	202,000	196,800
2025	100,700	95,600	91,700	217,300	207,300	199,500
2030	105,300	99,100	93,500	224,700	212,400	201,800
2035	109,500	102,200	95,200	231,400	217,000	203,600
2040	113,400	104,700	96,500	237,600	220,900	205,300
2045	116,900	106,800	97,800	244,000	224,400	206,500
2050	120,500	109,100	99,200	250,700	227,700	207,500
Change: 2010-2050						
Population	34,100	22,700	12,800	55,300	32,300	12,100
Percent	39.5	26.3	14.8	28.3	16.5	6.2
Percent of Region: 2050	4.7	4.6	4.6	9.7	9.7	9.6
Data Item	**Walworth County**			**Washington County**		
Actual Population: 2010		102,200			131,900	
Percent of Region: 2010		5.1			6.5	
Projected Population:	High	Intermediate	Low	High	Intermediate	Low
2015	109,800	106,800	104,800	143,100	138,200	134,900
2020	116,900	111,900	108,000	151,600	144,600	137,600
2025	124,300	117,100	111,700	160,500	151,300	141,600
2030	131,400	122,100	115,300	169,700	158,000	146,900
2035	138,300	126,900	118,500	178,600	164,500	151,800
2040	145,300	131,500	121,300	187,200	170,300	156,100
2045	151,700	136,000	124,000	195,300	175,500	159,600
2050	158,300	140,600	126,800	203,400	180,500	162,800
Change: 2010-2050						
Population	56,100	38,400	24,600	71,500	48,600	30,900
Percent	54.9	37.6	24.1	54.2	36.8	23.4
Percent of Region: 2050	6.1	6.0	5.9	7.9	7.7	7.5
Data Item	**Waukesha County**			**Region**		
Actual Population: 2010		389,900			2,020,000	
Percent of Region: 2010		19.3			100.0	
Projected Population:	High	Intermediate	Low	High	Intermediate	Low
2015	411,400	401,900	395,600	2,099,900	2,060,800	2,027,000
2020	430,800	414,900	401,500	2,174,600	2,109,000	2,043,300
2025	451,700	428,700	409,300	2,251,600	2,159,700	2,066,400
2030	472,100	442,500	417,400	2,326,000	2,207,800	2,088,400
2035	491,300	454,600	424,600	2,394,800	2,249,800	2,110,800
2040	507,600	464,400	429,200	2,456,900	2,285,800	2,127,900
2045	522,700	472,600	434,200	2,515,700	2,318,700	2,143,900
2050	539,000	481,400	439,400	2,577,700	2,354,000	2,159,800
Change: 2010-2050						
Population	149,100	91,500	49,500	557,700	334,000	139,800
Percent	38.2	23.5	12.7	27.6	16.5	6.9
Percent of Region: 2050	20.9	20.4	20.3	100.0	100.0	100.0

Source: U.S. Bureau of the Census and SEWRPC

Figure 6.4
Actual and Projected Population in the Region by County: 1950-2050



Source: U.S. Bureau of the Census and SEWRPC

- Walworth County: 38,400 people (38 percent increase)
- Washington County: 48,600 people (37 percent increase)
- Waukesha County: 91,500 people (24 percent increase)

Table 6.2 and Figure 6.5 show that the projections anticipate continued change in the age composition of the regional population through 2050. The broad age groups 0-19 years, 20-44 years, and 45-64 years are projected to be relatively stable, while people age 65 and over are projected to nearly double. People age 65 and over would comprise about 21 percent of the population in 2050, compared to about 13 percent in 2010. This pattern reflects the aging of the Baby Boomer population. The changing age composition of the population is expected to have a range of impacts, including the availability of labor force in the Region and an increased demand for a variety of housing types and sizes. County-level population projections by age and sex are presented for the intermediate-growth scenario in Technical Report No. 11.

The number of people age 65 and over is projected to nearly double by 2050.

In addition to changes in the overall size and age characteristics of the regional population, continued change in the racial/ethnic makeup of the regional population may be expected in the years ahead. Table 6.3 shows the actual racial/ethnic composition of the regional population in 2010 and the projected racial/ethnic composition of the regional population in 2050, based on a continuation of the pattern of change from 1980 to 2010.[42] The minority share of the regional population would increase from 29 percent in 2010 to nearly 45 percent in 2050. A set of national population projections released by the Census Bureau in 2008 shows a similar nationwide trend. The minority share of the total national population is expected to increase from 36 percent in 2010 to 54 percent in 2050.

Trends from 1980 to 2010 indicate that the minority share of the regional population may increase to 45% by 2050.

6.4 HOUSEHOLD PROJECTIONS

Commission household projections for the year 2050 are shown in Table 6.4 and Figure 6.6. The number of households in the Region is projected to increase from about 0.80 million households in 2010 to 1.06 million households in 2050 under the high-growth scenario, to 0.97 million households under the intermediate-growth scenario, and to 0.89 million households under the low-growth scenario. The balance of this section focuses on the intermediate household projection.

The number of households in the Region would increase by about 172,300 households, or 22 percent, from about 800,100 households in 2010 to 972,400 households in 2050, under the intermediate-growth scenario. This exceeds the projected relative increase in population under the intermediate-growth scenario (17 percent). The number of households in each county in the Region would also increase under the intermediate-growth scenario at a greater rate than population. Household increases projected for the seven counties under the intermediate-growth scenario between 2010 and 2050 are as follows:

Households are projected to increase to 972,400 by 2050, which is a 22% increase over 2010.

- Kenosha County: 32,800 households (52 percent increase)
- Milwaukee County: 26,000 households (7 percent increase)

[42] *The minority population of the Region is identified based on race and Hispanic origin.*

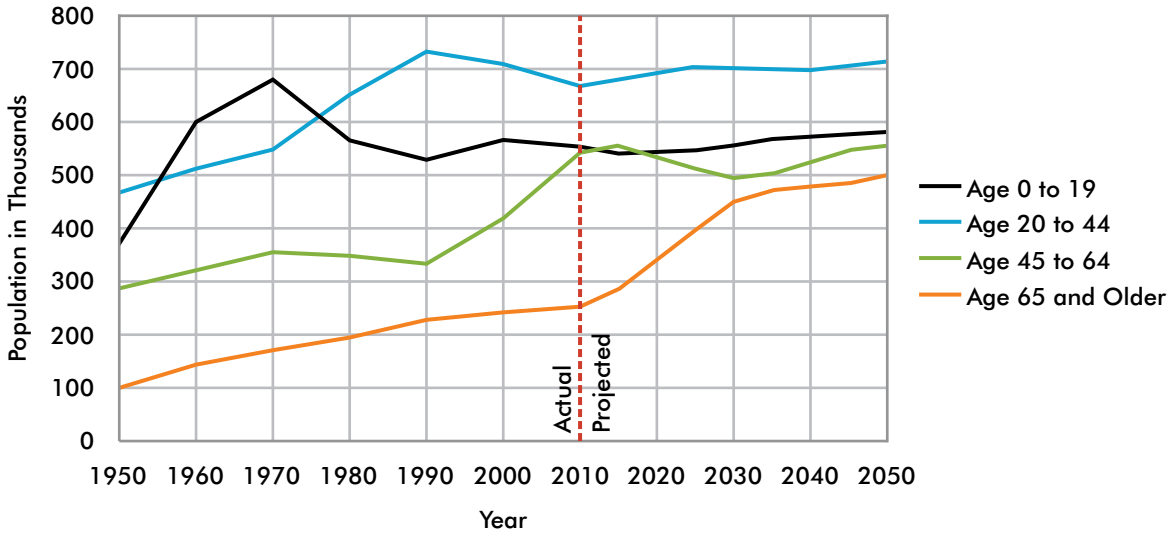
Table 6.2
Actual and Projected Population in the Region by Age: 2010-2050 (Intermediate Projection)

	Year								
Age Group	2010	2015	2020	2025	2030	2035	2040	2045	2050
Under 5	133,503	132,574	137,216	140,037	141,943	142,431	142,100	142,690	145,429
5 to 9	137,010	132,098	131,865	137,117	140,359	142,726	143,716	143,856	144,897
10 to 14	140,118	139,101	134,433	134,243	139,642	143,073	145,761	147,090	147,460
15 to 19	144,926	140,458	139,757	135,145	134,923	140,421	143,954	146,775	148,232
Subtotal 0 to 19	555,557	544,231	543,271	546,542	556,867	568,651	575,531	580,411	586,018
20 to 24	137,595	142,227	138,007	137,820	133,270	133,024	138,287	141,607	144,168
25 to 29	137,321	138,260	143,254	138,989	138,780	134,306	134,196	139,553	142,928
30 to 34	128,174	138,906	139,990	146,365	142,608	142,113	137,436	137,497	143,497
35 to 39	125,851	128,235	139,722	140,774	148,111	145,036	144,657	140,029	140,299
40 to 44	136,456	124,949	127,657	139,230	140,077	148,037	145,673	145,563	141,035
Subtotal 20 to 44	665,397	672,577	688,630	703,178	702,846	702,516	700,249	704,249	711,927
45 to 49	153,577	134,804	123,656	126,410	137,859	138,682	147,039	145,233	145,348
50 to 54	153,402	150,324	132,208	121,400	124,185	135,491	136,465	145,038	143,651
55 to 59	132,272	146,515	144,347	127,247	116,965	119,745	130,741	131,976	140,680
60 to 64	105,758	123,487	137,658	136,328	120,342	110,726	113,519	124,149	125,665
Subtotal 45 to 64	545,009	555,130	537,869	511,385	499,351	504,644	527,764	546,396	555,344
65 to 69	72,622	95,606	112,504	126,263	125,667	111,199	102,561	105,463	115,694
70 to 74	54,925	65,029	86,265	102,150	115,300	115,462	102,581	94,932	97,968
75 to 79	46,609	47,156	56,542	75,548	89,990	102,322	103,365	92,408	85,915
80 to 84	39,940	36,722	37,866	46,070	62,143	74,737	85,979	87,999	79,416
85 and Older	39,911	44,344	46,058	48,601	55,664	70,229	87,736	106,837	121,758
Subtotal 65 and Older	254,007	288,857	339,235	398,632	448,764	473,949	482,222	487,639	500,751
Total	2,019,970	2,060,795	2,109,005	2,159,737	2,207,828	2,249,760	2,285,766	2,318,695	2,354,040

Note: Age groups that approximate the Baby Boomer generation (people born from 1946 through 1964) are shaded green.

Source: U.S. Bureau of the Census and SEWRPC

Figure 6.5
Actual and Projected Population in the Region by General Age Group (Intermediate Projection): 1950-2050



Source: U.S. Bureau of the Census and SEWRPC

Table 6.3
Racial/Ethnic Makeup of the Regional Population: Existing 2010 and Projected 2050 Based Upon an Extrapolation of Past Trends

Race/Ethnicity	Percentage of Total Regional Population: Actual 2010	Percentage of Total Regional Population: Projected 2050[a]
Non-Hispanic White Population	71.1	55.5
Minority Population:[b]		
Non-Hispanic Black/African American	14.3	19.1
Non-Hispanic Other Race	4.7	8.2
Hispanic—Any Race	9.9	17.2
Minority Subtotal	28.9	44.5
Total	100.0	100.0

[a] *Assumes that the average annual numeric change in population for each group experienced between 1980 and 2010 would continue through 2050.*

[b] *The minority population includes people reported in the Census as being of Hispanic origin and/or reporting their race as Black or African American, American Indian/Alaska Native, Asian, Native Hawaiian/Pacific Islander, some other race, or more than one race.*

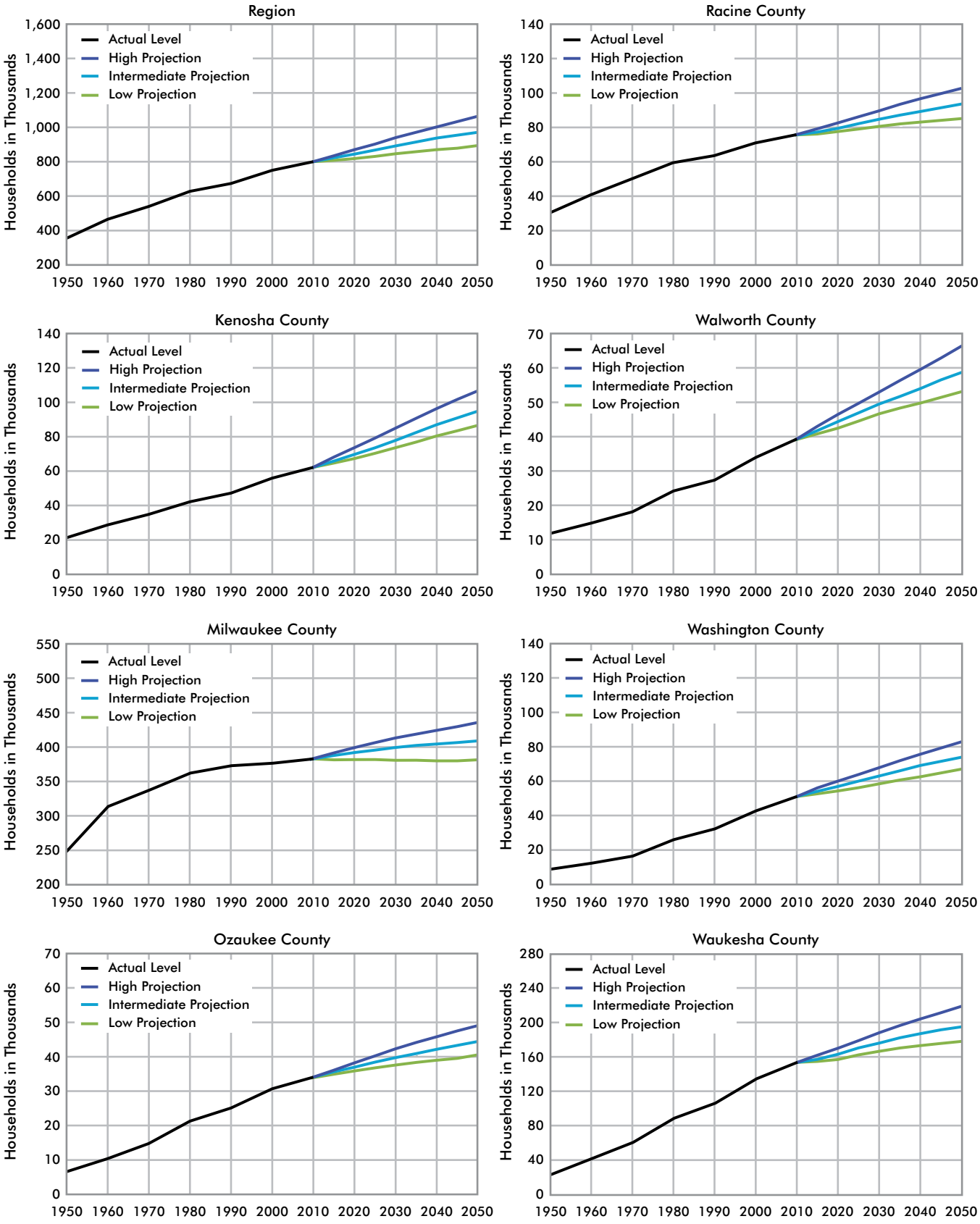
Source: U.S. Bureau of the Census and SEWRPC

Table 6.4
Actual and Projected Households in the Region by County: 2010-2050

Data Item	Kenosha County			Milwaukee County		
Actual Households: 2010		62,600			383,600	
Percent of Region: 2010		7.8			47.9	
Projected Households:	High	Intermediate	Low	High	Intermediate	Low
2015	68,400	66,300	64,800	390,700	387,200	381,400
2020	73,700	70,300	67,200	399,100	392,100	381,600
2025	79,300	74,600	70,500	406,800	396,500	381,500
2030	85,200	78,900	73,800	413,300	399,800	380,400
2035	91,100	83,100	77,200	418,700	402,000	380,300
2040	96,600	87,100	80,500	423,800	403,900	379,900
2045	101,800	91,100	83,800	429,100	406,300	379,900
2050	107,200	95,400	86,600	435,500	409,600	380,800
Change: 2010-2050						
Households	44,600	32,800	24,000	51,900	26,000	-2,800
Percent	71.2	52.4	38.3	13.5	6.8	-0.7
Percent of Region: 2050	10.1	9.8	9.7	40.9	42.1	42.7
Data Item	**Ozaukee County**			**Racine County**		
Actual Households: 2010		34,200			75,700	
Percent of Region: 2010		4.3			9.5	
Projected Households:	High	Intermediate	Low	High	Intermediate	Low
2015	36,000	35,200	34,900	79,400	77,200	76,000
2020	38,300	36,700	35,800	82,500	79,400	77,300
2025	40,300	38,300	36,700	86,000	82,100	79,000
2030	42,400	39,900	37,600	89,600	84,700	80,500
2035	44,200	41,200	38,400	93,000	87,200	81,800
2040	45,900	42,300	39,000	96,200	89,500	83,100
2045	47,500	43,300	39,700	99,600	91,600	84,300
2050	49,200	44,500	40,400	103,200	93,800	85,400
Change: 2010-2050						
Households	15,000	10,300	6,200	27,500	18,100	9,700
Percent	43.9	30.1	18.1	36.3	23.9	12.8
Percent of Region: 2050	4.6	4.6	4.5	9.7	9.6	9.6
Data Item	**Walworth County**			**Washington County**		
Actual Households: 2010		39,700			51,600	
Percent of Region: 2010		5.0			6.4	
Projected Households:	High	Intermediate	Low	High	Intermediate	Low
2015	43,100	41,900	41,100	56,400	54,500	53,200
2020	46,300	44,300	42,700	60,100	57,300	54,600
2025	49,600	46,800	44,600	64,000	60,300	56,400
2030	53,000	49,300	46,500	68,000	63,300	58,800
2035	56,300	51,700	48,200	72,000	66,300	61,200
2040	59,700	54,000	49,800	75,900	69,000	63,200
2045	63,000	56,400	51,500	79,700	71,600	65,000
2050	66,300	58,900	53,100	83,800	74,300	67,000
Change: 2010-2050						
Households	26,600	19,200	13,400	32,200	22,700	15,400
Percent	67.0	48.4	33.8	62.4	44.0	29.8
Percent of Region: 2050	6.2	6.1	6.0	7.9	7.6	7.5
Data Item	**Waukesha County**			**Region**		
Actual Households: 2010		152,700			800,100	
Percent of Region: 2010		19.1			100.0	
Projected Households:	High	Intermediate	Low	High	Intermediate	Low
2015	161,600	157,900	155,400	835,600	820,200	806,800
2020	170,200	163,900	158,600	870,100	844,000	817,800
2025	179,300	170,200	162,500	905,400	868,700	831,200
2030	188,400	176,600	166,500	940,000	892,400	844,200
2035	197,000	182,200	170,200	972,300	913,600	857,200
2040	204,500	187,100	172,900	1,002,600	932,900	868,400
2045	211,800	191,400	175,800	1,032,500	951,700	879,900
2050	219,500	195,900	178,800	1,064,700	972,400	892,100
Change: 2010-2050						
Households	66,800	43,200	26,100	264,600	172,300	92,000
Percent	43.7	28.3	17.1	33.1	21.5	11.5
Percent of Region: 2050	20.6	20.2	20.0	100.0	100.0	100.0

Source: U.S. Bureau of the Census and SEWRPC

Figure 6.6
Actual and Projected Households in the Region by County: 1950-2050



Source: U.S. Bureau of the Census and SEWRPC

Table 6.5
Average Household Size in the Region by County: Actual 2010 and Projected 2050

County	Average Household Size (People per Household)	
	Actual 2010	Projected 2050
Kenosha	2.58	2.42
Milwaukee	2.41	2.32
Ozaukee	2.47	2.39
Racine	2.52	2.36
Walworth	2.51	2.32
Washington	2.53	2.39
Waukesha	2.52	2.41
Region	2.47	2.36

Source: U.S. Bureau of the Census and SEWRPC

- Ozaukee County: 10,300 households (30 percent increase)
- Racine County: 18,100 households (24 percent increase)
- Walworth County: 19,200 households (48 percent increase)
- Washington County: 22,700 households (44 percent increase)
- Waukesha County: 43,200 households (28 percent increase)

Average household size is expected to decrease from 2.47 in 2010 to 2.36 in 2050.

The higher growth rate of households relative to population is expected to be accompanied by a decrease in household size for the Region as a whole and each of the seven counties, as shown in Table 6.5. The average household size for the Region is expected to decrease from 2.47 people in 2010 to 2.36 people in 2050. This is expected to occur because of a combination of factors, including a continued change in household types and the increase in the older population age groups.

6.5 EMPLOYMENT PROJECTIONS

Commission projections of total employment in the Region for 2050 are shown in Table 6.6 and Figure 6.7. Total employment in the Region is projected to increase from about 1.18 million jobs in 2010 to 1.54 million jobs in 2050 under the high-growth scenario, to 1.39 million jobs under the intermediate-growth scenario, and to 1.24 million jobs under the low-growth scenario. The balance of this section focuses on the intermediate employment projection.

Jobs in the Region are projected to increase to 1,386,900 by 2050, which is an 18% increase over 2010, but only a 12% increase over the all-time high of 1,238,600 in 2007.

Total employment in the Region would increase by about 210,300 jobs, or 18 percent, over the 40-year projection period, from 1,176,600 jobs in 2010 to 1,386,900 jobs in 2050, under the intermediate-growth scenario. It is important to recognize that employment in the Region was unusually low in 2010, the base year of the new projections, because of the national economic recession that began in late 2007. Total employment decreased by 62,000 jobs, or 5 percent, from an all-time high of 1,238,600 jobs in 2007. Projected total employment for the Region under the intermediate-growth scenario is 12 percent greater than the peak level of 2007.

There has been a significant change in the distribution of jobs among counties in the Region over the past decades, as described in Chapter 2. The largest distributional changes in employment among the Region's counties have occurred in Milwaukee and Waukesha Counties. Milwaukee County's share of regional employment decreased by about 30 percent over the previous six

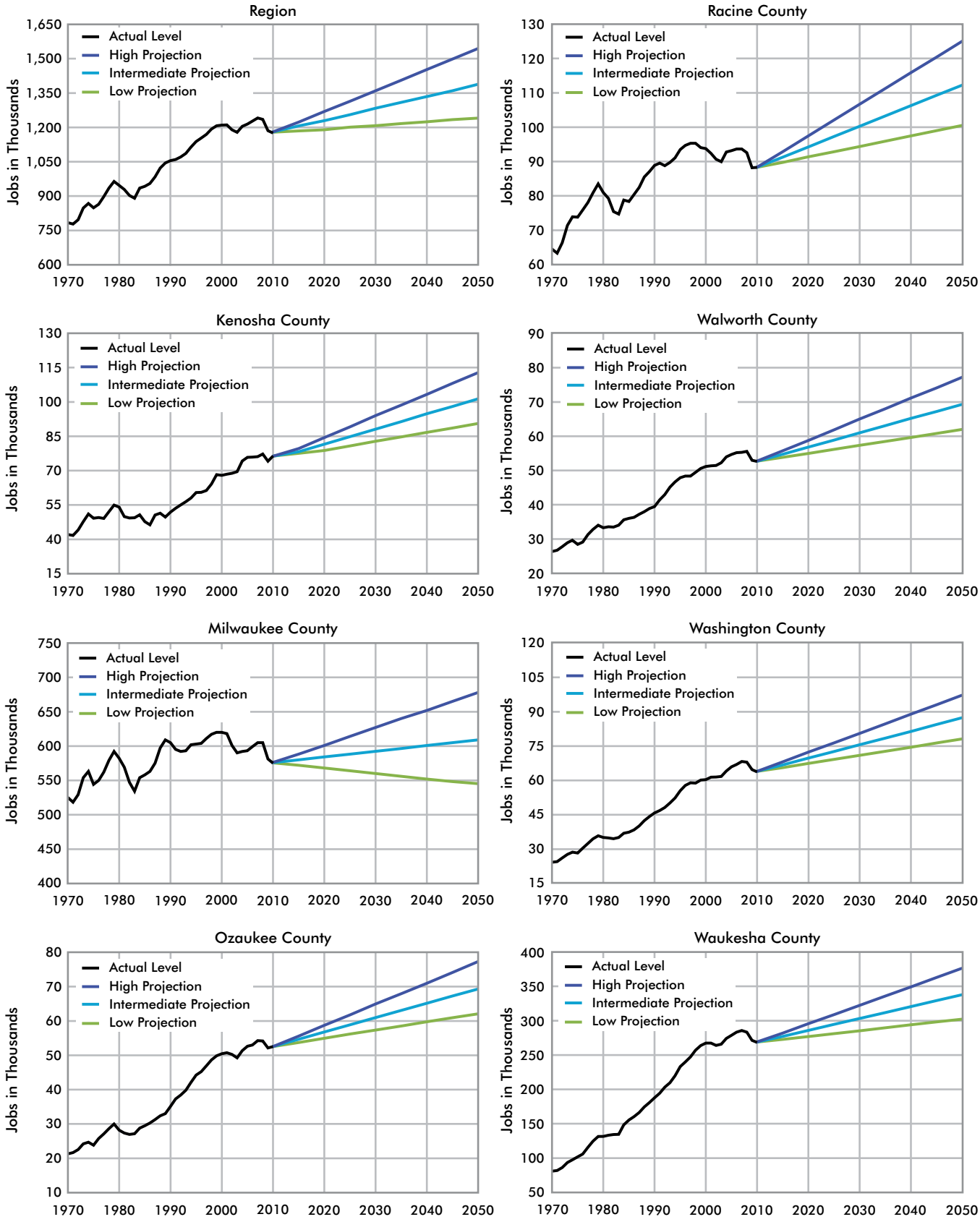
Table 6.6
Actual and Projected Employment in the Region by County: 2010-2050

County	Actual Employment: 2010		Projected Employment: 2050									Percent of Region Jobs[a]
			High Projection			Intermediate Projection			Low Projection			
	Number of Jobs	Percent of Region	Number of Jobs: 2050	Change: 2010-2050 Number	Change: 2010-2050 Percent	Number of Jobs: 2050	Change: 2010-2050 Number	Change: 2010-2050 Percent	Number of Jobs: 2050	Change: 2010-2050 Number	Change: 2010-2050 Percent	
Kenosha	74,900	6.4	112,800	37,900	50.6	101,300	26,400	35.2	90,600	15,700	21.0	7.3
Milwaukee	575,400	48.9	678,100	102,700	17.8	608,900	33,500	5.8	544,500	-30,900	-5.4	43.9
Ozaukee	52,500	4.5	77,200	24,700	47.0	69,300	16,800	32.0	62,000	9,500	18.1	5.0
Racine	88,300	7.5	125,100	36,800	41.7	112,300	24,000	27.2	100,500	12,200	13.8	8.1
Walworth	52,700	4.5	77,200	24,500	46.5	69,300	16,600	31.5	62,000	9,300	17.6	5.0
Washington	63,900	5.4	97,300	33,400	52.3	87,400	23,500	36.8	78,100	14,200	22.2	6.3
Waukesha	268,900	22.8	376,900	108,000	40.2	338,400	69,500	25.8	302,700	33,800	12.6	24.4
Region	1,176,600	100.0	1,544,600	368,000	31.3	1,386,900	210,300	17.9	1,240,400	63,800	5.4	100.0

[a] *Applies to all projections.*

Source: U.S. Bureau of Economic Analysis and SEWRPC

Figure 6.7
Actual and Projected Employment in the Region by County: 1970-2050



Source: U.S. Bureau of Economic Analysis and SEWRPC

decades, while Waukesha County's share increased by about 20 percent. The share of the other five counties in the Region combined increased by about 10 percent. Commission employment projections indicate a continuation of these historical trends in the distribution of jobs within the Region, but at a moderated pace. The projections consider a number of factors, including the historical trend in the number of jobs by county and the historical trend in each county's share of total regional employment. Also considered was the general pattern of planned commercial and industrial development identified in long-range county and community comprehensive plans as well as major commitments of public utilities to serve such development. Employment increases projected for the seven counties under the intermediate-growth scenario between 2010 and 2050 are as follows:

- Kenosha County: 26,400 jobs (35 percent increase)
- Milwaukee County: 33,500 jobs (6 percent increase)
- Ozaukee County: 16,800 jobs (32 percent increase)
- Racine County: 24,000 jobs (27 percent increase)
- Walworth County: 16,600 jobs (32 percent increase)
- Washington County: 23,500 jobs (37 percent increase)
- Waukesha County: 69,500 jobs (26 percent increase)

In general, the new employment projections indicate the continuation of the long-term shift in the regional economy from a manufacturing to a service orientation, as described in Chapter 2. Manufacturing jobs—which accounted for 30 percent of all jobs in 1970 and 13 percent in 2010—would comprise 9 percent of jobs in the Region in 2050 under the intermediate-growth scenario (see Table 6.7). Service jobs—which accounted for 26 percent of all jobs in 1970 and 50 percent in 2010—would comprise 55 percent in 2050. Projected changes in employment by industry group under the intermediate-growth scenario between 2010 and 2050 are as follows:

Projections indicate a continuation of the long-term shift from manufacturing to service jobs.

- Manufacturing: -28,900 jobs (20 percent decrease)
- Construction: 17,400 jobs (38 percent increase)
- Wholesale Trade: 11,000 jobs (23 percent increase)
- Retail Trade: 26,100 jobs (14 percent increase)
- Services: 172,000 jobs (29 percent increase)
- Transportation, Warehousing, and Utilities: 7,200 jobs (19 percent increase)
- Government: 6,700 jobs (6 percent increase)
- Agriculture: -1,200 jobs (23 percent decrease)

Table 6.7
Projected Employment by Industry Group in the Region: 2010-2050

Industry	Actual Employment: 2010		Projected Employment: 2050						Projected Change: 2010-2050					
			High Projection		Intermediate Projection		Low Projection		High Projection		Intermediate Projection		Low Projection	
	Number of Jobs	Percent of Total	Number of Jobs	Percent of Total	Number of Jobs	Percent of Total	Number of Jobs	Percent of Total	Number	Percent	Number	Percent	Number	Percent
Manufacturing	148,100	12.6	143,000	9.3	119,200	8.6	95,400	7.7	-5,100	-3.4	-28,900	-19.5	-52,700	-35.6
Construction	45,900	3.9	71,300	4.6	63,300	4.5	57,300	4.6	25,400	55.3	17,400	37.9	11,400	24.8
Wholesale Trade	48,800	4.2	66,700	4.3	59,800	4.3	52,400	4.2	17,900	36.7	11,000	22.5	3,600	7.4
Retail Trade	185,800	15.8	244,100	15.8	211,900	15.3	192,600	15.5	58,300	31.4	26,100	14.0	6,800	3.7
Services	584,400	49.7	828,200	53.6	756,400	54.5	684,700	55.2	243,800	41.7	172,000	29.4	100,300	17.2
Transportation, Warehousing, and Utilities	38,200	3.2	50,300	3.3	45,400	3.3	42,500	3.4	12,100	31.7	7,200	18.8	4,300	11.3
Government	117,700	10.0	133,400	8.6	124,400	9.0	109,700	8.9	15,700	13.3	6,700	5.7	-8,000	-6.8
Agriculture	5,200	0.4	5,100	0.3	4,000	0.3	3,300	0.3	-100	-1.9	-1,200	-23.1	-1,900	-36.5
Other (unclassified)	2,500	0.2	2,500	0.2	2,500	0.2	2,500	0.2	0	0.0	0	0.0	0	0.0
Total	1,176,600	100.0	1,544,600	100.0	1,386,900	100.0	1,240,400	100.0	368,000	31.3	210,300	17.9	63,800	5.4

Source: U.S. Bureau of Economic Analysis and SEWRPC

Table 6.8
Estimated Number of Jobs to be Accommodated by the Projected Labor Force in the Region: 2050

Growth Scenario	Projected Population: 2050	Projected Labor Force: 2050	Assumed Unemployment Rate: 2050	Multiple Job-holding Factor—Assumed Range: 2050		Jobs Able to be Accommodated by Projected Labor Force: 2050		Projected Jobs: 2050
				From	To	From	To	
High	2,577,700	1,287,400	4.0	1.194	1.268	1,475,700	1,567,100	1,544,600
Intermediate	2,354,000	1,171,300	5.0	1.194	1.268	1,328,600	1,410,900	1,386,900
Low	2,159,800	1,070,500	6.0	1.194	1.268	1,201,500	1,276,000	1,240,400

Source: SEWRPC

Relationship Between Population and Employment Projections

The processes of preparing projections of future population and employment levels were closely coordinated.

The processes of preparing projections of future population and employment levels were closely coordinated to ensure consistency between the two because the labor force trends that may be expected in light of projected changes in the regional population need to be consistent with the projected employment trends. The relationship between projected employment levels and the labor force is described in this section.

Table 6.8 shows the size of the labor force in the Region that may be expected based on the Commission's projected population by age and sex and projected future labor force participation rates. The labor force would increase from 1,079,000 people in 2010 to 1,287,400 people in 2050 under the high-growth scenario, to 1,171,300 people under the intermediate-growth scenario, and to 1,070,500 people under the low-growth scenario. These projections indicate slower growth in the labor force than has occurred in the Region over the past 40 years. The expected reduced growth is directly related to the aging of the population, as a large segment of the workforce enters those age groups with lower labor force participation rates. The retirement of large numbers of seniors may be expected to dampen growth in the overall labor force in coming decades despite the fact that some seniors may work longer than in the past, which was assumed in the analysis.

Estimating the employment levels able to be accommodated by the labor force required that assumptions be made regarding unemployment and the extent of multiple job-holding. Unemployment rates of 4.0, 5.0, and 6.0 percent were assumed for the high-, intermediate-, and low-growth scenarios, respectively. These were deemed to be representative of the long-term average rates that could reasonably be expected under the three growth scenarios. The measure of multiple job-holding used in this analysis is the ratio between the total number of jobs in the Region and the employed labor force. A range of multiple job-holding factors from 1.19 to 1.27—consistent with the range observed in the Region between 1990 and 2010—was considered for each growth scenario.

Table 6.8 shows the range in the number of jobs that could potentially be accommodated by the projected population and associated labor force under the high-, intermediate-, and low-growth scenarios based upon the foregoing assumptions. As indicated, the projected year 2050 job levels in the Region under the high-, intermediate-, and low-growth scenarios are within these ranges. This indicates basic consistency between the projected employment levels and the projected population and associated labor force in the Region under each growth scenario.

Table 6.9
Actual and Projected Personal Income Levels in the Region: 1969-2050

Income Category	Year	Constant 2010 Dollars		
		Income Per Worker	Per Capita Income	Mean Household Income
Actual Income	1969	$49,800	$20,100	$65,800
	1979	51,900	24,300	68,300
	1989	51,900	25,300	67,700
	1999	59,100	29,200	75,300
	2010	54,200	25,900	65,400
Projected Income	2050	$63,000	$29,800	$72,000
Projected Change in Income 2010-2050:				
Dollars	--	$8,800	$3,900	$6,600
Percent	--	16.2	15.1	10.1

Source: U.S. Bureau of the Census and SEWRPC

Income projections are based on trends from the past 40 years, which include periods of very modest growth, rapid growth, and decline.

6.6 PERSONAL INCOME PROJECTIONS

The Commission's personal income projections focus on income per worker, per capita income, and mean household income. The historical trends in income per worker, per capita income, and mean household income in the Region, expressed in constant 2010 dollars, are presented in Table 6.9 and Figures 6.8 to 6.10. The impact of the major recession of the late 2000s is evident in the decrease in all three measures of personal income between 1999 and 2010.

The Commission's projection of income per worker is based upon the assumption that the long-term trend in per worker income would be similar to that observed over the past 40 years—which includes periods of very modest growth, rapid growth, and decline. The projected per worker income represents an extrapolation of the per worker income observed in the Region between 1969 and 2010.

The projections of per capita income and mean household income were derived from the per worker income projection. Thus, projected per capita income was determined by dividing the projected aggregate personal income by the projected population, where the projected aggregate personal income was obtained by multiplying the projected per worker income by the projected employed labor force. Similarly, the projected mean household income was determined by dividing the projected aggregate personal income by the projected number of households.

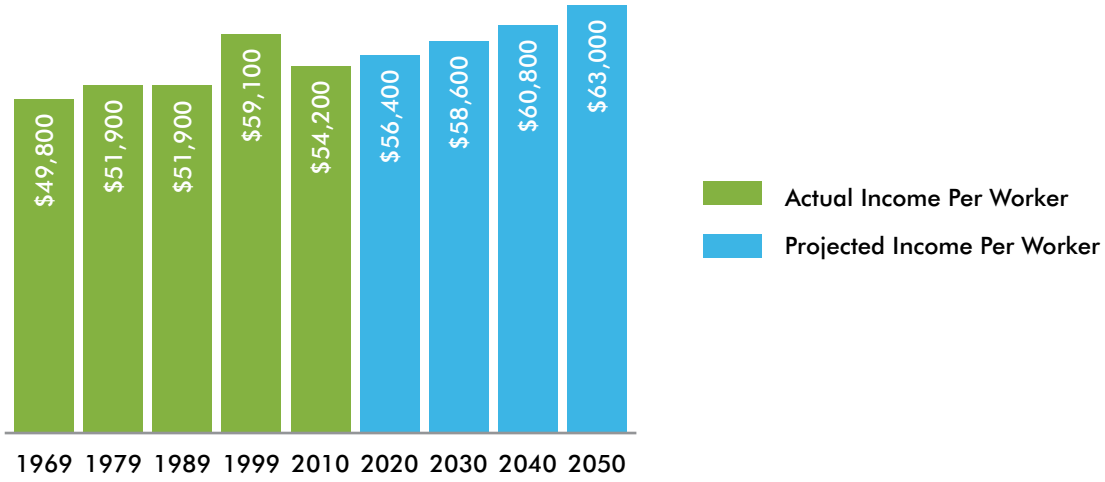
Worker income is projected to increase to $63,000 a year in 2050, which is a 16% increase over 2010.

As indicated in Table 6.9 and Figures 6.8 to 6.10, Commission projections indicate that per worker income in the Region would increase by 16 percent over the 40-year projection period, from $54,200 in 2010 to $63,000 in 2050. Per capita income would increase by 15 percent, from $25,900 in 2010 to $29,800 in 2050. Mean household income would increase by 10 percent, from $65,400 in 2010 to $72,000 in 2050.

6.7 SUMMARY

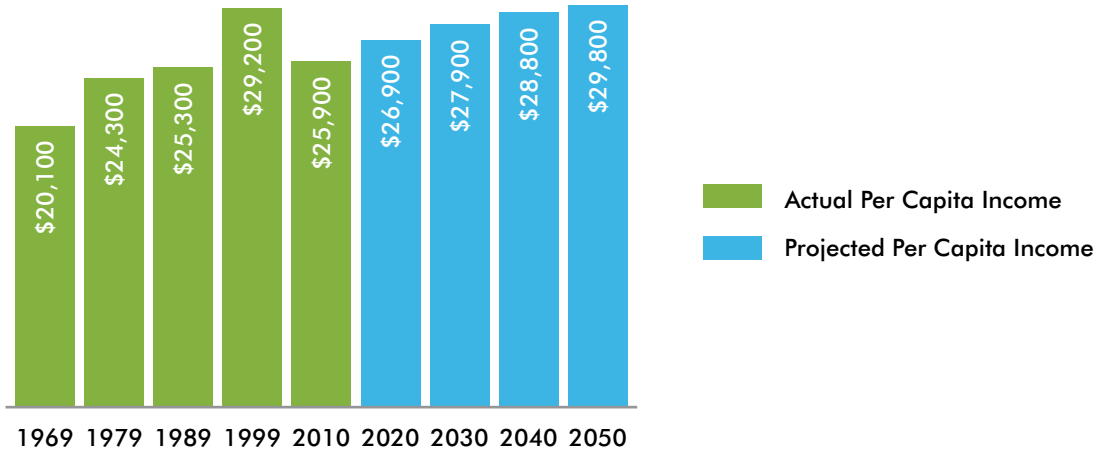
This chapter presents a set of population, household, and employment projections for the Region for the period from 2010 to 2050. The projections were developed by the Commission as a basis for updating and extending the regional land use and transportation plan and other elements of the comprehensive plan for the Region. The new population and household projections are fully documented in SEWRPC Technical Report No. 11 (5th

Figure 6.8
Actual and Projected Income per Worker in the Region: 1969-2050 (Constant 2010 Dollars)



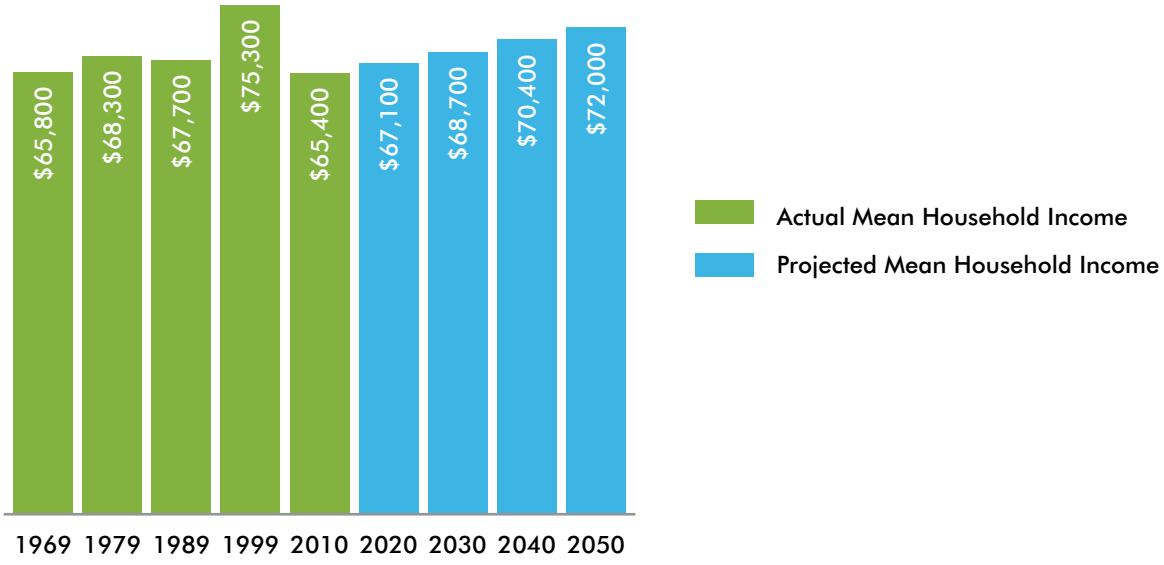
Source: U.S. Bureau of the Census and SEWRPC

Figure 6.9
Actual and Projected Per Capita Income in the Region: 1969-2050 (Constant 2010 Dollars)



Source: U.S. Bureau of the Census and SEWRPC

Figure 6.10
Actual and Projected Mean Household Income in the Region: 1969-2050 (Constant 2010 Dollars)



Source: U.S. Bureau of the Census and SEWRPC

Edition), *The Population of Southeastern Wisconsin*. The new employment projections are fully documented in SEWRPC Technical Report No. 10 (5th Edition), *The Economy of Southeastern Wisconsin*. These reports were prepared in tandem to ensure consistency between the Commission's long-range population and employment projections.

As in previous projection efforts, the Commission has prepared a range of future population, household, and employment levels—high, intermediate, and low—for the Region. This approach recognizes the uncertainty in any effort to predict future socioeconomic conditions. The Commission's Advisory Committee on Regional Population and Economic Forecasts considered the intermediate projection the most likely to occur for the Region as a whole. The high and low projections are intended to provide an indication of the range of population, household, and employment levels that could conceivably occur under significantly higher or lower, but nevertheless plausible, growth scenarios for the Region. The intermediate projections were used as the basis for VISION 2050, indicating the approximate future population, household, and employment levels in the Region that the plan should be designed to accommodate. It should be noted, however, that the projections were refined during the planning process because recommendations were made that altered the distribution of population, households, jobs, and urban land use within the Region in order to better achieve the long-range vision for the Region.

In addition to the population, household, and employment projections, this chapter presents a long-range projection of personal income levels for the Region, as required for certain aspects of the land use-transportation planning process.

The following is a summary of the year 2050 Commission projections:

Population

- The Commission intermediate projection indicates that the regional population would increase by 334,000 people, or 17 percent, from 2,020,000 people in 2010 to 2,354,000 people in 2050. The high projection indicates that the regional population could be as high as 2,577,700 people in 2050, an increase of about 557,700 people, or 28 percent, over the 2010 level. Conversely, the low projection indicates that the regional population could be as low as 2,159,800 people in 2050, an increase of 139,800 people, or 7 percent, over 2010.

- The new projections anticipate continued change in the age composition of the regional population in the coming decades, particularly as a result of the aging of the large Baby Boomer population. Under the intermediate projection, the number of people age 65 and over is projected to nearly double during the projection period, accounting for about 21 percent of the total population in the Region in 2050, compared to about 13 percent in 2010.

- In addition to changes in the overall size and age characteristics of the regional population, continued change in the racial/ethnic makeup of the Region's population may be expected in the years ahead. Extrapolation of past trends indicates a significant increase in the minority share of the regional population—from 29 percent in 2010 to nearly 45 percent in 2050—and a corresponding decrease in the non-Hispanic White share. Similar changes are projected for the Nation as a whole.

Households

- The intermediate projection indicates that the number of households in the Region would increase by 172,300, or 22 percent, from 800,100 households in 2010 to 972,400 households in 2050. The high projection indicates that the number of households in the Region could be as high as 1,064,700 in 2050, an increase of 264,600 households, or 33 percent, over the 2010 level. The low projection indicates that the number of households could be as low as 892,100 in 2050, an increase of 92,000 households, or 12 percent, over 2010.

- Commission projections indicate that the average household size in the Region will continue its historical decline, with the rate of decline being somewhat moderated in the coming decades. The average household size in the Region is projected to decrease by 4.5 percent during the projection period, from 2.47 people in 2010 to 2.36 people in 2050. The decrease in household size is expected because of a continued change in household types and the increase in older population age groups.

Employment

- The intermediate-growth projection indicates that employment in the Region would increase from 1,176,600 jobs in 2010 to 1,386,900 jobs in 2050, an increase of 210,300 jobs, or 18 percent. Total employment in the Region would increase to about 1,544,600 jobs in 2050, an increase of 368,000 jobs, or 31 percent, over 2010, under the high-growth scenario. Total employment would increase to about 1,240,400 jobs in 2050, an increase of 63,800 jobs, or 5 percent, over

2010, under the low-growth scenario. These projections are generally consistent with the size of the labor force that could be expected in the Region under the Commission's year 2050 population projections for each growth scenario.

- The new employment projections indicate the continuation of the long-term shift in the regional economy from a manufacturing to a service orientation. This shift is expected to occur under each growth scenario. Under the intermediate-growth scenario, manufacturing would account for 9 percent of all jobs in the Region in 2050, compared to 13 percent in 2010, 20 percent in 1990, and 30 percent in 1970. Service employment would represent 55 percent of all jobs in the Region in 2050, compared to 50 percent in 2010, 40 percent in 1990, and 26 percent in 1970.

Personal Income

- Future personal income levels were projected by extrapolating trends observed in the Region over the past four decades. Constant dollar per worker income is projected to increase by about 16 percent over the 40-year projection period, from $54,200 in 2010 to $63,000 in 2050. Constant dollar per capita income is projected to increase by 15 percent, from $25,900 in 2010 to $29,800 in 2050. Constant dollar mean household income for the Region is projected to increase by about 10 percent, from $65,400 in 2010 to $72,000 in 2050.

APPENDICES

APPENDIX A
A COMPARISON OF THE MILWAUKEE METROPOLITAN AREA TO ITS PEERS

EXECUTIVE SUMMARY

This report provides a statistical comparison of the Milwaukee metropolitan area with 13 other metro areas in the midwest and 13 other metro areas throughout the nation (see Map 1). The purpose was to assess how the Milwaukee area compares with other areas on a number of key measures, including population growth and characteristics, the economy, and transportation. The comparison includes data on existing conditions as well as changes primarily between 2000 and 2013. Major findings of the comparison are noted below. These findings provide valuable information for use in developing VISION 2050, a long-range regional land use and transportation plan for Southeastern Wisconsin.

- **A Slow-growth Area** – The Milwaukee metro area has had slower population growth than most metro areas. Of the 26 peers in this report, 17 grew by 10 percent or more from 2000 to 2013 compared to about 5 percent growth for the Milwaukee area.

  In terms of job "growth," the recession had nationwide impacts, but only the Cleveland and Detroit metro areas fared worse than the 5 percent overall job loss in the Milwaukee area from 2001 to 2013. Manufacturing employment in the Milwaukee area has also continued its long-term decline, although it continues to account for 15 percent of total employment, ranking Milwaukee first among its peers.

  Even though the Milwaukee area has experienced slower population growth and above average job loss, housing values and home selling prices in the Milwaukee area are among the highest in the midwest and rank near the middle of metro areas outside the midwest.

- **Strong Evidence of Disparities** – Within the Milwaukee metro area's population, there are significant disparities between whites and minorities—far more pronounced than the disparities in almost all other metro areas. Whites on average have significantly higher educational attainment levels and per capita income levels, and a far lower poverty rate. Similar disparities also exist between whites and minorities within the City of Milwaukee itself.

  There are also significant disparities for education, per capita income, and poverty between City of Milwaukee residents and residents of the rest of the Milwaukee metro area. These geographical disparities in the Milwaukee area exceed the disparities between central cities and their suburbs in almost all other metro areas.

- **A Transportation System Losing Balance** – Several indicators show that the highway system in the Milwaukee metro area performs well in comparison to other metropolitan areas. Travel time delay and

congestion costs for auto commuters in the Milwaukee area are among the lowest for midwest and other metropolitan areas. The increase in travel time delay for auto commuters in the Milwaukee area over the past three decades is also among the lowest compared to midwest and other metro areas.

The Milwaukee area does not compare nearly as well with respect to public transit. While the Milwaukee area continues to have among the highest transit service levels per capita compared to midwest and other metro areas, it has experienced among the most severe declines in transit service and ridership—20 percent and 40 percent, respectively, since 2000—compared to its peers. The root of this decline is its unique method of funding transit, which is heavily dependent on State and Federal funds and uses local funds coming from property taxes. Only one of the 26 metro areas is more dependent on State funding than the Milwaukee area. Two-thirds of the peer metro areas have a local dedicated source of funding—typically a sales tax—which provides the bulk of their funding. Milwaukee has by far the largest transit system of its peers not supported by dedicated funding. The other peer metro area transit systems without dedicated funding provide 1/2 to 1/5 the transit service per capita provided in Milwaukee. This would suggest that action is needed to provide dedicated local transit funding, or at least increase State transit funding, to avoid Milwaukee's transit levels shrinking to the much lower levels of those peers without dedicated funding.

1 INTRODUCTION

One of the major functions of the Regional Planning Commission is to collect, analyze, and disseminate basic planning and engineering data. As part of this function, the Commission has recently prepared a statistical comparison of the Milwaukee metropolitan area—the largest metropolitan area in the Southeastern Wisconsin Region—with other metropolitan areas throughout the nation. This effort was undertaken at the request of the Commission's Advisory Committees on Regional Land Use Planning and Regional Transportation Planning to help assess how this area compares with other areas of the nation in terms of such matters as population growth and characteristics, the economy, and transportation.

This effort involved a comparison of the Milwaukee "metropolitan statistical area" and 26 other metropolitan statistical areas in the nation. Metropolitan statistical areas are delineated throughout the nation by the U.S. Office of Management and Budget based largely upon population size and density and travel patterns. In general, each metropolitan statistical area includes one or more counties containing an urban core area of at least 50,000 persons, as well as adjacent counties that have a high degree of social and economic integration with the urban core.

This report compares the Milwaukee area to 13 metropolitan areas within 500 miles of Milwaukee and 13 other metropolitan areas from the remainder of the Nation.

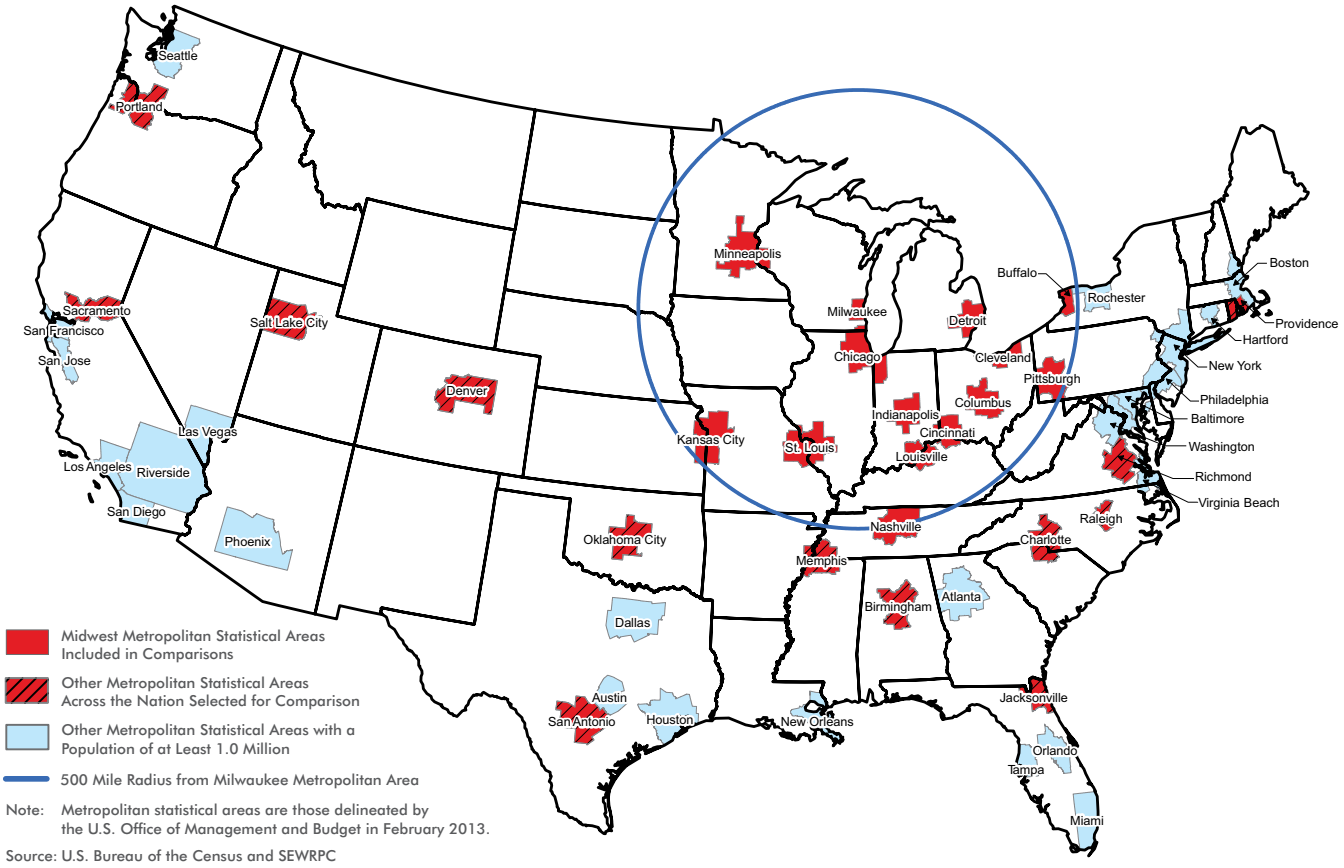
The Milwaukee metropolitan statistical area includes four of the seven counties that comprise the Southeastern Wisconsin Region—Milwaukee, Ozaukee, Washington, and Waukesha. In this comparative analysis, the Milwaukee metropolitan statistical area, which had an estimated population of 1.57 million persons in 2013, is compared to the 13 other metropolitan statistical areas located in the midwest (within 500 miles of Milwaukee) that have a population of at least 1.0 million persons. In addition, the Milwaukee area is compared to 13 other metropolitan statistical areas having a population of at least 1.0 million persons that are geographically distributed throughout the nation (see Map 1).

In most cases, the data presented in the metropolitan area comparisons pertain to entire metropolitan statistical areas as delineated by the U.S. Office of Management and Budget in February 2013. Several data sets pertain to the primary urbanized area within the metropolitan statistical area.

In the tabular data, the metro areas are presented in rank order for the data item concerned. In each table, the ranking should be considered in the context of the range of the data presented. In tables where the data for the metro areas is tightly grouped, and where range between low and high values is small, the rankings are less meaningful. In many cases, comparisons to the metro area averages, rather the rankings, may be more useful.

While this report focuses on metropolitan statistical areas as defined by the U.S. Office of Management and Budget, the report also presents information pertaining to the largest cities of the metropolitan areas considered. This information is provided comparing the City of Milwaukee, the largest city in the four-county Milwaukee metropolitan statistical area, with the largest cities of other metropolitan areas—for example, the Cities of Detroit, St. Louis, Cleveland, and Portland—within the midwest and across the country. The city-by-city data comparisons are included in the last set of tables in this report.

Map 1
Metropolitan Statistical Areas in the United States with a 2010 Population of at Least 1.0 Million People



Note: Metropolitan statistical areas are those delineated by the U.S. Office of Management and Budget in February 2013.

Source: U.S. Bureau of the Census and SEWRPC

2 METROPOLITAN AREA COMPARISONS: POPULATION AND HOUSEHOLDS

Overview

Growth in the Milwaukee metro area population has been relatively slow since 2000, especially in comparison to other metro areas from across the nation. The Milwaukee area is similar to many other metro areas with respect to population age, educational attainment, and per capita income. The proportion of the racial/ethnic minority population for Milwaukee is higher than the average for the midwest metro areas but somewhat lower than the average for other metro areas. Disparities between the white and minority population levels in terms of educational attainment, per capita income, and poverty in the Milwaukee metro area are relatively high in comparison to other metro areas.

The Milwaukee area has grown slower than many other metro areas across the country.

- **Population Change** (Table 2)
  The Milwaukee area has experienced relatively slow population growth since 2000, increasing by 4.6 percent between 2000 and 2013. Within the midwest, ten of 14 metropolitan areas experienced a population increase between 2000 and 2013, ranging from 4.6 percent in Milwaukee to 27.3 percent in Nashville. Four metro areas in the midwest—Pittsburgh, Buffalo, Detroit, and Cleveland—experienced decreases in population.

The Milwaukee area population growth rate of 4.6 percent between 2000 and 2013 was second lowest compared to the metro areas from across the nation. More than half of these metro areas experienced population growth of at least 20 percent during this time.

- **Population Density** (Table 3)
  Population density is provided for the primary urbanized area within the respective metropolitan statistical areas. The Milwaukee urbanized area had an overall population density of 2,523 persons per square mile in 2010. This is just above the average density for midwest urbanized areas (2,379 persons per square mile) and about the same as the average for the other areas (2,504 persons per square mile).

- **Age Makeup** (Tables 4-6)
  The median age of the Milwaukee area population in 2013 (37.2 years) was slightly lower than the average for the midwest metro areas (38.2 years) and slightly above the average for the other metro areas (36.5 years).

- **Race/Ethnicity** (Tables 7-11)
  The racial/ethnic minority population comprised 32.0 percent of the total population of the Milwaukee metro area in 2013. This includes those reported by the Census Bureau as being of Hispanic origin and/or non-white race. Milwaukee's minority population percentage was higher than the average for midwest metro areas (26.2 percent) and lower than the average for the other metro areas (37.6 percent).

- **Educational Attainment** (Tables12-16)
  About 41.8 percent of adults age 25 and over in the Milwaukee metro area had a degree beyond high school (associate's, bachelor's, or graduate degree) in 2013. This is slightly higher than the average for the midwest metro areas (40.5 percent) and for the other areas (40.1 percent).

  About 11.2 percent of adults in the Milwaukee area held a graduate degree in 2013, compared to the average of 12.0 percent for the midwest metro areas and 11.3 percent for the other metro areas.

  About 10.0 percent of adults in the Milwaukee area did not have a high school diploma or the equivalent in 2013, nearly the same as the average percentage for the midwest metro areas (10.1) and slightly lower than the average for the other metro areas (12.0).

- **Personal Income** (Tables 17-18)
  Milwaukee's annual per capita income of $29,069 in 2013 was close to the average for the midwest metro areas ($29,232) and slightly higher than the average for the other metro areas ($28,405).

  Nearly all of the metro areas experienced a decrease in real per capita income, adjusted for inflation, between 2000 and 2013. The Milwaukee area experienced a decrease of 10.2 percent in constant dollar per capita income during that time—compared to the average decrease of 8.3 percent among the midwest metro areas and 7.4 percent among the other metro areas.

- **Poverty** (Table 19)
  About 15.9 percent of the total population in the Milwaukee area was below the poverty level in 2013. This compares to the average of 14.2 percent for the midwest metro areas and 14.9 percent for the other metro areas.

- **Infant Mortality** (Table 20)
  The Milwaukee area's infant mortality rate in 2010—7.47 infant deaths per 1,000 live births—was similar to the average rate for the midwest metro areas (7.56) and somewhat higher than the average rate for the other metro areas (6.81). These rates reflect records for counties with a population of at least 250,000 within each metropolitan statistical area.

- **Households** (Tables 21-23)
  The average household size in the Milwaukee metro area was 2.47 persons in 2013. This compares to the average of 2.51 persons per household for the midwest metro areas and 2.66 for the other metro areas.

  About 62.3 percent of all households in the Milwaukee metro area in 2013 were family households, compared to the average of 64.0 percent for the midwest metro areas and 65.7 percent for the other metro areas.

- **Racial/Ethnic Disparities** (Tables 24-27)
  In all of the metro areas considered, there are differences in educational attainment, personal income levels, and poverty rates between the white and the minority populations. In all metro areas, the percent of minority adults without a high school diploma or equivalent exceeds the percentage for the adult white population. This disparity is more pronounced in the Milwaukee metro area than most of the other midwest metro areas and many of the other metro areas across the nation. The disparity between white and minority adults holding a bachelor's or greater degree is also relatively high in the Milwaukee area.

  There are significant education and income disparities between whites and minorities in the Milwaukee area—greater disparities than nearly all other metro areas.

  In all metro areas, the per capita income for the white population exceeds that of the minority population. As measured by the ratio of white to minority per capita income, the income disparity in the Milwaukee metro area is the largest among both the midwest metro areas and the other metro areas.

  In all metro areas, the incidence of poverty is greater for the minority population than the white population. The Milwaukee area disparity in this regard is among the largest of all the metro areas considered.

3 METROPOLITAN AREA COMPARISONS: ECONOMY

Overview

The recession of the late 2000s has had a significant impact on job trends throughout the nation. While some metro areas, particularly areas outside the midwest, have seen job growth, for other areas (including Milwaukee) job levels in 2013 remain below the levels of 2001. Milwaukee's job loss is among the worst for midwest metro areas, and is the worst among the other metro areas. Nevertheless, Milwaukee and most other metro areas saw an increase in constant dollar gross domestic product (GDP) since 2001, with more rapid growth generally occurring in the metro areas outside the midwest. Milwaukee's GDP on a per capita basis is above the average for both the midwest and the other metro areas. Manufacturing remains a key sector of Milwaukee's economic base, with the Milwaukee area's proportion of manufacturing jobs the highest among all metro areas considered.

- **Change in Jobs** (Table 29)
  As noted above, the trend in the number of jobs throughout the nation was significantly impacted by the recession of the late 2000s. In the Milwaukee area, the number of jobs in 2013 was 4.6 percent below the level in 2001. Milwaukee was among a majority of metro areas in the midwest where job levels in 2013 remained below 2001 jobs levels.

  Job growth has generally been stronger in the metro areas outside the midwest. Despite the recession, ten of these metro areas experienced job increases of 4 to 22 percent between 2001 and 2013.

- **Change in Labor Force** (Table 30)
  Changes in the size of the labor force between 2000 and 2013 generally lagged behind changes in population, due in part to the recession of the late 2000s. With a slight loss of 1.3 percent, the Milwaukee area was one of five midwest metro areas to experience a decrease in labor force during this time.

  The slight decrease in the Milwaukee area labor force between 2000 and 2013 is in contrast to the growth in the labor force in many metro areas outside the midwest. More than half of these metro areas have seen labor force increases of at least 15 percent since 2000.

- **Change in Gross Domestic Product** (Table 32)
  Nearly all of the metro areas considered experienced an increase in gross domestic product (the market value of all goods and services produced) between 2001 and 2013, adjusted for inflation. GDP growth in metro areas across the nation was more robust than the midwest. The Milwaukee area increase of 13.6 percent in GDP ranked near the middle among the midwest metro areas and in the lower half among the other metro areas.

- **Gross Domestic Product per Capita** (Table 33)
  The Milwaukee metro area gross domestic product on a per capita basis was relatively high compared to many midwest and other metro areas. The Milwaukee metro area per capita GDP of $60,100 in 2013 ranked fourth highest among both midwest metro areas (where the average was $56,900) and the other metro areas (where the average was $55,200).

- **Manufacturing Sector** (Tables 34-36)
  Manufacturing has historically been a key component of the economic base in the Milwaukee metro area. As in other metro areas, the share of jobs in manufacturing relative to total jobs in the Milwaukee metro area has decreased. Despite the reduction, manufacturing employment continues to account for 15.0 percent of all jobs in the Milwaukee area (2013). This ranks highest among both the midwest metro areas and the metro areas outside the midwest, where the average shares were 10.3 percent and 7.4 percent, respectively.

  About 16.5 percent of the Milwaukee metro area gross domestic product was related to manufacturing in 2013. This compares to the average of 14.5 percent for the midwest metro areas and 12.4 percent for the other metro areas.

Despite a greater rate of job loss than all metro areas other than Cleveland and Detroit, Milwaukee continues to have the largest percentage of its total employment in manufacturing.

- **Unemployment Rate** (Table 37)
  The Milwaukee metro area unemployment rate stood at 7.3 percent in 2013, down from the recessionary high level of 8.9 percent in 2009 and 2010. The Milwaukee area's rate in 2013 was about the same as the average for the midwest metro areas (7.2 percent) and just slightly higher than the average for the metro areas outside the midwest (6.9 percent).

4 METROPOLITAN AREA COMPARISONS: HOUSING

Overview
Growth in the Milwaukee area's housing stock since 2000 has been relatively slow compared to other metro areas. Multi-family housing comprises a relatively large share of all housing in the Milwaukee area compared to other metro areas. The median value of owner-occupied housing for Milwaukee is relatively high compared to other midwest metro areas, as is the median selling price for recent single-family home sales. Milwaukee's median value and median sale price are near the averages for the metro areas outside the midwest.

- **Change in Housing Stock** (Table 38)
  The number of housing units of all types in the Milwaukee metro area increased by 8.3 percent between 2000 and 2013. The Milwaukee area growth rate was in the lower half among the midwest metro areas and nearly the lowest among the other metro areas.

- **Housing Structure Type** (Table 39)
  Multi-family housing—including housing in structures of two or more housing units—comprises a relatively large share of Milwaukee's housing stock. About 44.1 percent of all housing units in the Milwaukee area were in two-or-more-unit structures in 2013, ranking second highest among both the midwest and the other metro areas.

Although population and jobs are growing slowly in the Milwaukee area, housing values and sale prices are relatively high compared to most metro areas.

- **Housing Values and Rent** (Tables 40-41)
  The median value of all owner-occupied housing for the Milwaukee metro area of $188,100 in 2013 ranked third highest among the midwest metro areas and near the middle among the metro areas outside the midwest.

  The median gross monthly rent for all renter-occupied housing in the Milwaukee metro area was $807 in 2013, ranking in the middle among the midwest metro areas and in the lower half among the other metro areas.

- **Home Sale Prices** (Table 42)
  The median price of recent (2013) single-family home sales for the Milwaukee metro area was $200,700—highest among the midwest metro areas and about the same as the average for the metro areas outside the midwest.

- **Home Sale Price Affordability** (Table 43)
  About 77.3 percent of recent (2013) home sales in the Milwaukee area are considered to be affordable to median income families in the Milwaukee area. This is somewhat lower than the average of 82.1 percent for the midwest metro areas and somewhat higher than the average of 73.8 percent for the metro areas outside the midwest.

5 METROPOLITAN AREA COMPARISONS: TRANSPORTATION

Overview

The average travel time to work in minutes for workers in the Milwaukee metro area is just slightly lower than the average for both the midwest metro areas and metro areas outside the midwest. The proportion of workers who drive alone to work in the Milwaukee metro area is close to the average for both the midwest metro areas and the other metro areas. The proportion of Milwaukee metro area workers who take public transportation to work is just slightly above the average for both the midwest metro areas and the other metro areas. The proportion of households with no personal-use vehicle available is above the average for midwest metro areas and ranks highest among other metro areas. Travel time delays for auto commuters in the Milwaukee area are relatively low compared to other metro areas. Local funding in support of public transportation varies considerably among metro areas, with the Milwaukee area ranking relatively low in this regard.

- **Travel to Work** (Tables 44-49)
  The average travel time to work for workers in the Milwaukee metro area was 23.5 minutes in 2013, just slightly lower than the average of about 25 minutes for both the midwest metro areas and the other metro areas.

  The percentage of workers who drive to work alone in the Milwaukee metro area is similar to a majority of the other metro areas. About 80.7 percent of all Milwaukee metro area workers drove to work alone in 2013, compared to averages of 81.5 percent for the midwest metro areas and 79.7 percent for the other metro areas.

  Among the metro areas considered, with the exception of Chicago, the percentage of workers who take public transportation to work is less than 7 percent. About 3.6 percent of Milwaukee metro area workers took public transit to work in 2013, compared to the average of 3.2 percent for the midwest metro areas and 2.4 percent for the other metro areas. The percentage of Milwaukee metro area workers using public transit is higher than all metro areas except Chicago, Pittsburgh, Minneapolis, Portland, and Denver.

Travel time delay and congestion costs for auto commuters in the Milwaukee area are low compared to other metro areas.

- **Vehicle Availability** (Tables 50 and 51)
  The percentage of households in the Milwaukee metro area having no personal-use vehicle (9.8 percent) is above the average for the midwest metro areas and ranks highest among metro areas outside the midwest. Similarly, the percentage of households in the Milwaukee metro area having one or no personal-use vehicle (45.6 percent) is also above the average for the midwest metro areas and ranks highest among other metro areas.

- **Congestion** (Tables 52-54)
  Travel time delays for Milwaukee area auto commuters are relatively low compared to many other midwest metro areas and metro areas across the nation, and have increased slower than nearly all other metro areas over the last 30 years. The annual delay during peak travel times per auto commuter in the Milwaukee area—28 hours in 2013—compares to an average of 37 hours for midwest metro areas and 34 hours for other metro areas. This, in turn, is reflected in somewhat lower congestion costs, considering the value of lost

time and excess fuel consumption. The annual congestion cost for Milwaukee area auto commuters in 2013 is estimated at $585, compared to an average of $796 for midwest metro areas and $727 for the other metro areas.

- **Public Transportation** (Tables 55-61)
  Eight midwest metro areas and seven metro areas across the nation provide some form of rail service, in addition to buses, as part of their public transit systems.

  A relatively small portion of the annual operating deficit for the Milwaukee County Transit System—15 percent—was funded with local funds in 2011. This is the third lowest percent among the major public transit operators in the midwest metro areas and second lowest among major public transit operators in metro areas across the nation. Rather than a high percentage of funding for the annual operating deficit coming from local funds, Milwaukee is uniquely dependent on State funding compared to its peers in both groups. Only one of the 26 metro areas is more dependent on State funding than the Milwaukee area.

  Public transit in the Milwaukee area has declined while peer areas are increasing service.

  Of the midwest metro areas, only Milwaukee, Nashville, and Indianapolis do not have a dedicated source of local funding for transit. About half of the other metro areas have a dedicated local funding source. Sales taxes are the most common form of dedicated local funding for transit.

  While six midwest metro areas and nine other metro areas experienced ridership growth between 2000 and 2013, Milwaukee County Transit System experienced a 40 percent loss. This was the largest decline among midwest metro areas and second largest among other metro areas. The ridership loss corresponded with a 20 percent decline in service levels, fourth largest among midwest metro areas and largest among other metro areas. Nevertheless, Milwaukee remains above average in terms of vehicle revenue hours of public transit service per capita and public transit operating expenditures per capita. However, the midwest and other metro area transit systems that do not have dedicated local funding—like the Milwaukee area—are at the bottom of transit service provided per capita, and provide between one-half to one-fifth the transit service provided by Milwaukee County.

6 METROPOLITAN AREA COMPARISONS: AIR QUALITY

Overview

EPA sets National Ambient Air Quality Standards (NAAQS) for six common air pollutants, designating areas not meeting a particular standard as "nonattainment". EPA also classifies the level of severity of nonattainment, based on the parts per million of a particular pollutant, with classifications including marginal, moderate, serious, severe, and extreme. Historically, the Milwaukee metro area was in nonattainment for two air pollutants—ozone and fine particulate matter ($PM_{2.5}$). The Milwaukee area is currently in attainment for ozone and a portion of the area (Milwaukee and Waukesha Counties) is in maintenance for $PM_{2.5}$.

Nonattainment areas for a particular standard must develop and implement a plan to meet the standard, or risk losing some forms of Federal funding. An implementation plan must demonstrate how an area will achieve or maintain a standard. Budgets are established for different types of emission

sources at or below which the nonattainment or maintenance area will achieve or maintain the requisite standard. Once a nonattainment area demonstrates that it is consistently meeting the standard, EPA redesignates that area as maintenance. Periodically, EPA reviews and promulgates new, more restrictive standards.

It should be noted that many of the metro areas indicated in Table 62 as being in nonattainment or maintenance only have a portion of the metropolitan area designated as such, with the remainder of the metro area in attainment.

- **Ozone** (Table 62)
  EPA recently revoked the 1997 8-hour ozone standard—for which the Milwaukee area was in maintenance—and replaced it with the 2008 8-hour ozone standard—for which the Milwaukee area is in attainment. Those areas that did not achieve attainment of the 1997 standard retain their nonattainment status for that standard. Within both the midwest and outside the midwest, 11 of the 14 metro areas (including Milwaukee) are in attainment for the 1997 standard. Under the new 2008 standard, eight of the 14 midwest metro areas and 10 of the 14 other metros areas are in attainment. Of the metro areas in nonattainment for the 2008 standard, all are in marginal nonattainment except Sacramento, which is in severe nonattainment.

- **$PM_{2.5}$** (Table 62)
  A portion of the Milwaukee metro area (Milwaukee and Waukesha Counties) is currently in maintenance for the 2006 $PM_{2.5}$ standard. In addition to Milwaukee, two midwest areas and one other metro area are also in maintenance. One midwest metro area and two other metro areas are in moderate nonattainment. Within both the midwest and outside the midwest, 10 of the 14 metro areas are in attainment.

7 PRINCIPAL CITY COMPARISONS

Overview

Previous sections of this report compared the four-county Milwaukee metropolitan statistical area with other metropolitan statistical areas—each consisting of a cluster of two or more counties—in the midwest and throughout the nation. This section focuses on the principal cities of those respective metro areas. It provides a comparison of the City of Milwaukee and the principal cities of the other metro areas considered in this report.[43]

The comparisons of the City of Milwaukee with principal cities of other metro areas are presented in the last set of tables (Tables 63-89) in this report. These comparisons cover many of the items previously examined at the

[43] The largest city in each metropolitan statistical area identified by the U.S. Office of Management and Budget is designated a "principal city." Other cities within a metropolitan area may qualify as a principal city if they meet certain criteria regarding population size and employment. This section of the report generally provides comparative data for the largest principal city of the metro areas considered. It should be noted that, for the Minneapolis metropolitan area, data are provided for the Cities of Minneapolis and St. Paul combined. For the Kansas City metropolitan area, data are provided for Kansas City, Missouri and Kansas City, Kansas combined. In keeping with data reporting by the U.S. Census Bureau, for the Indianapolis metropolitan area, data are provided for Indianapolis City (balance); for the Louisville metropolitan area, data are provided for Louisville/Jefferson County Metro Government (balance); and for the Nashville metropolitan area, data are provided for Nashville-Davidson Metropolitan Government (balance).

metro-area level. For many of these items, the City of Milwaukee's ranking relative to other principal cities is similar to the metropolitan area rankings. Some of the more significant differences are noted below.

- **Population Density** (Table 65)
  The population density of the City of Milwaukee is higher than many other principal cities. The City of Milwaukee density of 6,190 persons per square mile in 2010 ranked fourth highest among principal cities in the midwest and second highest among other principal cities across the country.

- **Educational Attainment** (Table 67)
  A relatively low proportion of adults in the City of Milwaukee have a degree beyond high school compared to other principal cities. In 2013, 30.0 percent of adults age 25 or more in the City of Milwaukee had a degree beyond high school—ranking third lowest among principal cities in the midwest and lowest among other principal cities.

Compared to other principal cities of the metro areas included in this report, the City of Milwaukee has lower educational attainment, lower per capita income, and higher unemployment.

- **Per Capita Income** (Table 68)
  Per capita income in the City of Milwaukee is relatively low compared to other principal cities. Milwaukee's per capita income of $19,371 in 2013 ranked third lowest among principal cities in the midwest and lowest among other principal cities.

- **Unemployment Rate** (Table 74)
  The City of Milwaukee unemployment rate stood at 10.0 percent in 2013, compared to the average unemployment rate of 8.7 percent for principal cities in the midwest and 7.6 percent for other principal cities. Milwaukee's unemployment rate was third highest among principal cities in the midwest and fourth highest among other principal cities.

- **Housing Values** (Table 77)
  The median value of all owner-occupied housing in the City of Milwaukee in 2013 ($113,900) ranked near the middle among principal cities in the midwest and third lowest among other principal cities across the country.

The final four tables of this report (Tables 86-89) are concerned with differences that exist within each metropolitan area—specifically, differences between the principal city and the remainder of the metro area—focusing on educational attainment, per capita income, and poverty. Disparities identified within the Milwaukee metro area—between the City of Milwaukee and the remainder of the Milwaukee metro area—are among the largest in the midwest and across the country, as described below.

- **Educational Attainment—Principal City vs. Remainder of Metro Area** (Tables 86 and 87)
  The percentage of City of Milwaukee adults lacking a high school diploma or the equivalent was over three times the percentage for the remainder of the Milwaukee metro area in 2013. This is the largest such disparity among all metro areas considered.

  The percentage of City of Milwaukee adults with a bachelor's degree or higher was significantly lower than the percentage for the remainder

of the Milwaukee metro area. Milwaukee's disparity in this regard is the third largest among midwest metro areas and the largest among other metro areas across the country. In almost half of the metro areas considered, the percentage of adults with a bachelor's degree or higher for the principal city is actually higher than the percentage for the remainder of the metro area.

The disparities in education, income, and poverty between the City of Milwaukee and its suburbs are greater than nearly all other metro areas.

- **Per Capita Income—Principal City vs. Remainder of Metro Area** (Table 88)
  In most metropolitan areas, the per capita income for the central city is lower than the per capita income for the remainder of the metro area. As measured by the ratio of the principal city's per capita income to the per capita income for the remainder of the metro area, the largest such disparity in 2013 occurred in the Milwaukee area.

- **Poverty—Principal City vs. Remainder of Metro Area** (Table 89)
  In all metropolitan areas, the incidence of poverty is greater in the principal city than the remainder of the metro area. The disparity between the poverty rates for the City of Milwaukee and the remainder of the Milwaukee metro area is the largest among all metro areas considered.

8 SUMMARY

This comparison of the Milwaukee metro area to midwest and other peer metro areas across the nation indicates that the Milwaukee area experienced in the 2000s slower growth in population, a greater decline in jobs, and a greater reduction in inflation-adjusted per capita income, compared to other metro areas, with only a few exceptions.

No significant differences were identified between the Milwaukee area and other metro areas with respect to population age, minority population, and education levels. However, the Milwaukee area has greater differences than nearly all metro areas with respect to the differences between white and minority population education, per capita income, and poverty. Milwaukee also has high home value/price relative to midwest metro areas, and is in the middle of the other metro areas.

With respect to measures of transportation congestion—work commute travel time, travel time delay, and change in travel time delay over the last 30 years—the Milwaukee metro area performed better than nearly all other metro areas. Compared to other metro areas, the Milwaukee metro area has a lower number of people commuting to work by carpool, but has higher numbers biking, walking, and using transit to work. With respect to public transit commuting, only Chicago, Pittsburgh, Portland, Minneapolis, and Denver are higher.

Over half of the other metro areas have some form of rail transit in addition to buses, and two-thirds of the metro areas have a dedicated local funding source for transit. The Milwaukee metro area has no local dedicated funding source and local funds cover only about 15 percent of public transit operating expenses not covered by farebox revenue. The Milwaukee area remains above average in terms of vehicle revenue hours of public transit service per capita. However, the Milwaukee area has experienced a larger decline in transit ridership and service levels than nearly all other metro areas, with

most other metro areas actually experiencing an increase in ridership and service levels.

The Milwaukee metro area was previously designated by EPA as being in nonattainment for two common air pollutants—ozone and fine particulate matter ($PM_{2.5}$). The Milwaukee area and most midwest and other metro areas currently meet EPA's ozone standards. A portion of the Milwaukee metro area (Milwaukee and Waukesha Counties) is in maintenance for EPA's $PM_{2.5}$ standard—meaning it consistently meets the standard but did not previously. Most midwest and other metro areas are also either in maintenance or attainment for the current $PM_{2.5}$ standard.

When focusing on the largest cities within the metropolitan areas, the City of Milwaukee's ranking relative to other principal cities is similar to the metropolitan area rankings in many respects. Some of the notable differences are found with respect to population density (higher in the City of Milwaukee); educational attainment (lower proportion of adults with a degree beyond high school in the City of Milwaukee); per capita income (lower in the City of Milwaukee); and unemployment rate (higher in the City of Milwaukee).

Disparities between the City of Milwaukee and the rest of the Milwaukee area in terms of educational attainment, per capita income, and poverty exceed the central city-suburban disparities in other metropolitan areas.

TABLES

Table 1
TOTAL POPULATION: 2013

MIDWEST METRO AREAS		
1	Chicago	9,537,289
2	Detroit	4,294,983
3	Minneapolis	3,459,146
4	St. Louis	2,801,056
5	Pittsburgh	2,360,867
6	Cincinnati	2,137,406
7	Cleveland	2,064,725
8	Kansas City	2,054,473
9	Columbus	1,967,066
10	Indianapolis	1,953,961
11	Nashville	1,757,912
12	Milwaukee	1,569,659
13	Louisville	1,262,261
14	Buffalo	1,134,115
	Average	2,739,637

OTHER METRO AREAS		
1	Denver	2,697,476
2	Charlotte	2,335,358
3	Portland	2,314,554
4	San Antonio	2,277,550
5	Sacramento	2,215,770
6	Providence	1,604,291
7	Milwaukee	1,569,659
8	Jacksonville	1,394,624
9	Memphis	1,341,746
10	Oklahoma City	1,319,677
11	Richmond	1,245,764
12	Raleigh	1,214,516
13	Salt Lake City	1,140,483
14	Birmingham	1,140,300
	Average	1,700,841

Source: U.S. Bureau of the Census Annual Estimates of Population.

Table 2
CHANGE IN POPULATION
Percent Change: 2000-2013

MIDWEST METRO AREAS		
1	Nashville	27.3
2	Indianapolis	17.8
3	Columbus	17.4
4	Minneapolis	14.1
5	Kansas City	13.4
6	Louisville	12.6
7	Cincinnati	7.1
8	Chicago	4.8
9	St. Louis	4.7
10	Milwaukee	4.6
11	Pittsburgh	-2.9
12	Buffalo	-3.1
13	Detroit	-3.5
14	Cleveland	-3.9
	Average	7.9

OTHER METRO AREAS		
1	Raleigh	52.4
2	Charlotte	36.0
3	San Antonio	33.1
4	Jacksonville	24.2
5	Denver	23.8
6	Sacramento	23.3
7	Salt Lake City	21.4
8	Oklahoma City	20.5
9	Portland	20.1
10	Richmond	18.0
11	Memphis	10.6
12	Birmingham	8.4
13	Milwaukee	4.6
14	Providence	1.3
	Average	21.3

Source: U.S. Bureau of the Census Decennial Census and Annual Estimates of Population.

Table 3
POPULATION DENSITY
Persons Per Square Mile of Land Area: 2010

MIDWEST METRO AREAS		
1	Chicago	3,524
2	Detroit	2,793
3	Columbus	2,680
4	Minneapolis	2,594
5	Milwaukee	2,523
6	Buffalo	2,463
7	St. Louis	2,329
8	Cleveland	2,307
9	Kansas City	2,242
10	Indianapolis	2,108
11	Cincinnati	2,063
12	Louisville	2,040
13	Pittsburgh	1,916
14	Nashville	1,721
	Average	2,379

OTHER METRO AREAS		
1	Salt Lake City	3,675
2	Sacramento	3,660
3	Denver	3,554
4	Portland	3,528
5	San Antonio	2,945
6	Milwaukee	2,523
7	Providence	2,185
8	Memphis	2,132
9	Oklahoma City	2,098
10	Jacksonville	2,009
11	Richmond	1,938
12	Raleigh	1,708
13	Charlotte	1,685
14	Birmingham	1,414
	Average	2,504

Note: Data pertain to the primary urbanized area within the metropolitan area.

Source: U.S Bureau of the Census Decennial Census.

Table 4
POPULATION MEDIAN AGE: 2013

MIDWEST METRO AREAS		
1	Pittsburgh	42.8
2	Cleveland	41.3
3	Buffalo	40.8
4	Detroit	40.0
5	Louisville	38.9
6	St. Louis	38.6
7	Cincinnati	37.9
8	Milwaukee	37.2
9	Kansas City	36.6
9	Minneapolis	36.6
11	Chicago	36.5
12	Nashville	36.1
13	Indianapolis	36.0
14	Columbus	35.7
	Average	38.2

OTHER METRO AREAS		
1	Providence	40.0
2	Birmingham	38.2
3	Richmond	38.1
4	Jacksonville	38.0
5	Portland	37.5
6	Milwaukee	37.2
7	Charlotte	36.9
8	Sacramento	36.6
9	Denver	36.1
10	Memphis	35.7
10	Raleigh	35.7
12	Oklahoma City	34.6
13	San Antonio	34.2
14	Salt Lake City	31.8
	Average	36.5

Source: U.S. Bureau of the Census American Community Survey.

Table 5
POPULATION AGE 65 AND OVER
Percent of Total Population: 2013

MIDWEST METRO AREAS		
1	Pittsburgh	18.0
2	Buffalo	16.4
3	Cleveland	16.2
4	St. Louis	14.4
5	Detroit	14.3
6	Louisville	14.0
7	Milwaukee	13.5
8	Cincinnati	13.3
9	Kansas City	13.0
10	Chicago	12.4
11	Indianapolis	12.1
12	Minneapolis	11.9
13	Nashville	11.8
14	Columbus	11.7
	Average	13.8

OTHER METRO AREAS		
1	Providence	15.5
2	Birmingham	14.2
3	Jacksonville	13.8
4	Milwaukee	13.5
4	Sacramento	13.5
6	Richmond	13.3
7	Portland	12.8
8	Oklahoma City	12.4
9	Charlotte	12.0
10	San Antonio	11.9
11	Memphis	11.6
12	Denver	11.2
13	Raleigh	10.2
14	Salt Lake City	9.3
	Average	12.5

Source: U.S. Bureau of the Census American Community Survey.

Table 6
POPULATION UNDER AGE 18
Percent of Total Population: 2013

MIDWEST METRO AREAS		
1	Indianapolis	25.4
2	Kansas City	25.1
3	Cincinnati	24.4
4	Minneapolis	24.3
5	Columbus	24.2
6	Chicago	24.1
7	Nashville	23.9
8	Milwaukee	23.8
9	Detroit	23.2
10	Louisville	23.1
11	St. Louis	23.0
12	Cleveland	22.2
13	Buffalo	20.7
14	Pittsburgh	19.5
	Average	23.4

OTHER METRO AREAS		
1	Salt Lake City	28.9
2	San Antonio	26.0
3	Memphis	25.7
4	Raleigh	25.4
5	Oklahoma City	24.9
5	Charlotte	24.9
7	Denver	24.1
8	Sacramento	23.9
9	Milwaukee	23.8
10	Birmingham	23.5
11	Jacksonville	22.8
11	Portland	22.8
13	Richmond	22.6
14	Providence	20.6
	Average	24.3

Source: U.S. Bureau of the Census American Community Survey.

Table 7
RACIAL/ETHNIC MINORITY POPULATION
Percent of Total Population: 2013

MIDWEST METRO AREAS		
1	Chicago	45.9
2	Detroit	32.7
3	Milwaukee	32.0
4	Cleveland	29.0
5	Kansas City	26.5
5	Nashville	26.5
7	Indianapolis	25.8
8	St. Louis	25.4
9	Columbus	24.4
10	Minneapolis	22.4
11	Louisville	22.2
12	Buffalo	21.3
13	Cincinnati	19.2
14	Pittsburgh	13.6
	Average	26.2

OTHER METRO AREAS		
1	San Antonio	64.9
2	Memphis	54.7
3	Sacramento	45.6
4	Richmond	42.2
5	Raleigh	37.6
6	Charlotte	36.9
7	Birmingham	35.8
8	Jacksonville	35.2
9	Denver	34.9
10	Oklahoma City	33.8
11	Milwaukee	32.0
12	Salt Lake City	26.5
13	Portland	24.7
14	Providence	22.0
	Average	37.6

Note: The minority population includes persons reported in the census as being of Hispanic origin and/or reporting their race as Black or African American, American Indian/Alaska Native, Asian, Native Hawaiian/Pacific Islander, some other race, or more than one race.

Source: U.S. Bureau of the Census American Community Survey.

Table 8
WHITE POPULATION (NON-HISPANIC)
Percent of Total Population: 2013

MIDWEST METRO AREAS		
1	Pittsburgh	86.4
2	Cincinnati	80.8
3	Buffalo	78.7
4	Louisville	77.8
5	Minneapolis	77.6
6	Columbus	75.6
7	St. Louis	74.6
8	Indianapolis	74.2
9	Nashville	73.5
9	Kansas City	73.5
11	Cleveland	71.0
12	Milwaukee	68.0
13	Detroit	67.3
14	Chicago	54.1
	Average	73.8

OTHER METRO AREAS		
1	Providence	78.0
2	Portland	75.3
3	Salt Lake City	73.5
4	Milwaukee	68.0
5	Oklahoma City	66.2
6	Denver	65.1
7	Jacksonville	64.8
8	Birmingham	64.2
9	Charlotte	63.1
10	Raleigh	62.4
11	Richmond	57.8
12	Sacramento	54.4
13	Memphis	45.3
14	San Antonio	35.1
	Average	62.4

Source: U.S. Bureau of the Census American Community Survey.

Table 9
BLACK/AFRICAN AMERICAN POPULATION (NON-HISPANIC)
Percent of Total Population: 2013

MIDWEST METRO AREAS		
1	Detroit	22.3
2	Cleveland	19.6
3	St. Louis	18.1
4	Chicago	16.6
5	Milwaukee	16.3
6	Nashville	15.3
7	Indianapolis	14.6
8	Columbus	14.4
9	Louisville	13.9
10	Kansas City	12.4
11	Buffalo	12.0
12	Cincinnati	11.9
13	Pittsburgh	8.1
14	Minneapolis	7.4
	Average	14.5

OTHER METRO AREAS		
1	Memphis	46.2
2	Richmond	29.9
3	Birmingham	28.4
4	Charlotte	22.0
5	Jacksonville	21.2
6	Raleigh	19.9
7	Milwaukee	16.3
8	Oklahoma City	10.1
9	Sacramento	6.8
10	San Antonio	6.2
11	Denver	5.2
12	Providence	4.4
13	Portland	2.8
14	Salt Lake City	1.5
	Average	15.8

Source: U.S. Bureau of the Census American Community Survey.

Table 10
ASIAN POPULATION (NON-HISPANIC)
Percent of Total Population: 2013

MIDWEST METRO AREAS		
1	Chicago	6.0
1	Minneapolis	6.0
3	Detroit	3.8
4	Milwaukee	3.2
4	Columbus	3.2
6	Buffalo	2.6
7	Indianapolis	2.5
7	Kansas City	2.5
9	Nashville	2.4
10	St. Louis	2.3
11	Cleveland	2.1
11	Cincinnati	2.1
13	Pittsburgh	2.0
14	Louisville	1.6
	Average	3.0

OTHER METRO AREAS		
1	Sacramento	12.2
2	Portland	5.8
3	Raleigh	5.0
4	Denver	3.7
5	Jacksonville	3.6
6	Richmond	3.5
7	Salt Lake City	3.4
8	Milwaukee	3.2
9	Charlotte	3.0
9	Oklahoma City	3.0
11	Providence	2.7
12	San Antonio	2.1
13	Memphis	1.9
14	Birmingham	1.2
	Average	3.9

Source: U.S. Bureau of the Census American Community Survey.

Table 11
HISPANIC POPULATION (OF ANY RACE)
Percent of Total Population: 2013

MIDWEST METRO AREAS		
1	Chicago	21.4
2	Milwaukee	10.1
3	Kansas City	8.6
4	Nashville	6.7
5	Indianapolis	6.3
6	Minneapolis	5.6
7	Cleveland	5.1
8	Buffalo	4.5
9	Louisville	4.3
10	Detroit	4.1
11	Columbus	3.7
12	St. Louis	2.8
12	Cincinnati	2.8
14	Pittsburgh	1.5
	Average	6.3

OTHER METRO AREAS		
1	San Antonio	54.5
2	Denver	22.7
3	Sacramento	20.8
4	Salt Lake City	17.3
5	Oklahoma City	12.1
6	Portland	11.3
7	Providence	11.2
8	Raleigh	10.3
9	Milwaukee	10.1
10	Charlotte	9.6
11	Jacksonville	7.7
12	Richmond	5.6
13	Memphis	5.2
14	Birmingham	4.4
	Average	14.5

Source: U.S. Bureau of the Census American Community Survey.

Table 12
ADULTS WITH A DEGREE BEYOND HIGH SCHOOL
Percent of Total Adult Population: 2013

MIDWEST METRO AREA		
1	Minneapolis	49.1
2	Buffalo	42.3
3	Chicago	42.1
4	Milwaukee	41.8
4	Pittsburgh	41.8
6	St. Louis	41.2
6	Kansas City	41.2
8	Columbus	40.7
9	Cincinnati	39.4
10	Nashville	39.0
11	Indianapolis	38.4
12	Cleveland	37.7
13	Detroit	37.4
14	Louisville	35.0
	Average	40.5

OTHER METRO AREAS		
1	Raleigh	52.1
2	Denver	47.9
3	Portland	44.0
4	Milwaukee	41.8
5	Sacramento	40.6
6	Salt Lake City	40.2
7	Charlotte	40.1
8	Richmond	39.7
9	Jacksonville	38.4
10	Providence	38.3
11	Birmingham	36.0
12	Oklahoma City	34.8
13	San Antonio	34.3
14	Memphis	33.2
	Average	40.1

Note: Data pertains to adults 25 years of age and over with an associate's, bachelor's, or graduate degree.

Source: U.S. Bureau of the Census American Community Survey.

Table 13
ADULTS WITH A GRADUATE DEGREE
Percent of Total Adult Population: 2013

MIDWEST METRO AREAS		
1	Chicago	13.7
2	Buffalo	13.4
3	Minneapolis	13.2
4	Pittsburgh	12.5
5	St. Louis	12.4
6	Kansas City	12.2
7	Columbus	12.1
8	Cincinnati	11.5
8	Cleveland	11.5
8	Detroit	11.5
11	Nashville	11.3
12	Milwaukee	11.2
13	Indianapolis	11.0
14	Louisville	10.6
	Average	12.0

OTHER METRO AREAS		
1	Raleigh	15.7
2	Denver	14.4
3	Portland	12.9
4	Richmond	12.2
5	Providence	11.4
6	Milwaukee	11.2
7	Sacramento	11.1
7	Salt Lake City	11.1
9	Birmingham	11.0
10	Charlotte	10.1
11	Memphis	9.7
12	San Antonio	9.4
13	Oklahoma City	9.3
14	Jacksonville	9.0
	Average	11.3

Note: Data pertains to adults 25 years of age and over.

Source: U.S. Bureau of the Census American Community Survey.

Table 14
ADULTS WITH A BACHELOR'S DEGREE AS THEIR HIGHEST LEVEL OF EDUCATION
Percent of Total Adult Population: 2013

MIDWEST METRO AREAS		
1	Minneapolis	26.1
2	Milwaukee	22.0
3	Columbus	21.6
4	Kansas City	21.5
5	Chicago	21.4
6	Nashville	21.0
7	St. Louis	20.2
8	Pittsburgh	19.8
8	Indianapolis	19.8
10	Cincinnati	19.6
11	Cleveland	18.3
12	Detroit	17.5
13	Buffalo	16.7
14	Louisville	16.3
	Average	20.1

OTHER METRO AREAS		
1	Raleigh	28.0
2	Denver	25.9
3	Portland	22.2
4	Milwaukee	22.0
5	Charlotte	21.9
6	Richmond	20.3
7	Salt Lake City	20.1
8	Sacramento	19.7
9	Jacksonville	19.3
10	Oklahoma City	18.6
11	Providence	18.2
12	Birmingham	17.7
13	San Antonio	17.4
14	Memphis	16.7
	Average	20.6

Note: Data pertains to adults 25 years of age and over.

Source: U.S. Bureau of the Census American Community Survey.

Table 15
ADULTS WITH AN ASSOCIATE'S DEGREE AS THEIR HIGHEST LEVEL OF EDUCATION
Percent of Total Adult Population: 2013

MIDWEST METRO AREAS		
1	Buffalo	12.2
2	Minneapolis	9.8
3	Pittsburgh	9.5
4	St. Louis	8.7
5	Milwaukee	8.6
6	Detroit	8.4
7	Cincinnati	8.3
8	Louisville	8.0
9	Cleveland	7.9
10	Indianapolis	7.7
11	Kansas City	7.5
12	Columbus	7.0
12	Chicago	7.0
14	Nashville	6.7
	Average	8.4

OTHER METRO AREAS		
1	Jacksonville	10.2
2	Sacramento	9.8
3	Salt Lake City	9.0
4	Portland	8.9
5	Providence	8.7
6	Milwaukee	8.6
7	Raleigh	8.4
8	Charlotte	8.1
9	Denver	7.6
10	San Antonio	7.5
11	Birmingham	7.4
12	Richmond	7.2
13	Oklahoma City	6.9
13	Memphis	6.9
	Average	8.2

Note: Data pertains to adults 25 years of age and over.

Source: U.S. Bureau of the Census American Community Survey.

Table 16
ADULTS WITHOUT A HIGH SCHOOL DIPLOMA OR EQUIVALENT
Percent of Total Adult Population: 2013

MIDWEST METRO AREAS		
1	Chicago	12.8
2	Nashville	11.8
3	Louisville	11.7
4	Detroit	11.4
5	Indianapolis	11.3
6	Cleveland	10.6
7	Cincinnati	10.4
8	Milwaukee	10.0
8	Columbus	10.0
10	Buffalo	9.6
11	St. Louis	9.1
12	Kansas City	8.8
13	Pittsburgh	7.5
14	Minneapolis	7.0
	Average	10.1

OTHER METRO AREAS		
1	San Antonio	15.8
2	Providence	15.2
3	Memphis	14.7
4	Oklahoma City	13.2
5	Charlotte	13.1
6	Birmingham	13.0
7	Richmond	12.2
8	Sacramento	11.6
9	Raleigh	10.0
9	Milwaukee	10.0
11	Denver	9.9
12	Salt Lake City	9.8
13	Jacksonville	9.7
14	Portland	9.2
	Average	12.0

Note: Data pertains to adults 25 years of age and over.

Source: U.S. Bureau of the Census American Community Survey.

Table 17
PER CAPITA INCOME
Per Capita Income: 2013

MIDWEST METRO AREAS		
1	Minneapolis	$34,029
2	Chicago	31,302
3	Pittsburgh	29,985
4	Kansas City	29,688
5	St. Louis	29,675
6	Milwaukee	29,069
7	Cincinnati	29,014
8	Cleveland	28,686
9	Columbus	28,601
10	Detroit	28,080
11	Nashville	28,013
12	Louisville	27,739
13	Buffalo	27,715
14	Indianapolis	27,657
	Average	29,232

OTHER METRO AREAS		
1	Denver	$33,636
2	Raleigh	31,525
3	Portland	30,450
4	Providence	29,866
5	Richmond	29,527
6	Milwaukee	29,069
7	Sacramento	28,276
8	Charlotte	28,003
9	Jacksonville	27,958
10	Salt Lake City	26,819
11	Birmingham	26,662
12	Oklahoma City	26,191
13	Memphis	25,093
14	San Antonio	24,597
	Average	28,405

Source: U.S Bureau of the Census American Community Survey.

Table 18
CHANGE IN PER CAPITA INCOME
Percent Change Adjusted for Inflation: 2000-2013

MIDWEST METRO AREAS		
1	Pittsburgh	3.2
2	Buffalo	-1.6
3	St. Louis	-5.9
4	Minneapolis	-6.6
5	Louisville	-7.6
6	Kansas City	-8.4
7	Chicago	-9.1
8	Cleveland	-9.2
9	Cincinnati	-9.4
10	Columbus	-9.5
11	Nashville	-10.1
12	Milwaukee	-10.2
13	Indianapolis	-14.2
14	Detroit	-18.2
	Average	-8.3

OTHER METRO AREAS		
1	Providence	-0.4
2	Oklahoma City	-2.9
3	Salt Lake City	-4.2
4	San Antonio	-4.6
5	Portland	-6.5
6	Birmingham	-7.6
6	Jacksonville	-7.6
8	Sacramento	-9.3
9	Richmond	-9.7
10	Memphis	-10.0
11	Milwaukee	-10.2
12	Raleigh	-10.5
13	Charlotte	-12.3
--	Denver	N/A
	Average	-7.4

Source: U.S. Bureau of the Census decennial census and American Community Survey.

Table 19
PERSONS BELOW THE POVERTY LEVEL
Percent of Total Population: 2013

MIDWEST METRO AREAS		
1	Detroit	16.9
2	Milwaukee	15.9
3	Cleveland	15.6
4	Indianapolis	15.2
5	Buffalo	14.9
6	Columbus	14.8
7	Cincinnati	14.5
8	Chicago	14.4
9	Louisville	13.8
10	Nashville	13.7
11	St. Louis	12.9
12	Pittsburgh	12.8
13	Kansas City	12.6
14	Minneapolis	10.3
	Average	14.2

OTHER METRO AREAS		
1	Memphis	19.8
2	Birmingham	16.9
3	Sacramento	16.6
4	San Antonio	16.3
5	Milwaukee	15.9
6	Oklahoma City	14.9
7	Charlotte	14.8
7	Jacksonville	14.8
9	Providence	14.3
10	Richmond	13.9
11	Portland	13.5
12	Salt Lake City	12.4
13	Denver	12.1
14	Raleigh	12.0
	Average	14.9

Source: U.S. Bureau of the Census American Community Survey.

Table 20
INFANT MORTALITY RATE
Infant Deaths per 1,000 Live Births: 2010

MIDWEST METRO AREAS		
1	Indianapolis	10.00
2	Cincinnati	9.19
3	Cleveland	8.89
4	Buffalo	8.29
5	Columbus	7.85
6	Detroit	7.84
7	Pittsburgh	7.76
8	Nashville	7.53
9	Milwaukee	7.47
10	Louisville	7.15
11	St. Louis	7.01
12	Chicago	6.89
13	Kansas City	5.65
14	Minneapolis	4.38
	Average	7.56

OTHER METRO AREAS		
1	Birmingham	11.47
2	Memphis	10.21
3	Jacksonville	7.85
4	Oklahoma City	7.71
5	Milwaukee	7.47
6	San Antonio	6.56
7	Denver	5.94
8	Charlotte	5.68
9	Portland	5.64
10	Providence	5.55
10	Richmond	5.55
12	Raleigh	5.43
13	Sacramento	5.34
14	Salt Lake City	4.88
	Average	6.81

Note: Rates are for counties with a population of at least 250,000 persons within the respective MSA's. However, data were not available for the following counties with a 2010 population of at least 250,000: Douglas County, CO (Denver MSA); Hamilton County, IN (Indianapolis MSA); Cleveland County, OK (Oklahoma City MSA); and Placer County, CA (Sacramento MSA).

Source: Centers for Disease Control and Prevention.

Table 21
HOUSEHOLD SIZE
Average Number of Persons per Household: 2013

MIDWEST METRO AREAS		
1	Chicago	2.72
2	Nashville	2.60
3	Indianapolis	2.59
4	Columbus	2.56
4	Detroit	2.56
6	Minneapolis	2.55
7	Cincinnati	2.54
8	Kansas City	2.53
9	Louisville	2.50
10	St. Louis	2.48
11	Milwaukee	2.47
12	Cleveland	2.39
13	Buffalo	2.35
14	Pittsburgh	2.33
	Average	2.51

OTHER METRO AREAS		
1	Salt Lake City	3.08
2	San Antonio	2.87
3	Sacramento	2.75
4	Charlotte	2.68
4	Memphis	2.68
6	Jacksonville	2.65
7	Raleigh	2.64
8	Oklahoma City	2.61
9	Birmingham	2.59
9	Richmond	2.59
11	Portland	2.58
12	Denver	2.57
13	Providence	2.50
14	Milwaukee	2.47
	Average	2.66

Source: U.S. Bureau of the Census American Community Survey.

Table 22
FAMILY HOUSEHOLDS
Percent of Total Households: 2013

MIDWEST METRO AREAS		
1	Cincinnati	66.2
2	Chicago	65.7
2	St. Louis	65.7
4	Indianapolis	65.4
5	Kansas City	65.2
6	Nashville	65.0
7	Detroit	64.9
8	Louisville	64.8
9	Minneapolis	64.5
10	Columbus	63.1
11	Milwaukee	62.3
12	Cleveland	61.5
13	Pittsburgh	61.0
14	Buffalo	60.6
	Average	64.0

OTHER METRO AREAS		
1	Salt Lake City	71.6
2	San Antonio	68.5
3	Charlotte	67.2
4	Birmingham	66.9
5	Raleigh	66.6
6	Memphis	66.5
7	Sacramento	66.2
8	Jacksonville	65.0
9	Oklahoma City	64.7
10	Providence	64.4
11	Richmond	64.3
12	Portland	63.6
13	Denver	62.4
14	Milwaukee	62.3
	Average	65.7

Note: Family households are those in which there are one or more persons related to the householder by birth, marriage, or adoption. Non-family households include those in which the householder lives alone and those which do not have any members that are related to the householder

Source: U.S. Bureau of the Census American Community Survey.

Table 23
FAMILY HOUSEHOLDS HEADED BY SINGLE PARENTS
Percent of Total Family Households: 2013

MIDWEST METRO AREAS		
1	Detroit	19.8
2	Cleveland	19.2
3	Louisville	18.5
4	St. Louis	18.4
5	Cincinnati	18.2
5	Indianapolis	18.2
7	Chicago	18.0
8	Buffalo	17.8
9	Milwaukee	17.5
10	Kansas City	17.3
11	Nashville	16.8
11	Columbus	16.8
13	Pittsburgh	14.9
14	Minneapolis	14.4
	Average	17.6

OTHER METRO AREAS		
1	Memphis	24.9
2	San Antonio	20.5
3	Birmingham	19.6
3	Richmond	19.6
5	Providence	19.2
6	Charlotte	18.8
7	Sacramento	18.4
8	Jacksonville	18.3
9	Oklahoma City	17.6
10	Milwaukee	17.5
11	Raleigh	16.7
12	Salt Lake City	15.9
13	Portland	15.0
14	Denver	14.9
	Average	18.4

Source: U.S. Bureau of the Census American Community Survey.

Table 24
RATIO OF MINORITIES TO WHITES WITHOUT A HIGH SCHOOL DIPLOMA: 2013
(Percent of Minority Adults Without a High School Diploma or Equivalent Divided by Percent of White Adults Without a High School Diploma or Equivalent)

MIDWEST METRO AREAS		
1	Minneapolis	5.8
2	Milwaukee	4.1
2	Chicago	4.1
4	Kansas City	3.8
5	Buffalo	2.5
6	Nashville	2.4
7	Cleveland	2.2
7	Indianapolis	2.2
9	St. Louis	2.1
10	Columbus	2.0
11	Cincinnati	1.9
12	Detroit	1.8
13	Louisville	1.6
13	Pittsburgh	1.6
	Average	2.7

OTHER METRO AREAS		
1	Denver	6.7
2	Salt Lake City	5.7
3	San Antonio	4.8
4	Portland	4.5
5	Raleigh	4.3
6	Milwaukee	4.1
7	Sacramento	3.5
8	Memphis	2.7
9	Oklahoma City	2.5
10	Providence	2.3
11	Richmond	2.2
11	Charlotte	2.2
13	Jacksonville	1.8
14	Birmingham	1.6
	Average	3.5

Source: U.S. Bureau of the Census American Community Survey.

Table 25
RATIO OF WHITES TO MINORITIES WITH A BACHELOR'S DEGREE OR HIGHER: 2013
(Percent of White Adults with a Bachelor's Degree or Higher Divided by
Percent of Minority Adults with a Bachelor's Degree or Higher)

MIDWEST METRO AREAS		
1	Milwaukee	2.1
2	Chicago	1.8
2	Kansas City	1.8
4	Cleveland	1.6
5	Minneapolis	1.5
5	Indianapolis	1.5
5	Buffalo	1.5
5	St. Louis	1.5
9	Nashville	1.4
9	Louisville	1.4
11	Cincinnati	1.3
11	Columbus	1.3
11	Detroit	1.3
14	Pittsburgh	1.1
	Average	1.5

OTHER METRO AREAS		
1	Denver	2.2
2	Milwaukee	2.1
2	San Antonio	2.1
4	Memphis	1.9
5	Salt Lake City	1.6
5	Oklahoma City	1.6
5	Richmond	1.6
8	Providence	1.5
8	Raleigh	1.5
8	Birmingham	1.5
11	Portland	1.4
11	Charlotte	1.4
11	Sacramento	1.4
14	Jacksonville	1.3
	Average	1.7

Source: U.S. Bureau of the Census American Community Survey.

Table 26
RATIO OF WHITE TO MINORITY PER CAPITA INCOME: 2013

MIDWEST METRO AREAS		
1	Milwaukee	2.2
2	Chicago	2.1
2	Minneapolis	2.1
4	Kansas City	1.9
5	Buffalo	1.8
5	Cleveland	1.8
5	St. Louis	1.8
5	Nashville	1.8
9	Louisville	1.7
9	Indianapolis	1.7
9	Cincinnati	1.7
9	Detroit	1.7
13	Columbus	1.6
14	Pittsburgh	1.5
	Average	1.8

OTHER METRO AREAS		
1	Milwaukee	2.2
2	Denver	2.1
2	Memphis	2.1
2	Providence	2.1
5	San Antonio	2.0
6	Raleigh	1.9
6	Oklahoma City	1.9
8	Birmingham	1.8
8	Charlotte	1.8
8	Salt Lake City	1.8
8	Portland	1.8
12	Sacramento	1.7
12	Jacksonville	1.7
12	Richmond	1.7
	Average	1.9

Source: U.S. Bureau of the Census American Community Survey.

Table 27
RATIO OF MINORITIES TO WHITES IN POVERTY: 2013
(Percent of Minority Population in Poverty Divided by
Percent of White Population in Poverty)

MIDWEST METRO AREAS		
1	Buffalo	3.9
2	Milwaukee	3.7
2	Minneapolis	3.7
4	St. Louis	3.2
5	Cleveland	3.1
5	Chicago	3.1
7	Indianapolis	2.8
7	Pittsburgh	2.8
7	Kansas City	2.8
10	Cincinnati	2.7
11	Detroit	2.6
12	Columbus	2.4
12	Louisville	2.4
14	Nashville	2.1
	Average	3.0

OTHER METRO AREAS		
1	Milwaukee	3.7
2	Memphis	3.5
3	Providence	3.2
4	Raleigh	3.1
5	Salt Lake City	3.0
6	Denver	2.8
7	Richmond	2.7
8	Charlotte	2.5
8	San Antonio	2.5
10	Birmingham	2.3
11	Oklahoma City	2.2
12	Portland	2.1
13	Jacksonville	2.0
14	Sacramento	1.9
	Average	2.7

Source: U.S. Bureau of the Census American Community Survey.

Table 28
TOTAL EMPLOYMENT (JOBS): 2013

MIDWEST METRO AREAS		
1	Chicago	4,238,649
2	Detroit	1,781,295
3	Minneapolis	1,769,175
4	St. Louis	1,251,009
5	Pittsburgh	1,098,019
6	Cleveland	987,101
7	Cincinnati	970,601
8	Kansas City	954,402
9	Columbus	937,791
10	Indianapolis	923,952
11	Nashville	817,814
12	Milwaukee	795,555
13	Louisville	586,211
14	Buffalo	525,832
	Average	1,259,815

OTHER METRO AREAS		
1	Denver	1,277,062
2	Portland	1,029,419
3	Charlotte	1,009,053
4	San Antonio	888,703
5	Sacramento	880,482
6	Milwaukee	795,555
7	Providence	660,205
8	Salt Lake City	624,170
9	Richmond	590,406
10	Jacksonville	579,764
11	Oklahoma City	578,555
12	Memphis	578,430
13	Raleigh	527,748
14	Birmingham	472,428
	Average	749,427

Source: U.S. Bureau of Labor Statistics Quarterly Census of Employment and Wages.

Table 29
CHANGE IN TOTAL EMPLOYMENT
Percent Change: 2001-2013

MIDWEST METRO AREAS		
1	Nashville	13.5
2	Indianapolis	7.0
3	Columbus	4.0
4	Louisville	2.5
5	Minneapolis	2.4
6	Kansas City	0.5
7	Pittsburgh	-0.4
8	Buffalo	-0.8
9	Cincinnati	-1.4
10	Chicago	-2.2
11	St. Louis	-4.1
12	Milwaukee	-4.6
13	Cleveland	-9.0
14	Detroit	-13.1
	Average	-0.4

OTHER METRO AREAS		
1	Raleigh	22.2
2	San Antonio	19.9
3	Salt Lake City	15.1
4	Charlotte	12.1
5	Oklahoma City	9.0
6	Denver	8.1
7	Jacksonville	7.9
8	Portland	7.1
9	Sacramento	5.1
10	Richmond	4.4
11	Birmingham	-1.5
12	Memphis	-2.4
13	Providence	-2.6
14	Milwaukee	-4.6
	Average	7.1

Source: U.S. Bureau of Labor Statistics Quarterly Census of Employment and Wages.

Table 30
CHANGE IN LABOR FORCE
Percent Change: 2000-2013

MIDWEST METRO AREAS		
1	Nashville	17.4
2	Columbus	11.7
3	Indianapolis	11.0
4	Minneapolis	6.4
5	Cincinnati	5.0
6	Louisville	4.8
7	Pittsburgh	4.7
8	Kansas City	3.9
9	Chicago	3.0
10	St. Louis	-0.9
11	Buffalo	-1.1
12	Milwaukee	-1.3
13	Cleveland	-5.2
14	Detroit	-11.0
	Average	3.5

OTHER METRO AREAS		
1	Raleigh	34.2
2	San Antonio	28.3
3	Charlotte	23.3
4	Salt Lake City	20.9
5	Jacksonville	19.1
6	Richmond	19.0
7	Denver	15.3
8	Sacramento	15.1
9	Oklahoma City	9.5
10	Portland	8.6
11	Providence	3.1
12	Memphis	1.6
13	Birmingham	-1.0
14	Milwaukee	-1.3
	Average	14.0

Source: U.S. Bureau of Labor Statistics Local Area Unemployment Statistics.

Table 31
GROSS DOMESTIC PRODUCT: 2013
(In millions of dollars)

MIDWEST METRO AREAS		
1	Chicago	590,248
2	Minneapolis	227,793
3	Detroit	224,726
4	St. Louis	145,958
5	Pittsburgh	131,265
6	Indianapolis	126,472
7	Cleveland	122,878
8	Cincinnati	119,090
9	Kansas City	117,321
10	Columbus	114,253
11	Nashville	100,841
12	Milwaukee	94,374
13	Louisville	64,554
14	Buffalo	51,630
	Average	159,386

OTHER METRO AREAS		
1	Denver	178,860
2	Portland	163,692
3	Charlotte	139,022
4	Sacramento	108,165
5	San Antonio	96,030
6	Milwaukee	94,374
7	Salt Lake City	76,185
8	Providence	73,334
9	Oklahoma City	71,951
10	Richmond	68,497
11	Memphis	67,936
12	Raleigh	66,878
13	Jacksonville	62,104
14	Birmingham	59,722
	Average	94,768

Note: The metropolitan area gross domestic product is the market value of all final goods and services produced in the area in a year.

Source: U.S. Bureau of Economic Analysis.

Table 32
CHANGE IN GROSS DOMESTIC PRODUCT
Percent Change Adjusted for Inflation: 2001-2013

MIDWEST METRO AREAS		
1	Nashville	38.2
2	Indianapolis	21.9
3	Columbus	20.4
4	Minneapolis	19.3
5	Kansas City	16.3
6	Louisville	14.8
7	Cincinnati	13.9
8	Milwaukee	13.6
9	Buffalo	12.8
10	Pittsburgh	12.1
11	Chicago	8.3
12	St. Louis	8.1
13	Cleveland	7.9
14	Detroit	-4.2
	Average	14.5

OTHER METRO AREAS		
1	Portland	82.3
2	Raleigh	42.9
3	Charlotte	40.2
4	Oklahoma City	39.4
5	Salt Lake City	39.2
6	San Antonio	37.3
7	Denver	25.1
8	Sacramento	24.5
9	Jacksonville	16.4
10	Milwaukee	13.6
11	Providence	13.3
12	Richmond	10.9
13	Birmingham	9.9
14	Memphis	4.4
	Average	28.5

Note: The metropolitan area gross domestic product is the market value of all final goods and services produced in the area in a year.

Source: U.S. Bureau of Economic Analysis.

Table 33
GROSS DOMESTIC PRODUCT PER CAPITA: 2013

MIDWEST METRO AREAS		
1	Minneapolis	$65,852
2	Indianapolis	64,726
3	Chicago	61,888
4	Milwaukee	60,124
5	Cleveland	59,513
6	Columbus	58,083
7	Nashville	57,364
8	Kansas City	57,105
9	Cincinnati	55,717
10	Pittsburgh	55,600
11	Detroit	52,323
12	St. Louis	52,108
13	Louisville	51,142
14	Buffalo	45,524
	Average	56,934

OTHER METRO AREAS		
1	Portland	$70,723
2	Salt Lake City	66,801
3	Denver	66,306
4	Milwaukee	60,124
5	Charlotte	59,529
6	Raleigh	55,066
7	Richmond	54,984
8	Oklahoma City	54,522
9	Birmingham	52,374
10	Memphis	50,633
11	Sacramento	48,816
12	Providence	45,711
13	Jacksonville	44,531
14	San Antonio	42,164
	Average	55,163

Note: The metropolitan area gross domestic product is the market value of all final goods and services produced in the area in a year.

Source: U.S. Bureau of Economic Analysis.

Table 34
MANUFACTURING SHARE OF TOTAL EMPLOYMENT
Percent of Total Employment: 2013

MIDWEST METRO AREAS		
1	Milwaukee	15.0
2	Detroit	12.7
3	Cleveland	12.5
4	Louisville	12.2
5	Cincinnati	10.9
6	Minneapolis	10.5
7	Buffalo	9.7
8	Chicago	9.6
9	Indianapolis	9.5
10	Nashville	9.2
11	St. Louis	8.8
12	Pittsburgh	8.1
13	Kansas City	7.5
14	Columbus	7.4
	Average	10.3

OTHER METRO AREAS		
1	Milwaukee	15.0
2	Portland	11.2
3	Charlotte	9.8
4	Salt Lake City	8.6
5	Birmingham	8.0
6	Memphis	7.7
7	Oklahoma City	6.3
8	Raleigh	5.9
9	Richmond	5.2
10	San Antonio	5.1
11	Denver	5.0
12	Jacksonville	4.8
13	Sacramento	3.8
--	Providence	N/A
	Average	7.4

Source: U.S Bureau of Labor Statistics Quarterly Census of Employment and Wages.

Table 35
CHANGE IN MANUFACTURING SHARE OF TOTAL EMPLOYMENT
Percentage Point Change in Manufacturing Share of Total Employment: 2001-2013

MIDWEST METRO AREAS		
1	Kansas City	-1.5
2	Minneapolis	-2.8
3	Pittsburgh	-3.1
4	Milwaukee	-3.5
5	Columbus	-3.5
6	Chicago	-4.0
7	Cleveland	-4.1
8	Indianapolis	-4.2
9	Nashville	-4.6
10	Detroit	-4.9
11	Buffalo	-5.1
--	Cincinnati	N/A
--	Louisville	N/A
--	St. Louis	N/A
	Average	-3.8

OTHER METRO AREAS		
1	Salt Lake City	-1.4
2	Memphis	-2.2
3	San Antonio	-2.3
4	Sacramento	-2.4
5	Birmingham	-2.6
5	Raleigh	-2.6
7	Oklahoma City	-2.9
8	Portland	-3.1
9	Milwaukee	-3.5
10	Richmond	-4.2
11	Charlotte	-6.4
--	Denver	N/A
--	Jacksonville	N/A
--	Providence	N/A
	Average	-3.1

Source: U.S Bureau of Labor Statistics Quarterly Census of Employment and Wages.

Table 36
MANUFACTURING SHARE OF GROSS DOMESTIC PRODUCT
Percent of GDP Related to Manufacturing: 2013

MIDWEST METRO AREAS		
1	Indianapolis	24.1
2	Detroit	17.7
3	Louisville	17.0
4	Milwaukee	16.5
5	Cincinnati	16.4
6	Cleveland	15.9
7	Buffalo	14.8
8	St. Louis	13.6
9	Chicago	13.2
9	Minneapolis	13.2
11	Kansas City	10.6
11	Nashville	10.6
13	Pittsburgh	9.8
14	Columbus	9.3
	Average	14.5

OTHER METRO AREAS		
1	Portland	34.6
2	Milwaukee	16.5
3	Charlotte	14.4
4	Raleigh	14.1
5	Salt Lake City	13.4
6	Memphis	12.8
7	Richmond	12.2
8	Birmingham	10.8
9	San Antonio	7.7
10	Oklahoma City	7.2
11	Denver	6.2
11	Jacksonville	6.2
13	Sacramento	5.1
--	Providence	NA
	Average	12.4

Source: U.S. Bureau of Economic Analysis.

Table 37
UNEMPLOYMENT RATE: 2013

MIDWEST METRO AREAS		
1	Detroit	9.4
2	Chicago	9.1
3	Louisville	7.8
4	Buffalo	7.5
4	Cleveland	7.5
6	Milwaukee	7.3
7	St. Louis	7.2
8	Cincinnati	7.1
9	Indianapolis	6.9
10	Pittsburgh	6.8
11	Nashville	6.5
12	Kansas City	6.4
13	Columbus	6.2
14	Minneapolis	4.8
	Average	7.2

OTHER METRO AREAS		
1	Providence	9.7
2	Memphis	9.3
3	Sacramento	8.6
4	Charlotte	8.1
5	Portland	7.3
5	Milwaukee	7.3
7	Jacksonville	6.9
8	Denver	6.6
9	Raleigh	6.4
10	San Antonio	6.0
11	Richmond	5.9
12	Birmingham	5.7
13	Oklahoma City	5.1
14	Salt Lake City	4.2
	Average	6.9

Source: U.S. Bureau of Labor Statistics Local Area Unemployment Statistics.

Table 38
CHANGE IN HOUSING UNITS
Percent Change: 2000-2013

MIDWEST METRO AREAS		
1	Nashville	25.6
2	Indianapolis	17.9
3	Columbus	17.7
4	Minneapolis	17.4
5	Kansas City	15.8
6	Louisville	14.1
7	Cincinnati	10.4
8	Chicago	9.5
8	St. Louis	9.5
10	Milwaukee	8.3
11	Detroit	5.0
12	Cleveland	4.6
13	Pittsburgh	2.1
14	Buffalo	1.3
	Average	11.4

OTHER METRO AREAS		
1	Raleigh	47.9
2	Charlotte	35.1
3	San Antonio	31.9
4	Jacksonville	28.0
5	Sacramento	22.9
6	Salt Lake City	20.5
7	Richmond	18.5
8	Portland	18.2
9	Oklahoma City	16.3
10	Memphis	15.6
11	Birmingham	10.8
12	Milwaukee	8.3
13	Providence	5.4
--	Denver	N/A
	Average	21.5

Source: U.S. Bureau of the Census Decennial Census and Annual Estimates of Housing Units.

Table 39
HOUSING STRUCTURE TYPE
Multi-Family Housing as a Percent of Total Housing Units: 2013

MIDWEST METRO AREAS		
1	Chicago	46.9
2	Milwaukee	44.1
3	Buffalo	38.0
4	Minneapolis	37.2
5	Columbus	34.8
6	Cleveland	34.2
7	Cincinnati	31.6
8	Nashville	28.5
8	Pittsburgh	28.5
10	Indianapolis	28.4
11	Kansas City	28.3
12	Detroit	27.3
13	Louisville	26.4
13	St. Louis	26.4
	Average	32.9

OTHER METRO AREAS		
1	Providence	44.3
2	Milwaukee	44.1
3	Denver	38.6
4	Portland	33.3
5	Salt Lake City	33.0
6	Raleigh	31.2
7	Jacksonville	29.1
7	Sacramento	29.1
9	Richmond	28.5
10	Memphis	26.3
11	San Antonio	26.2
12	Charlotte	24.9
13	Oklahoma City	22.9
14	Birmingham	21.1
	Average	30.9

Source: U.S. Bureau of the Census American Community Survey.

Table 40
HOUSING VALUES
Median Value of Owner-Occupied Housing Units: 2013

MIDWEST METRO AREAS		
1	Chicago	$206,300
2	Minneapolis	206,100
3	Milwaukee	188,100
4	Nashville	172,400
5	Kansas City	157,400
6	Columbus	154,800
7	St. Louis	153,000
8	Cincinnati	152,000
9	Louisville	148,700
10	Indianapolis	139,600
11	Cleveland	136,100
12	Pittsburgh	130,700
13	Buffalo	123,400
14	Detroit	120,500
	Average	156,364

OTHER METRO AREAS		
1	Sacramento	$278,500
2	Portland	264,000
3	Denver	257,000
4	Providence	246,100
5	Salt Lake City	225,100
6	Richmond	204,800
7	Raleigh	202,900
8	Milwaukee	188,100
9	Charlotte	164,000
10	Jacksonville	152,200
11	Birmingham	144,100
12	Oklahoma City	137,100
13	San Antonio	134,000
14	Memphis	128,600
	Average	194,750

Note: Values are based upon the ACS respondent's estimate of how much the property (house and lot or condominium unit) would sell for if it were for sale.

Source: U.S. Bureau of the Census American Community Survey.

Table 41
HOUSING RENT
Median Gross Rent of Renter-Occupied Housing: 2013

MIDWEST METRO AREAS		
1	Chicago	$959
2	Minneapolis	911
3	Nashville	849
4	Kansas City	834
5	Detroit	829
6	St. Louis	814
7	Milwaukee	807
8	Columbus	804
9	Indianapolis	789
10	Louisville	740
11	Cleveland	734
12	Cincinnati	729
13	Buffalo	718
14	Pittsburgh	712
	Average	802

OTHER METRO AREAS		
1	Sacramento	$1,060
2	Denver	998
3	Portland	969
4	Richmond	959
5	Jacksonville	949
6	Salt Lake City	935
7	Raleigh	908
8	Providence	885
9	San Antonio	857
10	Charlotte	835
11	Memphis	825
12	Milwaukee	807
13	Birmingham	787
14	Oklahoma City	762
	Average	895

Note: Gross monthly rent includes the cost of utilities and fuels.

Source: U.S. Bureau of the Census American Community Survey.

Table 42
HOME SALE PRICES
Median Sales Price of Single-Family Homes: 2013

MIDWEST METRO AREAS		
1	Milwaukee	$200,700
2	Minneapolis	196,200
3	Chicago	191,300
4	Nashville	176,400
5	Kansas City	154,800
6	Columbus	142,800
7	Louisville	139,500
8	Indianapolis	136,700
9	Cincinnati	135,500
10	St. Louis	134,300
11	Buffalo	131,000
12	Cleveland	117,700
--	Detroit	N/A
--	Pittsburgh	N/A
	Average	154,700

OTHER METRO AREAS		
1	Denver	$280,600
2	Portland	265,500
3	Sacramento	239,500
4	Providence	230,800
5	Salt Lake City	230,600
6	Richmond	207,500
7	Milwaukee	200,700
8	Raleigh	196,900
9	Charlotte	174,200
10	San Antonio	171,000
11	Birmingham	165,100
12	Jacksonville	160,800
13	Oklahoma City	153,100
14	Memphis	129,400
	Average	200,400

Source: National Association of Realtors.

Table 43
HOME SALE PRICE AFFORDABILITY
Percent of Home Sales Affordable to Median Income Families: 2013

MIDWEST METRO AREAS		
1	Indianapolis	92.6
2	Buffalo	87.4
3	Cincinnati	86.5
4	Cleveland	84.6
5	Pittsburgh	83.2
6	Detroit	83.1
7	St. Louis	83.0
8	Louisville	80.8
9	Minneapolis	80.6
10	Milwaukee	77.3
11	Columbus	76.9
12	Chicago	68.9
--	Kansas City	N/A
--	Nashville	N/A
	Average	82.1

OTHER METRO AREAS		
1	Memphis	79.8
2	Jacksonville	79.3
3	Oklahoma City	79.1
3	Richmond	79.1
5	Milwaukee	77.3
6	Birmingham	76.9
7	Raleigh	76.1
8	Providence	74.8
9	Charlotte	73.8
10	Salt Lake City	72.6
11	Denver	71.1
12	San Antonio	68.2
13	Sacramento	63.1
14	Portland	61.7
	Average	73.8

Note: Data represent averages for four quarters of 2013, except Birmingham (average for last three quarters of 2013) and Indianapolis (average for first three quarters of 2013)

Source: National Association of Home Builders/Wells Fargo.

Table 44
AVERAGE TRAVEL TIME TO WORK IN MINUTES: 2013

MIDWEST METRO AREAS		
1	Chicago	30.8
2	Nashville	26.5
3	Detroit	26.4
4	Pittsburgh	26.1
5	St. Louis	25.2
6	Minneapolis	25.1
7	Cleveland	24.7
8	Cincinnati	24.4
8	Indianapolis	24.4
10	Milwaukee	23.5
11	Columbus	23.3
11	Louisville	23.3
13	Kansas City	22.9
14	Buffalo	20.6
	Average	24.8

OTHER METRO AREAS		
1	Denver	27.1
2	Birmingham	26.1
2	Jacksonville	26.1
4	Charlotte	26.0
4	Sacramento	26.0
6	Portland	25.7
7	Raleigh	25.6
8	Providence	25.2
9	Richmond	25.1
10	San Antonio	25.0
11	Memphis	24.1
12	Milwaukee	23.5
13	Oklahoma City	22.5
14	Salt Lake City	22.3
	Average	25.0

Source: U.S. Bureau of the Census American Community Survey.

Table 45
WORKERS WHO DRIVE TO WORK ALONE
Percent of Total Workers: 2013

MIDWEST METRO AREAS		
1	Louisville	84.5
2	Detroit	83.9
3	Kansas City	83.5
4	Indianapolis	83.3
5	St. Louis	83.2
6	Cincinnati	83.0
7	Nashville	82.8
8	Columbus	82.6
9	Cleveland	82.5
10	Buffalo	82.4
11	Milwaukee	80.7
12	Minneapolis	78.4
12	Pittsburgh	78.4
14	Chicago	71.1
	Average	81.5

OTHER METRO AREAS		
1	Birmingham	86.4
2	Memphis	84.2
3	Oklahoma City	83.9
4	Jacksonville	81.7
4	Richmond	81.7
6	Providence	80.9
7	Milwaukee	80.7
8	Raleigh	80.4
9	Charlotte	80.2
10	San Antonio	79.2
11	Denver	75.4
12	Sacramento	75.1
13	Salt Lake City	75.0
14	Portland	70.7
	Average	79.7

Source: U.S. Bureau of the Census American Community Survey.

Table 46
WORKERS WHO CARPOOL TO WORK
Percent of Total Workers: 2013

MIDWEST METRO AREAS		
1	Nashville	9.1
2	Indianapolis	8.9
3	Kansas City	8.7
4	Detroit	8.5
4	Pittsburgh	8.5
6	Louisville	8.3
7	Cincinnati	8.1
7	Minneapolis	8.1
9	Buffalo	8.0
9	Chicago	8.0
9	Columbus	8.0
12	Milwaukee	7.7
13	St. Louis	7.2
14	Cleveland	7.1
	Average	8.2

OTHER METRO AREAS		
1	Salt Lake City	12.7
2	Sacramento	11.2
3	San Antonio	11.0
4	Charlotte	10.0
5	Portland	9.8
5	Raleigh	9.8
7	Memphis	9.7
7	Oklahoma City	9.7
9	Jacksonville	9.1
10	Denver	8.9
11	Richmond	8.7
12	Providence	8.3
13	Birmingham	8.1
14	Milwaukee	7.7
	Average	9.6

Source: U.S. Bureau of the Census American Community Survey.

Table 47
WORKERS WHO TAKE PUBLIC TRANSPORTATION TO WORK
Percent of Total Workers: 2013

MIDWEST METRO AREAS		
1	Chicago	11.8
2	Pittsburgh	4.9
3	Minneapolis	4.6
4	Milwaukee	3.6
5	Cleveland	3.2
6	Buffalo	2.9
6	St. Louis	2.9
8	Cincinnati	2.2
9	Columbus	1.7
9	Detroit	1.7
9	Louisville	1.7
12	Kansas City	1.2
13	Indianapolis	1.1
14	Nashville	1.0
	Average	3.2

OTHER METRO AREAS		
1	Portland	6.4
2	Denver	4.4
3	Milwaukee	3.6
4	Salt Lake City	3.2
5	Providence	2.7
6	Sacramento	2.6
7	San Antonio	2.5
8	Charlotte	1.7
9	Richmond	1.3
10	Jacksonville	1.1
10	Memphis	1.1
12	Raleigh	1.0
13	Birmingham	0.8
14	Oklahoma City	0.5
	Average	2.4

Source: U.S. Bureau of the Census American Community Survey.

Table 48
WORKERS WHO BIKE TO WORK
Percent of Total Workers: 2013

MIDWEST METRO AREAS		
1	Minneapolis	1.0
2	Chicago	0.6
2	Milwaukee	0.6
4	Buffalo	0.5
4	Columbus	0.5
6	Cleveland	0.4
6	Pittsburgh	0.4
8	Detroit	0.3
8	Indianapolis	0.3
8	Louisville	0.3
8	Nashville	0.3
12	Kansas City	0.2
12	St. Louis	0.2
14	Cincinnati	0.1
	Average	0.4

OTHER METRO AREAS		
1	Portland	2.2
2	Sacramento	1.9
3	Denver	0.8
3	Salt Lake City	0.8
5	Milwaukee	0.6
6	Jacksonville	0.5
6	Richmond	0.5
8	Oklahoma City	0.4
8	Providence	0.4
10	Memphis	0.2
10	San Antonio	0.2
12	Charlotte	0.1
12	Raleigh	0.1
14	Birmingham	< 0.1
	Average	0.6

Source: U.S. Bureau of the Census American Community Survey.

Table 49
WORKERS WHO WALK TO WORK
Percent of Total Workers: 2013

MIDWEST METRO AREAS		
1	Pittsburgh	3.3
2	Chicago	3.2
3	Milwaukee	3.1
4	Buffalo	2.6
5	Minneapolis	2.3
6	Columbus	2.2
7	Cincinnati	2.1
8	Cleveland	2.0
9	St. Louis	1.6
10	Indianapolis	1.5
11	Kansas City	1.4
11	Louisville	1.4
11	Nashville	1.4
14	Detroit	1.3
	Average	2.1

OTHER METRO AREAS		
1	Portland	3.4
1	Providence	3.4
3	Milwaukee	3.1
4	Sacramento	2.3
5	Denver	2.2
6	Richmond	2.0
7	Salt Lake City	1.7
7	San Antonio	1.7
9	Oklahoma City	1.5
9	Raleigh	1.5
11	Charlotte	1.4
11	Memphis	1.4
13	Jacksonville	1.2
14	Birmingham	1.0
	Average	2.0

Source: U.S. Bureau of the Census American Community Survey.

Table 50
HOUSEHOLDS WITH NO VEHICLES
Percent of Total Households: 2013

MIDWEST METRO AREAS		
1	Buffalo	12.9
2	Chicago	11.7
3	Pittsburgh	11.2
4	Cleveland	10.4
5	Milwaukee	9.8
6	Cincinnati	8.3
7	Detroit	8.2
8	Louisville	7.9
9	St. Louis	7.6
10	Minneapolis	7.4
11	Columbus	6.9
12	Kansas City	6.0
13	Indianapolis	5.6
14	Nashville	5.2
	Average	8.5

OTHER METRO AREAS		
1	Milwaukee	9.8
2	Providence	9.4
3	Memphis	8.3
4	Portland	8.2
5	San Antonio	7.3
6	Richmond	6.9
7	Denver	6.5
8	Sacramento	6.3
9	Jacksonville	6.2
9	Birmingham	6.2
11	Charlotte	5.9
12	Oklahoma City	5.2
12	Salt Lake City	5.2
14	Raleigh	4.8
	Average	6.9

Source: U.S. Bureau of the Census American Community Survey.

Table 51
HOUSEHOLDS WITH NO VEHICLES OR ONE VEHICLE
Percent of Total Households: 2013

MIDWEST METRO AREAS		
1	Buffalo	50.8
2	Pittsburgh	47.1
3	Chicago	46.9
4	Cleveland	46.7
5	Milwaukee	45.6
6	Detroit	44.0
7	Louisville	41.5
8	St. Louis	41.3
9	Columbus	40.8
10	Cincinnati	39.6
11	Indianapolis	39.2
12	Kansas City	38.5
13	Minneapolis	38.4
14	Nashville	37.0
	Average	42.7

OTHER METRO AREAS		
1	Milwaukee	45.6
2	Memphis	44.9
3	Providence	44.8
4	Jacksonville	41.8
5	San Antonio	41.7
6	Portland	40.8
7	Denver	39.8
8	Charlotte	39.0
9	Oklahoma City	38.9
9	Sacramento	38.4
11	Birmingham	38.1
12	Richmond	37.1
13	Raleigh	36.3
14	Salt Lake City	33.7
	Average	40.1

Source: U.S. Bureau of the Census American Community Survey.

Table 52
TRAVEL TIME DELAY FOR AUTO COMMUTERS
Annual Hours of Delay Per Auto Commuter: 2011

MIDWEST METRO AREAS		
1	Chicago	51
2	Nashville	47
3	Indianapolis	41
4	Columbus	40
4	Detroit	40
6	Pittsburgh	39
7	Cincinnati	37
8	Louisville	35
9	Minneapolis	34
10	Buffalo	33
11	Cleveland	31
11	St. Louis	31
13	Milwaukee	28
14	Kansas City	27
	Average	37

OTHER METRO AREAS		
1	Denver	45
2	Portland	44
3	Charlotte	40
4	Memphis	38
4	Oklahoma City	38
4	San Antonio	38
7	Birmingham	35
8	Sacramento	32
9	Jacksonville	30
9	Providence	30
9	Salt Lake City	30
12	Richmond	29
13	Milwaukee	28
14	Raleigh	23
	Average	34

Note: Data pertain to the primary urbanized area within the metropolitan area.

Source: Texas A&M Transportation Institute, 2012 Urban Mobility Report.

Table 53
CHANGE IN TRAVEL TIME DELAY FOR AUTO COMMUTERS
Change in Annual Hours of Delay Per Auto Commuter: 1982-2011

MIDWEST METRO AREAS		
1	Chicago	38
2	Columbus	36
3	Cincinnati	30
3	Minneapolis	30
5	Cleveland	26
6	Buffalo	25
7	Indianapolis	24
7	Nashville	24
9	Detroit	23
10	Kansas City	22
11	Louisville	21
12	St. Louis	20
13	Milwaukee	19
14	Pittsburgh	16
	Average	25

OTHER METRO AREAS		
1	Denver	34
2	San Antonio	33
3	Charlotte	32
4	Portland	31
5	Memphis	30
5	Oklahoma City	30
7	Providence	27
8	Birmingham	26
9	Richmond	23
9	Salt Lake City	23
11	Sacramento	21
12	Milwaukee	19
13	Jacksonville	18
13	Raleigh	18
	Average	26

Note: Data pertain to the primary urbanized area within the metropolitan area.

Source: Texas A&M Transportation Institute, 2012 Urban Mobility Report.

Table 54
CONGESTION COST FOR AUTO COMMUTERS
Annual Congestion Cost (dollars per auto commuter): 2011

MIDWEST METRO AREAS		
1	Chicago	$1,153
2	Nashville	1,034
3	Indianapolis	930
4	Detroit	859
5	Columbus	847
6	Pittsburgh	826
7	Cincinnati	814
8	Louisville	776
9	Buffalo	718
10	Minneapolis	695
11	St. Louis	686
12	Cleveland	642
13	Milwaukee	585
14	Kansas City	584
	Average	796

OTHER METRO AREAS		
1	Denver	$937
1	Portland	937
3	Charlotte	898
4	Memphis	833
5	Oklahoma City	803
6	San Antonio	787
7	Birmingham	773
8	Sacramento	669
9	Jacksonville	635
10	Salt Lake City	620
11	Providence	611
12	Milwaukee	585
13	Richmond	581
14	Raleigh	502
	Average	727

Note: Congestion cost is the value of the extra travel time and the extra fuel consumed by vehicles traveling at slower speeds.

Data pertain to the primary urbanized area within the metropolitan area.

Source: Texas A&M Transportation Institute, 2012 Urban Mobility Report.

Table 55
TYPES OF TRANSIT SERVICE AND DEDICATED FUNDING SOURCES FOR MAJOR PUBLIC TRANSIT OPERATORS: 2011

MIDWEST METRO AREAS			
Area	Major Transit Operator(s)	Types of Transit Service[a]	Source of Dedicated Funding[b]
Buffalo	Niagara Frontier Transportation Authority	Bus and Light Rail	0.125% Sales Tax
Chicago	Chicago Transit Authority / Northeast Illinois Regional Commuter Railroad Corporation (Metra) / Pace	Bus, Bus Rapid Transit, Commuter Rail, and Heavy Rail	Sales Tax[c]
Cincinnati	Southwest Ohio Regional Transit Authority	Bus and Bus Rapid Transit	0.3% Payroll Tax
Cleveland	Greater Cleveland Regional Transit Authority	Bus, Bus Rapid Transit, Heavy Rail, and Light Rail	1.0% Sales Tax
Columbus	Central Ohio Transit Authority	Bus and Bus Rapid Transit	0.5% Sales Tax
Detroit	City of Detroit Department of Transportation / Detroit Transportation Corporation / Suburban Mobility Authority for Regional Transportation	Bus and Monorail/Automated Guideway	Property Tax[d]
Indianapolis	Indianapolis Public Transportation Corporation	Bus	--
Kansas City	Kansas City Area Transportation Authority	Bus and Bus Rapid Transit	0.375% Sales Tax
Louisville	Transit Authority of River City	Bus	0.2% Payroll Tax
Milwaukee	Milwaukee County Transit System	Bus	--
Minneapolis	Metro Transit	Bus, Bus Rapid Transit, Light Rail, and Commuter Rail	Property and Sales Taxes[e]
Nashville	Regional Transportation Authority / Metropolitan Transit Authority	Bus and Commuter Rail	--
Pittsburgh	Port Authority of Allegheny County	Bus, Bus Rapid Transit, Light Rail, and Inclined Plane	Sales Taxes[f]
St. Louis	Bi-State Development Agency (Metro)	Bus and Light Rail	1.0 % Sales Tax

OTHER METRO AREAS			
Area	Major Transit Operator(s)	Types of Transit Service[a]	Source of Dedicated Funding[b]
Birmingham	Birmingham-Jefferson County Transit Authority	Bus	--
Charlotte	Charlotte Area Transit System	Bus and Light Rail	0.5% Sales Tax
Denver	Regional Transportation District	Bus, Bus Rapid Transit, and Light Rail	1.0 % Sales Tax
Jacksonville	Jacksonville Transportation Authority	Bus and Monorail/ Automated Guideway	1.0 % Sales Tax
Memphis	Memphis Area Transit Authority	Bus and Streetcar	--
Milwaukee	Milwaukee County Transit System	Bus	--
Oklahoma City	Central Oklahoma Transportation and Parking Authority	Bus and Ferryboat	--
Portland	Tri-County Metropolitan Transportation District of Oregon (Tri-Met)	Bus, Light Rail, Hybrid Rail, and Streetcar	0.7237% Payroll Tax
Providence	Rhode Island Public Transit Authority	Bus	--
Raleigh	Capital Area Transit	Bus and Bus Rapid Transit	--
Richmond	Greater Richmond Transit Company	Bus	--
Sacramento	Sacramento Regional Transit District	Bus and Light Rail	0.19125% Sales Tax
Salt Lake City	Utah Transit Authority	Bus, Bus Rapid Transit, Light Rail and Commuter Rail	Sales Tax[g]
San Antonio	VIA Metropolitan Transit	Bus	0.5 to 0.625% Sales Tax[h]

[a] Metropolitan areas listed as providing Bus Rapid Transit service have an exclusive, dedicated guideway for at least a portion of their route, or operate in managed lanes or on shoulders along freeways. Many metro areas also have some taxi and vanpool servcies, and all have paratransit services for persons with disabilities.

[b] The transit systems that do not have a dedicated source of funding are primarily funded through local property tax levy. The exception is the Rhode Island Public Transit Authority (Providence), which is a statewide transit agency funded through the State of Rhode Island's general fund.

[c] Transit-related sales taxes are as follows: 1.25 percent in Cook County and 0.5 percent in Dupage, Kane, Lake, McHenry, and Will Counties. The transit-related sales taxes are distributed by the Regional Transportation Authority to the Chicago Transit Authority, Metra, and Pace according to statutory formulas.

[d] The Suburban Mobility Authority for Regional Transportation (SMART) has dedicated funding in the form of a property tax in effect in Macomb, Oakland, and Wayne Counties (excluding the City of Detroit). The tax rate is subject to voter approval every four years. The current rate is 0.1 cent per dollar of property value.

[e] Dedicated funding for transit available to Metro Transit or counties in the metro area includes: 1) Metro Council property taxes levied on property in "Transit Capital Levy Communities," which together comprise the more urbanized area of the region; 2) state motor vehicle sales tax—6.5 percent on motor vehicle sales—with 40 percent of the proceeds dedicated for transit statewide, including Metro Transit; 3) a 0.25 percent sales tax in Anoka, Dakota, Hennepin, Ramsey, and Washington Counties—which jointly administer the tax through the Counties Transit Improvement Board, as authorized under Minnesota statutes; and 4) property taxes levied by county regional railroad authorities, which counties are authorized to create under Minnesota statutes.

[f] The Port Authority of Allegheny County is funded by dedicated state sales and use taxes allocated to Pennsylvania transit systems including 1 percent sales tax, $1 per tire, $2 per vehicle rental, and 3 percent of vehicle leases; Allegheny County dedicated taxes of 10 percent on alcoholic drinks and $2 per vehicle rental; and funds provided by the Allegheny Regional Asset District.

[g] Sales tax rates vary by county in the Utah Transit Authority service area, ranging from 1/2 to 2/3 of one cent.

[h] A 0.5 percent sales tax for transit is imposed in the portions of the transit system service area outside the Advanced Transportation District in the City of San Antonio. An additional 0.125 percent sales tax for transit is imposed in the Advanced Transportation District, bringing the total sales tax for transit in that area to 0.625 percent.

Source: Federal Transit Administration, National Transit Database and SEWRPC.

Table 56
LOCAL FUNDING IN SUPPORT OF PUBLIC TRANSIT
Percent of Total Annual Operating Deficit Funded with Local Funds: 2011

MIDWEST METRO AREAS			OTHER METRO AREAS		
1	Columbus	94.6	1	Charlotte	86.1
2	St. Louis	85.0	2	Portland	84.5
3	Kansas City	82.8	3	Raleigh	84.3
4	Cleveland	81.0	4	San Antonio	82.6
5	Cincinnati	73.7	5	Jacksonville	81.0
6	Louisville	72.4	6	Denver	76.7
7	Nashville	61.5	7	Birmingham	67.9
8	Indianapolis	51.6	8	Sacramento	66.7
9	Chicago	46.4	9	Salt Lake City	66.4
10	Detroit	41.1	10	Richmond	53.3
11	Buffalo	39.5	11	Memphis	50.7
12	Milwaukee	15.3	12	Oklahoma City	50.3
13	Pittsburgh[a]	10.7	13	Milwaukee	15.3
14	Minneapolis[a]	9.0	14	Providence[b]	12.2

Note: The annual operating deficit is the portion of the total operating cost not covered by farebox revenues and certain miscellaneous revenues. This table indicates the portion of the annual operating deficit that is funded with local funds rather than federal or state funds. The financial information reflects all services provided by the transit system.
See Table 55 for the major public transit operators included in each metro area.

[a] The Minneapolis and Pittsburgh metro areas receive a majority of their funding from a statewide dedicated revenue source.

[b] Providence is served by a statewide public transit agency

Source: Federal Transit Administration, National Transit Database and SEWRPC.

Table 57
STATE FUNDING IN SUPPORT OF PUBLIC TRANSIT
Percent of Total Annual Operating Deficit Funded with State Funds: 2011

MIDWEST METRO AREAS			OTHER METRO AREAS		
1	Minneapolis[a]	87.8	1	Milwaukee	68.1
2	Milwaukee	68.1	2	Providence[b]	56.5
3	Pittsburgh[a]	67.3	3	Richmond	24.7
4	Buffalo	47.4	4	Memphis	19.3
5	Chicago	39.5	5	Charlotte	13.9
6	Detroit	38.5	6	Raleigh	12.2
7	Indianapolis	25.4	7	Jacksonville	6.1
8	Nashville	18.0	8	Sacramento	4.4
9	Louisville	4.2	9	Oklahoma City	3.8
10	Cincinnati	1.7	10	Portland	0.6
11	Cleveland	1.5	11	Birmingham	0.0
12	Columbus	1.3	12	Denver	0.0
13	Kansas City	0.3	12	Salt Lake City	0.0
14	St. Louis	0.1	12	San Antonio	0.0

Note: The annual operating deficit is the portion of the total operating cost not covered by farebox revenues and certain miscellaneous revenues. This table indicates the portion of the annual operating deficit that is funded with state funds rather than federal or local funds. The financial information reflects all services provided by the transit system.
See Table 55 for the major public transit operators included in each metro area.

[a] The Minneapolis and Pittsburgh metro areas receive a majority of their funding from a statewide dedicated revenue source.

[b] Providence is served by a statewide public transit agency

Source: Federal Transit Administration, National Transit Database and SEWRPC.

Table 58
CHANGE IN RIDERSHIP FOR PUBLIC TRANSIT
Percent Change in Annual Unlinked Passenger Trips: 2000-2013

MIDWEST METRO AREAS		
1	Nashville	45.1
2	Minneapolis	10.7
3	Chicago	8.3
4	Kansas City	6.6
5	Louisville	5.4
6	Buffalo	2.3
7	Columbus	-1.4
8	St. Louis	-10.1
9	Indianapolis	-10.5
10	Pittsburgh	-17.7
11	Cleveland	-23.3
12	Detroit	-23.9
13	Cincinnati	-36.5
14	Milwaukee	-40.3
	Average	-6.1

OTHER METRO AREAS		
1	Charlotte	118.0
2	Salt Lake City	78.0
3	Raleigh	49.3
4	Jacksonville	40.8
5	Denver	30.5
6	Providence	24.2
7	Birmingham	19.1
8	Portland	14.1
9	San Antonio	2.4
10	Sacramento	-2.9
11	Memphis	-12.3
12	Oklahoma City	-34.3
13	Milwaukee	-40.3
14	Richmond	-40.7
	Average	17.6

Note: See Table 55 for the major transit operators included in each metro area.

Source: Federal Transit Administration, National Transit Database and SEWRPC.

Table 59
CHANGE IN SERVICE HOURS FOR PUBLIC TRANSIT
Percent Change in Annual Revenue Service Hours: 2000-2013

MIDWEST METRO AREAS		
1	Minneapolis	22.4
2	St. Louis	21.7
3	Nashville	17.6
4	Columbus	16.3
5	Indianapolis	12.9
6	Chicago	8.6
7	Kansas City	2.1
8	Buffalo	-0.9
9	Louisville	-6.6
10	Cincinnati	-17.8
11	Milwaukee	-19.6
12	Pittsburgh	-31.1
13	Cleveland	-33.3
14	Detroit	-41.0
	Average	-3.5

OTHER METRO AREAS		
1	Charlotte	76.8
2	Raleigh	67.1
3	Birmingham	55.4
4	Salt Lake City	48.3
5	Providence	46.8
6	Denver	33.4
7	Sacramento	11.9
8	Jacksonville	9.3
9	San Antonio	6.6
10	Richmond	2.3
11	Portland	0.9
12	Oklahoma City	-7.4
13	Memphis	-12.9
14	Milwaukee	-19.6
	Average	22.8

Note: See Table 55 for the major transit operators included in each metro area.

Source: Federal Transit Administration, National Transit Database and SEWRPC.

Table 60
PUBLIC TRANSIT OPERATING EXPENDITURES PER CAPITA: 2013

MIDWEST METRO AREAS		
1	Chicago	$250.42
2	Pittsburgh	152.70
3	Cleveland	114.30
4	Buffalo	110.90
5	Milwaukee	94.70
6	St. Louis	92.17
7	Minneapolis	85.80
8	Detroit	60.72
9	Louisville	57.51
10	Columbus	51.06
11	Cincinnati	42.43
12	Kansas City	39.53
13	Nashville	39.31
14	Indianapolis	30.79
	Average	87.3

OTHER METRO AREAS		
1	Salt Lake City	$270.28
2	Denver	193.77
3	Portland	184.04
4	Milwaukee	94.70
5	San Antonio	77.70
6	Providence	69.35
7	Sacramento	63.73
8	Jacksonville	60.08
9	Charlotte	53.35
10	Memphis	40.37
11	Richmond	38.24
12	Birmingham	24.56
13	Raleigh	23.45
14	Oklahoma City	17.92
	Average	86.5

Note: See Table 55 for the major transit operators included in each metro area.
The per capita data are based on the population of the primary urbanized area within the metropolitan area.

Source: Federal Transit Administration, National Transit Database and SEWRPC.

Table 61
VEHICLE REVENUE HOURS OF PUBLIC TRANSIT PER CAPITA: 2013

MIDWEST METRO AREAS		
1	Chicago	1.43
2	Buffalo	0.93
3	Pittsburgh	0.93
4	Milwaukee	0.90
5	Minneapolis	0.80
6	Cleveland	0.77
7	St. Louis	0.75
8	Columbus	0.59
9	Louisville	0.57
10	Cincinnati	0.44
11	Nashville	0.41
12	Kansas City	0.37
13	Detroit	0.35
14	Indianapolis	0.32
	Average	0.68

OTHER METRO AREAS		
1	Salt Lake City	1.47
2	Denver	1.26
3	Portland	1.11
4	Milwaukee	0.90
5	San Antonio	0.82
6	Charlotte	0.63
7	Jacksonville	0.56
8	Providence	0.51
9	Sacramento	0.42
10	Richmond	0.38
11	Memphis	0.37
12	Birmingham	0.29
13	Raleigh	0.22
14	Oklahoma City	0.18
	Average	0.65

Note: See Table 55 for the major transit operators included in each metro area.
The per capita data are based on the population of the primary urbanized area within the metropolitan area.

Source: Federal Transit Administration, National Transit Database and SEWRPC.

Table 62
AIR QUALITY
Attainment Status of Ozone and Fine Particulate National Ambient Air Quality Standards (NAAQS)

MIDWEST METRO AREAS			
Area	8-Hour Ozone (2008 Standard)	8-Hour Ozone (1997 Standard)[a]	$PM_{2.5}$ (2006 Standard)
Buffalo	--	Nonattainment - Moderate	--
Chicago	Nonattainment - Marginal[b]	--	--
Cincinnati	Nonattainment - Marginal[b]	--	--
Cleveland	Nonattainment - Marginal[b]	--	Maintenance[b]
Columbus	Nonattainment - Marginal[b]	--	--
Detroit	--	--	Maintenance
Indianapolis	--	--	--
Kansas City	--	--	--
Louisville	--	--	--
Milwaukee	--	--	Maintenance[b]
Minneapolis	--	--	--
Nashville	--	--	--
Pittsburgh	Nonattainment - Marginal	Nonattainment - Moderate	Nonattainment - Moderate[b]
St. Louis	Nonattainment - Marginal[b]	Nonattainment - Moderate[b]	--

OTHER METRO AREAS			
Area	8-Hour Ozone (2008 Standard)	8-Hour Ozone (1997 Standard)[a]	$PM_{2.5}$ (2006 Standard)
Birmingham	--	--	Maintenance[b]
Charlotte	Nonattainment - Marginal[b]	--	--
Denver	Nonattainment - Marginal[b]	Nonattainment - Marginal[b]	--
Jacksonville	--	--	--
Memphis	Nonattainment - Marginal[b]	--	--
Milwaukee	--	--	Maintenance[b]
Oklahoma City	--	--	--
Portland	--	--	--
Providence	--	Nonattainment - Moderate	--
Raleigh	--	--	--
Richmond	--	--	--
Sacramento	Nonattainment - Severe[b]	Nonattainment - Severe[b]	Nonattainment - Moderate[b]
Salt Lake City	--	--	Nonattainment - Moderate[b]
San Antonio	--	--	--

[a] The 1997 8-hour ozone NAAQS has been revoked and replaced with the 2008 8-hour ozone NAAQS. Only those areas still in nonattainment of the 1997 NAAQS are shown.
[b] Only a portion(s) of the metropolitan area is included in the area that has this nonattainment or maintenance status designation.

NOTE: Nonattainment refers to the EPA designation given to areas not meeting the standard set by EPA for a particular pollutant. The marginal, moderate, and severe classifications indicate the level of severity of nonattainment. Maintenance refers to an area that previously was in nonattainment for a particular standard, but now consistently meets the standard.

Source: U.S. Environmental Protection Agency and SEWRPC.

Table 63
TOTAL POPULATION: 2013

	PRINCIPAL CITIES OF MIDWEST METRO AREAS	
1	Chicago	2,718,789
2	Indianapolis	838,425
3	Columbus	822,762
4	Minneapolis/St. Paul	467,082
5	Detroit	688,740
6	Nashville	634,465
7	Milwaukee	599,168
8	Kansas City	548,191
9	Louisville	609,908
10	Cleveland	390,106
11	St. Louis	318,416
12	Pittsburgh	305,838
13	Cincinnati	297,498
14	Buffalo	258,945
	Average	678,452

	PRINCIPAL CITIES OF OTHER METRO AREAS	
1	San Antonio	1,409,000
2	Jacksonville	842,588
3	Charlotte	792,849
4	Memphis	653,450
5	Denver	649,495
6	Portland	611,134
7	Oklahoma City	610,617
8	Milwaukee	599,168
9	Sacramento	479,671
10	Raleigh	431,897
11	Richmond	214,114
12	Birmingham	211,933
13	Salt Lake City	191,160
14	Providence	177,995
	Average	562,505

Source: U.S. Bureau of the Census Annual Estimates of Population.

Table 64
CHANGE IN POPULATION
Percent Change: 2000-2013

	PRINCIPAL CITIES OF MIDWEST METRO AREAS	
1	Nashville	16.3
2	Columbus	15.6
3	Indianapolis	7.2
4	Kansas City	4.6
5	Minneapolis/St. Paul	3.8
6	Milwaukee	0.4
7	Chicago	-6.1
8	Pittsburgh	-8.6
8	St. Louis	-8.6
10	Cincinnati	-10.2
11	Buffalo	-11.5
12	Cleveland	-18.5
13	Detroit	-27.6
--	Louisville	N/A
	Average	-3.3

	PRINCIPAL CITIES OF OTHER METRO AREAS	
1	Raleigh	56.4
2	Charlotte	46.6
3	San Antonio	23.1
4	Oklahoma City	20.6
5	Sacramento	17.9
6	Denver	17.1
7	Portland	15.5
8	Jacksonville	14.5
9	Richmond	8.3
10	Salt Lake City	5.2
11	Providence	2.5
12	Memphis	0.5
13	Milwaukee	0.4
14	Birmingham	-12.7
	Average	15.4

Source: U.S. Bureau of the Census Decennial Census and Annual Estimates of Population.

Table 65
POPULATION DENSITY
Persons Per Square Mile of Land Area: 2010

	PRINCIPAL CITIES OF MIDWEST METRO AREAS	
1	Chicago	11,844
2	Buffalo	6,468
3	Minneapolis/St. Paul	6,304
4	Milwaukee	6,190
5	Pittsburgh	5,518
6	St. Louis	5,158
7	Detroit	5,146
8	Cleveland	5,107
9	Cincinnati	3,812
10	Columbus	3,624
11	Indianapolis	2,270
12	Louisville	1,837
13	Kansas City	1,377
14	Nashville	1,265
	Average	4,709

	PRINCIPAL CITIES OF OTHER METRO AREAS	
1	Providence	9,676
2	Milwaukee	6,190
3	Sacramento	4,765
4	Portland	4,376
5	Denver	3,923
6	Richmond	3,415
7	San Antonio	2,880
8	Raleigh	2,826
9	Charlotte	2,457
10	Memphis	2,054
11	Salt Lake City	1,678
12	Birmingham	1,453
13	Jacksonville	1,100
14	Oklahoma City	956
	Average	3,411

Source: U.S Bureau of the Census Decennial Census.

Table 66
RACIAL/ETHNIC MINORITY POPULATION
Percent of Total Population: 2013

	PRINCIPAL CITIES OF MIDWEST METRO AREAS	
1	Detroit	91.1
2	Chicago	68.0
3	Cleveland	66.2
4	Milwaukee	63.1
5	St. Louis	56.6
6	Buffalo	55.4
7	Cincinnati	49.8
8	Kansas City	48.3
9	Nashville	43.7
10	Indianapolis	43.0
11	Minneapolis/St. Paul	42.6
12	Columbus	41.6
13	Pittsburgh	34.1
14	Louisville	32.4
	Average	52.6

	PRINCIPAL CITIES OF OTHER METRO AREAS	
1	Birmingham	78.3
2	San Antonio	73.9
3	Memphis	72.7
4	Sacramento	65.0
5	Providence	63.8
6	Milwaukee	63.1
7	Richmond	60.1
8	Charlotte	57.1
9	Raleigh	47.4
10	Denver	46.7
11	Jacksonville	45.8
12	Oklahoma City	44.5
13	Salt Lake City	34.8
14	Portland	28.6
	Average	55.8

Note: The minority population includes persons reported in the census as being of Hispanic origin and/or reporting their race as Black or African American, American Indian/Alaska Native, Asian, Native Hawaiian/Pacific Islander, some other race, or more than one race.

Source: U.S. Bureau of the Census American Community Survey.

Table 67
ADULTS WITH A DEGREE BEYOND HIGH SCHOOL
Percent of Total Adult Population: 2013

	PRINCIPAL CITIES OF MIDWEST METRO AREAS	
1	Minneapolis/St. Paul	50.6
2	Pittsburgh	48.2
3	Nashville	43.3
4	Chicago	41.0
5	Columbus	40.2
6	St. Louis	38.8
7	Cincinnati	38.6
8	Louisville	35.3
9	Kansas City	35.0
10	Indianapolis	34.6
11	Buffalo	34.5
12	Milwaukee	30.0
13	Cleveland	22.6
14	Detroit	19.4
	Average	36.6

	PRINCIPAL CITIES OF OTHER METRO AREAS	
1	Raleigh	56.1
2	Portland	53.2
3	Denver	49.6
4	Salt Lake City	49.5
5	Charlotte	48.0
6	Richmond	39.7
7	Sacramento	37.6
8	Jacksonville	37.0
9	Providence	34.4
10	Birmingham	34.2
11	Oklahoma City	33.7
12	San Antonio	33.0
13	Memphis	31.2
14	Milwaukee	30.0
	Average	40.5

Note: Data pertains to adults 25 years of age and over with an associate's, bachelor's, or graduate degree.

Source: U.S. Bureau of the Census American Community Survey.

Table 68
PER CAPITA INCOME: 2013

	PRINCIPAL CITIES OF MIDWEST METRO AREAS	
1	Minneapolis/St. Paul	$30,149
2	Chicago	28,548
3	Pittsburgh	28,176
4	Nashville	27,306
5	Louisville	27,240
6	Cincinnati	25,046
7	Columbus	24,367
8	Indianapolis	24,322
9	Kansas City	24,197
10	St. Louis	22,921
11	Buffalo	20,026
12	Milwaukee	19,371
13	Cleveland	17,545
14	Detroit	14,721
	Average	23,853

	PRINCIPAL CITIES OF OTHER METRO AREAS	
1	Denver	$33,995
2	Portland	32,915
3	Raleigh	31,145
4	Salt Lake City	31,065
5	Charlotte	30,955
6	Richmond	26,540
7	Oklahoma City	25,685
8	Jacksonville	25,521
9	Sacramento	24,531
10	San Antonio	22,414
11	Memphis	22,393
12	Providence	21,494
13	Birmingham	19,587
14	Milwaukee	19,371
	Average	26,258

Source: U.S Bureau of the Census American Community Survey.

Table 69
PERSONS BELOW THE POVERTY LEVEL
Percent of Total Population: 2013

	PRINCIPAL CITIES OF MIDWEST METRO AREAS	
1	Detroit	40.7
2	Cleveland	36.9
3	Buffalo	31.4
4	Cincinnati	31.3
5	Milwaukee	29.0
6	St. Louis	26.6
7	Chicago	23.0
8	Columbus	22.7
8	Pittsburgh	22.7
10	Indianapolis	21.6
11	Minneapolis/St. Paul	21.5
12	Kansas City	20.9
13	Nashville	18.2
14	Louisville	17.4
	Average	26.0

	PRINCIPAL CITIES OF OTHER METRO AREAS	
1	Providence	31.9
2	Birmingham	30.7
3	Milwaukee	29.0
4	Memphis	27.7
5	Richmond	25.7
6	Sacramento	23.4
7	San Antonio	19.6
8	Denver	18.7
9	Portland	18.2
10	Oklahoma City	17.5
11	Jacksonville	17.3
12	Salt Lake City	17.1
13	Charlotte	17.0
14	Raleigh	15.1
	Average	22.1

Source: U.S. Bureau of the Census American Community Survey.

Table 70
RATIO OF MINORITIES TO WHITES WITHOUT A HIGH SCHOOL DIPLOMA: 2013
(Percent of Minority Adults Without a High School Diploma or Equivalent Divided by Percent of White Adults Without a High School Diploma or Equivalent)

	PRINCIPAL CITIES OF MIDWEST METRO AREAS	
1	Minneapolis/St. Paul	9.4
2	Chicago	4.4
3	Kansas City	3.6
4	Milwaukee	2.9
5	Nashville	2.7
6	St. Louis	2.4
6	Cincinnati	2.4
8	Columbus	2.1
9	Indianapolis	2.0
9	Buffalo	2.0
11	Louisville	1.5
11	Cleveland	1.5
11	Pittsburgh	1.5
14	Detroit	1.0
	Average	2.8

	PRINCIPAL CITIES OF OTHER METRO AREAS	
1	Denver	9.4
2	Raleigh	7.3
2	Salt Lake City	7.3
4	San Antonio	5.8
5	Portland	5.4
6	Richmond	4.6
7	Charlotte	4.5
8	Memphis	4.0
9	Sacramento	3.2
10	Milwaukee	2.9
10	Oklahoma City	2.9
12	Birmingham	2.8
13	Providence	2.7
14	Jacksonville	1.8
	Average	4.6

Source: U.S. Bureau of the Census American Community Survey.

Table 71
RATIO OF WHITES TO MINORITIES WITH A BACHELOR'S DEGREE OR HIGHER: 2013
(Percent of White Adults with a Bachelor's Degree or Higher Divided by Percent of Minority Adults with a Bachelor's Degree or Higher)

	PRINCIPAL CITIES OF MIDWEST METRO AREAS	
1	Cincinnati	3.0
1	Milwaukee	3.0
3	St. Louis	2.8
4	Chicago	2.7
4	Minneapolis/St. Paul	2.7
6	Kansas City	2.4
6	Detroit	2.4
8	Cleveland	2.3
9	Buffalo	2.2
10	Indianapolis	2.1
11	Nashville	1.8
12	Pittsburgh	1.7
13	Louisville	1.6
13	Columbus	1.6
	Average	2.3

	PRINCIPAL CITIES OF OTHER METRO AREAS	
1	Providence	3.6
2	Birmingham	3.2
2	Richmond	3.2
4	Denver	3.1
5	Milwaukee	3.0
6	Memphis	2.8
7	San Antonio	2.5
8	Charlotte	2.1
9	Raleigh	2.0
9	Oklahoma City	2.0
11	Portland	1.9
12	Sacramento	1.8
12	Salt Lake City	1.8
14	Jacksonville	1.4
	Average	2.5

Source: U.S. Bureau of the Census American Community Survey.

Table 72
RATIO OF WHITE TO MINORITY PER CAPITA INCOME: 2013

	PRINCIPAL CITIES OF MIDWEST METRO AREAS	
1	Chicago	2.8
2	Minneapolis/St. Paul	2.7
3	St. Louis	2.3
4	Milwaukee	2.2
5	Cincinnati	2.1
5	Kansas City	2.1
7	Nashville	2.0
8	Buffalo	1.9
8	Louisville	1.9
10	Cleveland	1.8
10	Indianapolis	1.8
12	Columbus	1.7
13	Pittsburgh	1.6
13	Detroit	1.6
	Average	2.0

	PRINCIPAL CITIES OF OTHER METRO AREAS	
1	Memphis	2.8
2	Denver	2.7
3	Richmond	2.5
3	Providence	2.5
3	Charlotte	2.5
6	Birmingham	2.3
6	Raleigh	2.3
8	Milwaukee	2.2
8	San Antonio	2.2
10	Oklahoma City	2.1
10	Portland	2.1
12	Salt Lake City	2.0
12	Sacramento	2.0
14	Jacksonville	1.8
	Average	2.3

Source: U.S. Bureau of the Census American Community Survey.

Table 73
RATIO OF MINORITIES TO WHITES IN POVERTY: 2013
(Percent of Minority Population in Poverty Divided by Percent of White Population in Poverty)

	PRINCIPAL CITIES OF MIDWEST METRO AREAS	
1	Chicago	2.8
1	Kansas City	2.8
3	Buffalo	2.6
3	Milwaukee	2.6
5	Minneapolis/St. Paul	2.5
6	St. Louis	2.4
7	Indianapolis	2.3
8	Cincinnati	2.2
9	Nashville	2.1
10	Louisville	2.0
10	Columbus	2.0
12	Pittsburgh	1.9
13	Cleveland	1.8
14	Detroit	1.0
	Average	2.2

	PRINCIPAL CITIES OF OTHER METRO AREAS	
1	Memphis	3.5
2	Charlotte	3.2
3	Denver	2.8
3	Providence	2.8
5	Raleigh	2.7
6	Milwaukee	2.6
7	Oklahoma City	2.5
8	San Antonio	2.3
8	Richmond	2.3
10	Jacksonville	2.1
10	Portland	2.1
12	Birmingham	1.7
12	Sacramento	1.7
14	Salt Lake City	1.5
	Average	2.4

Source: U.S. Bureau of the Census American Community Survey.

Table 74
UNEMPLOYMENT RATE: 2013

	PRINCIPAL CITIES OF MIDWEST METRO AREAS	
1	Detroit	16.9
2	Chicago	10.5
3	Milwaukee	10.0
4	Cleveland	9.8
5	Buffalo	9.7
6	St. Louis	9.1
7	Louisville	8.1
8	Cincinnati	7.9
9	Indianapolis	7.7
10	Kansas City	7.6
11	Pittsburgh	6.9
12	Nashville	6.5
13	Columbus	6.2
14	Minneapolis/St. Paul	5.1
	Average	8.7

	PRINCIPAL CITIES OF OTHER METRO AREAS	
1	Providence	11.4
2	Memphis	10.8
3	Sacramento	10.3
4	Milwaukee	10.0
5	Birmingham	7.5
5	Jacksonville	7.2
7	Charlotte	7.1
8	Denver	7.0
9	Richmond	6.9
10	Portland	6.8
11	San Antonio	5.9
12	Raleigh	5.7
13	Oklahoma City	5.1
14	Salt Lake City	4.1
	Average	7.6

Source: U.S. Bureau of Labor Statistics Local Area Unemployment Statistics.

Table 75
CHANGE IN HOUSING UNITS
Percent Change: 2000-2013

	PRINCIPAL CITIES OF MIDWEST METRO AREAS	
1	Columbus	15.3
2	Nashville	14.5
3	Kansas City	8.8
4	Indianapolis	7.6
5	Minneapolis/St. Paul	4.8
6	Milwaukee	3.9
7	Chicago	2.7
8	St. Louis	-0.7
9	Detroit	-1.8
10	Cleveland	-4.2
11	Cincinnati	-4.8
12	Pittsburgh	-6.9
13	Buffalo	-10.6
--	Louisville	N/A
	Average	2.2

	PRINCIPAL CITIES OF OTHER METRO AREAS	
1	Raleigh	53.5
2	Charlotte	42.4
3	San Antonio	24.3
4	Jacksonville	19.6
5	Sacramento	16.6
5	Denver	16.6
7	Oklahoma City	14.4
8	Portland	13.0
9	Memphis	9.6
10	Richmond	7.6
11	Salt Lake City	4.6
12	Milwaukee	3.9
13	Providence	3.4
14	Birmingham	-0.4
	Average	17.7

Source: U.S. Bureau of the Census Decennial Census and Annual Estimates of Housing Units.

Table 76
HOUSING STRUCTURE TYPE
Multi-Family Housing as a Percent of Total Housing Units: 2013

	PRINCIPAL CITIES OF MIDWEST METRO AREAS	
1	Chicago	74.8
2	Buffalo	65.6
3	Cincinnati	60.6
4	Milwaukee	59.2
5	St. Louis	56.4
6	Pittsburgh	54.1
7	Cleveland	53.7
8	Minneapolis/St. Paul	52.9
9	Columbus	52.7
10	Nashville	45.0
11	Indianapolis	39.0
12	Kansas City	34.5
13	Detroit	33.8
13	Louisville	33.7
	Average	51.1

	PRINCIPAL CITIES OF OTHER METRO AREAS	
1	Providence	76.1
2	Milwaukee	59.2
3	Denver	53.3
4	Raleigh	51.8
5	Salt Lake City	51.0
6	Richmond	50.8
7	Charlotte	42.6
8	Portland	41.6
9	Birmingham	40.1
10	Sacramento	38.9
11	Memphis	38.3
12	San Antonio	35.8
13	Jacksonville	33.9
14	Oklahoma City	30.3
	Average	46.0

Source: U.S. Bureau of the Census American Community Survey.

Table 77
HOUSING VALUES
Median Value of Owner-Occupied Housing Units: 2013

	PRINCIPAL CITIES OF MIDWEST METRO AREAS	
1	Chicago	$211,400
2	Minneapolis/St. Paul	186,300
3	Nashville	163,700
4	Louisville	141,900
5	Columbus	123,700
6	Cincinnati	120,400
7	Indianapolis	116,400
8	Kansas City	114,100
9	Milwaukee	113,900
10	St. Louis	108,100
11	Pittsburgh	95,700
12	Buffalo	68,500
13	Cleveland	66,600
14	Detroit	36,800
	Average	119,107

	PRINCIPAL CITIES OF OTHER METRO AREAS	
1	Portland	$291,400
2	Denver	263,900
3	Salt Lake City	249,600
4	Sacramento	228,200
5	Raleigh	202,800
6	Richmond	189,200
7	Providence	171,800
8	Charlotte	165,900
9	Oklahoma City	136,900
10	Jacksonville	129,700
11	San Antonio	115,600
12	Milwaukee	113,900
13	Memphis	89,400
14	Birmingham	83,800
	Average	173,721

Note: Values are based upon the ACS respondent's estimate of how much the property (house and lot or condominium unit) would sell for if it were for sale.

Source: U.S. Bureau of the Census American Community Survey.

Table 78
AVERAGE TRAVEL TIME TO WORK IN MINUTES: 2013

	PRINCIPAL CITIES OF MIDWEST METRO AREAS	
1	Chicago	33.7
2	Detroit	26.8
3	Cleveland	24.8
4	St. Louis	24.2
5	Nashville	23.3
6	Milwaukee	22.8
7	Indianapolis	22.6
7	Minneapolis/St. Paul	22.6
9	Pittsburgh	22.5
10	Cincinnati	22.3
11	Louisville	21.6
12	Kansas City	21.4
12	Columbus	21.4
14	Buffalo	18.7
	Average	23.5

	PRINCIPAL CITIES OF OTHER METRO AREAS	
1	Portland	25.3
2	Sacramento	25.1
3	Denver	24.8
4	Jacksonville	24.3
5	Charlotte	24.1
6	San Antonio	23.4
7	Raleigh	22.9
8	Milwaukee	22.8
9	Richmond	22.7
10	Memphis	21.9
11	Birmingham	20.9
12	Oklahoma City	20.7
12	Providence	20.7
14	Salt Lake City	19.6
	Average	22.8

Source: U.S. Bureau of the Census American Community Survey.

Table 79
WORKERS WHO DRIVE TO WORK ALONE
Percent of Total Workers: 2013

	PRINCIPAL CITIES OF MIDWEST METRO AREAS	
1	Louisville	82.9
2	Indianapolis	81.2
3	Nashville	81.1
4	Columbus	79.3
5	Kansas City	78.8
6	Cincinnati	74.4
7	Milwaukee	71.1
8	Cleveland	70.6
9	Detroit	70.1
10	St. Louis	70.1
11	Buffalo	69.4
12	Minneapolis/St. Paul	66.0
13	Pittsburgh	58.1
14	Chicago	49.7
	Average	71.6

	PRINCIPAL CITIES OF OTHER METRO AREAS	
1	Oklahoma City	82.6
2	Jacksonville	81.4
3	Birmingham	79.5
4	Memphis	79.5
5	San Antonio	78.9
6	Raleigh	77.6
7	Charlotte	75.5
8	Milwaukee	71.1
9	Sacramento	70.1
10	Denver	69.8
11	Richmond	68.6
12	Salt Lake City	66.8
13	Providence	63.8
14	Portland	57.4
	Average	73.0

Source: U.S. Bureau of the Census American Community Survey.

Table 80
WORKERS WHO CARPOOL TO WORK
Percent of Total Workers: 2013

	PRINCIPAL CITIES OF MIDWEST METRO AREAS	
1	Detroit	11.9
2	Kansas City	11.0
3	Indianapolis	10.2
4	Buffalo	10.1
4	Milwaukee	10.1
6	Cleveland	9.8
7	St. Louis	9.2
8	Columbus	9.2
9	Minneapolis/St. Paul	8.7
10	Pittsburgh	8.6
11	Chicago	8.5
11	Nashville	8.5
13	Louisville	8.2
14	Cincinnati	6.5
	Average	9.3

	PRINCIPAL CITIES OF OTHER METRO AREAS	
1	Salt Lake City	13.1
2	Sacramento	12.6
3	Memphis	12.4
4	Birmingham	11.7
5	Oklahoma City	11.3
6	Richmond	11.3
7	San Antonio	11.1
8	Charlotte	10.7
9	Raleigh	10.5
10	Milwaukee	10.1
11	Portland	9.9
12	Jacksonville	9.1
13	Providence	8.4
14	Denver	8.3
	Average	10.8

Source: U.S. Bureau of the Census American Community Survey.

Table 81
WORKERS WHO TAKE PUBLIC TRANSPORTATION TO WORK
Percent of Total Workers: 2013

	PRINCIPAL CITIES OF MIDWEST METRO AREAS	
1	Chicago	27.8
2	Pittsburgh	14.8
3	Cleveland	10.8
4	St. Louis	10.7
4	Minneapolis/St. Paul	10.6
6	Buffalo	9.4
7	Milwaukee	8.8
8	Cincinnati	8.2
9	Detroit	8.1
10	Columbus	3.3
11	Kansas City	2.9
12	Louisville	2.7
13	Indianapolis	2.3
14	Nashville	1.9
	Average	8.7

	PRINCIPAL CITIES OF OTHER METRO AREAS	
1	Portland	11.9
2	Milwaukee	8.8
3	Denver	7.4
4	Providence	6.6
5	Richmond	5.4
5	Salt Lake City	5.3
7	Sacramento	4.4
8	Charlotte	4.0
9	San Antonio	3.6
10	Birmingham	3.4
11	Raleigh	2.5
12	Memphis	2.2
13	Jacksonville	1.6
14	Oklahoma City	0.7
	Average	4.8

Source: U.S. Bureau of the Census American Community Survey.

Table 82
WORKERS WHO BIKE TO WORK
Percent of Total Workers: 2013

	PRINCIPAL CITIES OF MIDWEST METRO AREAS	
1	Minneapolis/St. Paul	3.0
2	Pittsburgh	2.2
3	Buffalo	1.6
4	Chicago	1.4
4	Milwaukee	1.1
6	Columbus	1.0
7	St. Louis	0.7
8	Detroit	0.6
9	Kansas City	0.5
9	Louisville	0.5
11	Cincinnati	0.5
12	Indianapolis	0.4
12	Cleveland	0.3
14	Nashville	0.3
	Average	1.0

	PRINCIPAL CITIES OF OTHER METRO AREAS	
1	Portland	5.9
2	Salt Lake City	2.9
3	Richmond	2.5
4	Sacramento	2.2
5	Denver	2.0
6	Providence	1.7
7	Milwaukee	1.1
8	Jacksonville	0.4
9	Memphis	0.4
10	Charlotte	0.3
10	Oklahoma City	0.3
12	San Antonio	0.3
13	Birmingham	0.2
14	Raleigh	0.2
	Average	1.5

Source: U.S. Bureau of the Census American Community Survey.

Table 83
WORKERS WHO WALK TO WORK
Percent of Total Workers: 2013

	PRINCIPAL CITIES OF MIDWEST METRO AREAS	
1	Pittsburgh	11.3
2	Chicago	6.7
3	Buffalo	6.4
4	Minneapolis/St. Paul	5.4
5	Milwaukee	5.4
6	Cincinnati	5.1
7	St. Louis	4.4
8	Cleveland	4.2
9	Detroit	3.5
10	Columbus	2.8
11	Kansas City	2.4
12	Nashville	2.3
13	Louisville	2.1
14	Indianapolis	1.9
	Average	4.6

	PRINCIPAL CITIES OF OTHER METRO AREAS	
1	Providence	11.8
2	Richmond	6.2
3	Portland	6.1
4	Milwaukee	5.4
5	Salt Lake City	5.0
6	Denver	4.5
7	Sacramento	3.5
8	Raleigh	2.4
9	Birmingham	2.2
9	Charlotte	2.2
11	Memphis	2.2
12	San Antonio	1.7
13	Jacksonville	1.4
13	Oklahoma City	1.3
	Average	4.0

Source: U.S. Bureau of the Census American Community Survey.

Table 84
HOUSEHOLDS WITH NO VEHICLES
Percent of Total Households: 2013

	PRINCIPAL CITIES OF MIDWEST METRO AREAS	
1	Buffalo	29.2
2	Chicago	26.5
3	Cleveland	25.7
4	Detroit	25.4
5	Pittsburgh	23.2
6	St. Louis	22.8
7	Cincinnati	22.0
8	Milwaukee	18.3
9	Minneapolis/St. Paul	16.1
10	Louisville	11.4
11	Indianapolis	10.1
12	Kansas City	10.0
13	Columbus	9.5
14	Nashville	6.6
	Average	18.3

	PRINCIPAL CITIES OF OTHER METRO AREAS	
1	Providence	19.5
2	Milwaukee	18.3
3	Richmond	17.2
4	Birmingham	14.6
5	Portland	14.3
6	Memphis	12.4
7	Salt Lake City	11.3
8	Sacramento	11.0
9	Denver	10.8
10	San Antonio	9.4
11	Jacksonville	8.2
12	Charlotte	7.9
13	Oklahoma City	7.6
14	Raleigh	5.9
	Average	12.0

Source: U.S. Bureau of the Census American Community Survey.

Table 85
HOUSEHOLDS WITH NO VEHICLES OR ONE VEHICLE
Percent of Total Households: 2013

	PRINCIPAL CITIES OF MIDWEST METRO AREAS	
1	Buffalo	72.6
2	Detroit	71.4
3	Chicago	71.3
4	Cleveland	69.6
5	St. Louis	69.0
6	Pittsburgh	65.9
7	Cincinnati	64.1
8	Milwaukee	62.9
9	Minneapolis/St. Paul	56.9
10	Columbus	53.5
11	Kansas City	50.7
12	Indianapolis	50.6
13	Louisville	49.9
14	Nashville	47.3
	Average	61.1

	PRINCIPAL CITIES OF OTHER METRO AREAS	
1	Milwaukee	62.9
2	Providence	62.2
3	Birmingham	59.7
4	Richmond	57.9
5	Memphis	55.9
6	Portland	54.5
7	Denver	54.2
8	Sacramento	51.6
9	Salt Lake City	50.8
10	San Antonio	48.6
11	Jacksonville	47.9
12	Charlotte	47.8
13	Raleigh	47.5
14	Oklahoma City	44.4
	Average	53.3

Source: U.S. Bureau of the Census American Community Survey.

Table 86
RATIO OF CITY TO REMAINDER OF METRO AREA
RESIDENTS WITHOUT A HIGH SCHOOL DIPLOMA: 2013
(Percent of Principal City Adults Without a High School Diploma or Equivalent Divided by Percent of Remainder of Metro Area Adults Without a High School Diploma or Equivalent)

	MIDWEST METRO AREAS	
1	Milwaukee	3.19
2	Cleveland	2.63
3	Detroit	2.21
4	Kansas City	2.20
5	Buffalo	2.09
6	St. Louis	2.04
7	Minneapolis/St. Paul	1.97
8	Indianapolis	1.73
9	Cincinnati	1.67
10	Chicago	1.65
11	Columbus	1.41
12	Louisville	1.26
13	Nashville	1.18
14	Pittsburgh	1.09
	Average	1.88

	OTHER METRO AREAS	
1	Milwaukee	3.19
2	Providence	1.97
3	Oklahoma City	1.69
4	Denver	1.59
5	Sacramento	1.58
6	Richmond	1.56
7	Memphis	1.45
8	San Antonio	1.41
9	Jacksonville	1.40
10	Birmingham	1.30
11	Salt Lake City	1.28
12	Portland	1.03
13	Raleigh	1.00
14	Charlotte	0.91
	Average	1.53

Source: U.S. Bureau of the Census American Community Survey.

Table 87
RATIO OF REMAINDER OF METRO AREA TO CITY
RESIDENTS WITH A BACHELOR'S DEGREE OR HIGHER: 2013
(Percent of Remainder of Metro Area Adults with a Bachelor's Degree or Higher Divided by Percent of Principal City Adults with a Bachelor's Degree or Higher)

MIDWEST METRO AREAS		
1	Detroit	2.45
2	Cleveland	1.98
3	Milwaukee	1.66
4	Kansas City	1.31
5	Buffalo	1.25
6	Indianapolis	1.19
7	St. Louis	1.02
8	Columbus	1.01
9	Chicago	1.00
10	Louisville	0.98
11	Cincinnati	0.97
12	Minneapolis/St. Paul	0.87
13	Nashville	0.80
14	Pittsburgh	0.79
	Average	1.23

OTHER METRO AREAS		
1	Milwaukee	1.66
2	Birmingham	1.13
3	Jacksonville	1.13
4	San Antonio	1.10
5	Memphis	1.08
6	Sacramento	1.06
7	Oklahoma City	1.04
8	Providence	0.99
9	Richmond	0.89
9	Denver	0.88
11	Raleigh	0.82
12	Charlotte	0.67
12	Portland	0.67
14	Salt Lake City	0.65
	Average	0.98

Source: U.S. Bureau of the Census American Community Survey.

Table 88
RATIO OF REMAINDER OF METRO AREA TO CITY
PER CAPITA INCOME: 2013
(Remainder of Metro Area Per Capita Income Divided by Principal City Per Capita Income)

MIDWEST METRO AREAS		
1	Detroit	2.08
2	Milwaukee	1.81
3	Cleveland	1.78
4	Buffalo	1.50
5	St. Louis	1.33
6	Kansas City	1.32
7	Columbus	1.30
8	Indianapolis	1.24
9	Cincinnati	1.18
10	Minneapolis/St. Paul	1.16
11	Chicago	1.13
12	Pittsburgh	1.07
13	Louisville	1.04
13	Nashville	1.04
	Average	1.36

OTHER METRO AREAS		
1	Milwaukee	1.81
2	Birmingham	1.44
2	Providence	1.44
4	San Antonio	1.26
5	Jacksonville	1.24
5	Memphis	1.24
7	Sacramento	1.19
8	Richmond	1.14
9	Oklahoma City	1.04
10	Raleigh	1.02
11	Denver	0.99
12	Portland	0.90
13	Charlotte	0.86
14	Salt Lake City	0.84
	Average	1.17

Source: U.S. Bureau of the Census American Community Survey.

Table 89
RATIO OF CITY TO REMAINDER OF METRO AREA
PERSONS IN POVERTY: 2013
(Percent of Principal City Population in Poverty Divided by Percent of Remainder of Metro Area Population in Poverty)

MIDWEST METRO AREAS		
1	Milwaukee	3.67
2	Cleveland	3.45
3	Detroit	3.28
4	Buffalo	3.14
5	Minneapolis/St. Paul	2.87
6	Cincinnati	2.65
7	Columbus	2.49
8	St. Louis	2.40
9	Kansas City	2.30
10	Chicago	2.09
11	Indianapolis	2.06
12	Pittsburgh	1.99
13	Louisville	1.66
14	Nashville	1.63
	Average	2.55

OTHER METRO AREAS		
1	Milwaukee	3.67
2	Providence	2.61
3	Memphis	2.23
3	Richmond	2.23
5	Birmingham	2.22
6	Denver	1.85
7	San Antonio	1.80
8	Jacksonville	1.59
9	Sacramento	1.58
10	Portland	1.54
11	Salt Lake City	1.49
12	Raleigh	1.45
12	Oklahoma City	1.38
14	Charlotte	1.25
	Average	1.92

Source: U.S. Bureau of the Census American Community Survey.

APPENDIX B
ADOPTED COUNTY AND LOCAL COMPREHENSIVE PLANS IN SOUTHEASTERN WISCONSIN

INTRODUCTION

Many communities in Southeastern Wisconsin have a long history of planning to guide growth and development in their jurisdictions, particularly the more urban communities. Some such plans have focused exclusively on future land use and other "master or comprehensive" plans have also addressed community facilities and public utilities. Historically, State law authorized, but did not require, local planning, and State law granted broad flexibility as to the contents of such plans.

State law concerning land use planning was changed in 1999 when the Wisconsin Legislature enacted legislation that effectively requires communities to adopt a comprehensive plan if they are to enact and exercise zoning, land division, and official mapping ordinances. Further, those zoning, land division, and official mapping ordinances must be consistent with the comprehensive plan. This comprehensive planning law, sometimes referred to as the State's "Smart Growth" law, applies to every city, village, town, and county that administers a zoning, land division, or official map ordinance. As a result, almost every county and local government in the Region has adopted a comprehensive plan consistent with State guidelines to comply with the law.

The Region

The Southeastern Wisconsin Region consists of Kenosha, Milwaukee, Ozaukee, Racine, Walworth, Washington, and Waukesha Counties. Exclusive of Lake Michigan, these counties have a total area of 2,689 square miles, or about 5 percent of the total area of Wisconsin. These counties, however, account for about 36 percent of the State's population, about 34 percent of all jobs in the State, and about 37 percent of the wealth in the State as measured by equalized value. As of 2014, the Region contained 154 local units of government, not including school and other special-purpose districts, all of which participate in the work of the Commission.

The regional plan for Southeastern Wisconsin contains extensive inventory information relating to existing land use, natural resources, and population and employment information and projections. The regional plan also contains land use, transportation, housing, and other plan elements that provide an areawide, or metropolitan, planning framework for the preparation of county and local comprehensive plans. County and local plans should refine and detail the recommendations set forth in the regional plan.

Purpose of Appendix and Scheme of Presentation

This appendix was prepared in conjunction with VISION 2050, the Commission's effort to update and extend its regional land use and transportation plans to a design year of 2050. VISION 2050 will replace the design year 2035 regional land use and transportation plans that were adopted by the Commission in 2006. This appendix to VISION 2050 is intended to document and summarize current local government

comprehensive plans, and to provide for their consideration in preparing the new year 2050 regional land use and transportation plan. There are three sections of this appendix:

- Introduction
- Comprehensive Planning Law in Wisconsin
- Adopted Comprehensive Plans in Southeastern Wisconsin

This appendix draws upon the comprehensive plan inventory and analysis work carried out under the regional housing plan,[44] which was adopted by the Regional Planning Commission in March, 2013.

COMPREHENSIVE PLANNING LAW IN WISCONSIN

The State comprehensive planning law requires local government general zoning, shoreland zoning, subdivision, and official mapping ordinances to be consistent with local comprehensive plans.

The State comprehensive planning law provides a framework for the development, adoption, implementation, and amendment of comprehensive plans by regional planning commissions and county, city, village, and town units of government. The law is set forth in Section 66.1001 of the *Wisconsin Statutes*. The law has been amended periodically, most recently in April 2012 through the enactment of 2011 Wisconsin Act 257. The law does not require the adoption of county and local comprehensive plans. Section 66.1001(3) of the *Statutes*, however, requires that county and local general zoning ordinances; county, city, and village shoreland zoning ordinances; county and local subdivision ordinances; and local official mapping ordinances enacted or amended on or after January 2, 2010, be consistent with the comprehensive plan adopted by the unit of government enacting or amending such ordinances.

Comprehensive Plan Elements

The comprehensive planning law requires that the following nine elements be addressed in a comprehensive plan:

- Issues and Opportunities
- Housing
- Transportation
- Utilities and Community Facilities
- Agricultural, Natural, and Cultural Resources
- Economic Development
- Intergovernmental Cooperation
- Land Use
- Implementation

Section 66.1001(2) of the *Statues* set forth the specific contents required for each of the nine comprehensive plan elements.

[44] *As documented in SEWRPC Planning Report No. 54,* A Regional Housing Plan for Southeastern Wisconsin: 2035, *March 2013.*

Public Participation
Section 66.1001(4)(a) of the *Statutes* requires that the governing body adopt written public participation procedures, designed to "foster public participation, including open discussion, communication programs, information services, and public meetings for which advance notice has been provided, in every stage of the preparation of a comprehensive plan." Proposed plan elements must be widely distributed, and opportunities must be provided for written comments to be submitted by the public to the governing body. A procedure for the governing body to respond to those comments must be identified. Public participation procedures must also be adopted for amendments to a comprehensive plan.

Plan Oversight
Preparation of a comprehensive plan may be guided by the governing body, the local plan commission, or an advisory committee created by the governing body to oversee preparation of the plan. The public participation plan adopted by the governing body should specify the roles of staff, consultants, and local boards and committees in preparing the comprehensive plan or a plan amendment.

Plan Adoption
A comprehensive plan must be adopted by an ordinance enacted by the governing body. All nine elements must be adopted simultaneously. At least one public hearing, preceded by a Class 1 notice published at least 30 days before the hearing, must be held by the unit of government prior to adopting the plan. Section 66.1001(4)(b) of the *Statues* requires that an adopted comprehensive plan, or an amendment to the plan, be sent to all governmental units within and adjacent to the county or local government preparing a plan; the Wisconsin Department of Administration; the regional planning commission; and the public library that serves the area in which the county or local government is located.

Plan Implementation and Consistency Requirement
2009 Wisconsin Act 372 changed the consistency provisions of the comprehensive planning law. Section 66.1001(3) now requires that general zoning, shoreland zoning, subdivision, and official mapping ordinances enacted or amended on or after January 1, 2010, must be consistent with the comprehensive plan (including any plan amendments) adopted by the governing body of the unit of government. In 2010, the Wisconsin Legislature amended the comprehensive planning law to include the following definition: "'Consistent with' means furthers or does not contradict the objectives, goals, and policies contained in the comprehensive plan" (Section 66.1001 (1) (am)).

More specifically, Section 66.1001(3) of the *Statutes* requires that the following ordinances be consistent with a unit of government's comprehensive plan:

- Official mapping enacted or amended under Section 62.23(6) of the *Statutes*
- Subdivision ordinances enacted or amended under Section 236.45 or 236.46 of the *Statutes*
- County zoning ordinances enacted or amended under Section 59.69 of the *Statutes*

In 2010, the State Legislature amended the comprehensive planning law to include the following definition: "'Consistent with' means furthers or does not contradict the objectives, goals, and policies contained in the comprehensive plan."

- City or village zoning ordinances enacted or amended under Section 62.23(7) of the *Statutes*

- Town zoning ordinances enacted or amended under Section 60.61 or 60.62 of the *Statutes*

- Zoning of shorelands or wetlands in shorelands under Section 59.692 (for counties), 61.351 (for villages), and 62.231 (for cities)

Zoning Ordinances and Maps

Beginning in January 2010, county and local governments must use their comprehensive plan as a guide to ensure that implementation of zoning, subdivision, and official mapping ordinances adopted by the governing body (county board, common council, village board, or town board) do not conflict with the recommendations of the comprehensive plan adopted by the governing body. The county or local government body has the option of amending its comprehensive plan if a conflict is found or would result from a proposed action. Plan amendments should follow the guidelines presented in the implementation element of the unit of government's comprehensive plan.

The zoning ordinance is one of the primary implementation tools of a comprehensive plan. Zoning ordinances regulate the use of property, lot size, development intensity, site planning, open space provision, and natural resource protection.

The zoning ordinance is typically one of the primary implementation tools of a comprehensive plan. As such, it should substantially reflect and promote achievement of plan goals, objectives, policies, and programs. A zoning ordinance and the accompanying map are a legal means for both guiding and controlling development within a county or local government, so that an orderly and desirable pattern of land use can be achieved by the plan design year that conforms to the plan and balances individual property rights with community interests and goals. The zoning ordinance contains provisions for regulating the use of property, size of lots, intensity of development, site planning, provision of open space, and protection of natural resources.

The appropriate county board committee or city, village, or town plan commission should initiate appropriate amendments to the zoning ordinance text and map to make it consistent with the concepts and proposals included in the comprehensive plan following adoption of the plan by the governing body. Particular focus should be given to the land use plan map in the land use element. One option would be to amend the zoning map to bring it into strict conformance with the land use plan map soon after the comprehensive plan is adopted; however, this approach has disadvantages. These disadvantages include zoning that could potentially accommodate "leapfrog" urban development (enclaves of urban development separated by agricultural or other urban uses), and/or development in areas that have not yet been provided with sanitary sewer, water, streets, or other necessary services. Another disadvantage is the potential creation of nonconforming uses in areas that are already developed, where the plan proposes redevelopment for another use (for example, an area zoned and historically used for industrial uses that is proposed to be redeveloped for residential or mixed use). Conversely, the zoning map should not permit the establishment of new uses that are not consistent with the land use plan map or other recommendations of the comprehensive plan, such as allowing residential development to occur in areas planned for commercial or industrial use.

The following approach may be used to update zoning maps following the adoption of a comprehensive plan to avoid these potential problems:

- Areas of existing development (other than agricultural uses) should, over time, be placed in a zoning district that is consistent with the land use designation shown on the land use plan map. The implementation element of the comprehensive plan should include a list of categories shown on the land use plan map and the corresponding zoning district(s). The plan could include a map that indicates the parcels that will be rezoned over time to bring the zoning map into conformance with the land use plan map. Rezonings to achieve consistency between the zoning map and the comprehensive plan can then be considered if requested by a property owner. The county or local government can also initiate a rezoning to achieve consistency.

- Areas that are currently in agricultural use, and zoned for such use, but shown on the land use plan map for future urban development should remain in agricultural zoning. Rezonings that would accommodate residential, commercial, industrial, or other urban uses can be undertaken when a property owner submits a request for rezoning that specifies a proposed use of the property that is consistent with the comprehensive plan and other applicable ordinance requirements contingent on the availability of basic public utilities and services. An "urban reserve area" map can be included in the comprehensive plan to indicate parcels that are planned to be converted to urban use during the planning period. Another option would be to develop a series of land use plan phasing maps to provide a time frame for consideration of future rezoning from agricultural to urban use. Each "phasing" map would identify a time period during which a property owner could request a rezoning to a zoning district consistent with the land use plan category in specified areas within the county or local government.

- Areas that are currently in agricultural use and designated for agricultural use on the land use plan map should be zoned agricultural.

- Primary environmental corridors should be placed, and other natural resources areas, including secondary environmental corridors and isolated natural resource areas, may be placed, in a conservancy or other appropriate zoning district (such as a park or rural residential zoning district). Generally, wetlands and surface waters should be placed in a lowland conservancy zoning district and woodlands, steep slopes, and other components of upland environmental corridors should be placed in an upland conservancy district. Farmed wetlands located in an agricultural zoning district should remain in such zoning as long as the wetland is farmed. Wetlands identified as farmed wetlands on the Wisconsin Wetlands Inventory should be placed in a lowland conservancy district at the time farming activity of the wetland parcel ceases and an application for residential or other urban development of the parcel is approved by the unit of government with zoning authority. In addition, certain areas of environmental corridors and isolated natural resource areas will likely be further regulated by floodplain and shoreland ordinances.

These are general recommendations and should be refined by individual counties and local governments, in consultation with the county or municipal attorney, governing body, planning commission, and planning staff.

Shoreland and Floodplain Zoning Ordinances

Shoreland and floodplain ordinances enforce the requirements of Chapter NR 115 (shoreland rules for counties), NR 116 (floodplain regulations for counties, cities, and villages), and NR 117 (shoreland-wetland rules for cities and villages) of the *Wisconsin Administrative Code*. Shorelands are those areas lying within 1,000 feet of the shoreline, referred to as the ordinary high-water mark (OHWM), of navigable lakes, ponds, or flowages; or within 300 hundred feet of the shoreline of navigable rivers or streams. The shoreland regulatory area extends to the landward edge of the floodplain if the 1-percent-annual-probability (100-year recurrence interval) floodplain extends more than 300 feet from a river or stream.

The goal of shoreland zoning is to protect water quality, fish and wildlife habitat, recreation, and natural beauty.

The goal of shoreland zoning is to protect water quality, fish and wildlife habitat, recreation, and natural beauty. To accomplish this, the statewide standards for county shoreland zoning ordinances in NR 115 create a 35-foot vegetated buffer strip and a 75-foot building setback around navigable waters, control the intensity of development around navigable waters, and protect wetlands within shorelands. Shoreland areas in unincorporated areas (towns) are regulated by the county shoreland zoning ordinance.

NR 117 requires cities and villages to protect wetlands of five acres or larger located entirely or partially within the shoreland area. Under 2013 Wisconsin Act 80,[45] city and village ordinances must also require a 50-foot building setback and a 35-foot vegetated buffer strip from navigable waters in areas annexed by the city or village after May 7, 1982, or incorporated after April 30, 1994, if the area annexed or incorporated was subject to a county shoreland zoning ordinance prior to the annexation or incorporation. Shoreland areas that were part of a city or village prior to 1982 are subject only to NR 117 requirements (shoreland-wetland zoning).

The goal of Wisconsin's floodplain management program is to protect people and property from unwise development in the floodplain, and to minimize the costs associated with floods.

NR 116 sets forth regulations for areas that have been or may be covered by floodwaters during the regional flood. The regional flood is defined as a flood with a 1 percent chance of being equaled or exceeded in any given year, which is also referred to as the 100-year flood. The goal of Wisconsin's floodplain management program is to protect people and property from unwise development in the floodplain, and to minimize the costs associated with floods. These costs include rescue, relief, and clean-up operations; temporary housing for displaced residents; and business interruption. Floodplain regulations are enforced by counties for unincorporated areas (towns) and by cities and villages for areas within their boundaries. Typically floodplain regulations are adopted as part of a county, city, or village zoning ordinance; although they may be adopted as a separate ordinance or as part of a combined shoreland and floodplain ordinance.

Land Division Ordinances

A land division ordinance is a public law that regulates the division of land into smaller parcels. Much of the form and character of a community is determined by the quality of its land divisions and the standards that are built into them. Land division ordinances provide for public oversight of the creation of new parcels and help ensure:

- New development is appropriately located
- Lot size minimums specified in zoning ordinances are observed

[45] *Codified in Sections 62.233 and 61.353 of the* Wisconsin Statutes *for cities and villages, respectively.*

- Arterial street right-of-ways are appropriately dedicated or reserved
- Access to arterial streets and highways is limited in order to preserve the traffic-carrying capacity and safety of such facilities
- Adequate land for parks, drainageways, and other open spaces is appropriately located and preserved
- Street, block, and lot layouts are appropriate
- Adequate public improvements are provided
- Public access is provided to navigable lakes and streams

Land division ordinances can be enacted by cities, villages, and towns. Counties may adopt land division ordinances to regulate land divisions in unincorporated areas (towns). Cities and village also have "extraterritorial" plat approval jurisdiction over subdivisions proposed near their municipal boundaries.

Land division ordinances establish basic design standards and improvements for new land divisions.

Chapter 236 of the *Wisconsin Statutes* sets forth general requirements governing the division of land, including, among others, surveying and monumenting requirements, necessary approvals, recording procedures, and requirements for amending or changing subdivision maps. The *Statutes* also grant authority to county and local governments to review subdivision maps, commonly referred to as plats, with respect to local ordinances. Chapter 236 further authorizes county and local governments to adopt their own land division ordinances, which may, to the extent permitted by Chapter 236, be more restrictive than State requirements. County and local land division ordinances often establish basic design standards and improvements required in new land divisions, such as:

- The width of street right-of-ways and pavement
- The installation of curbs, gutters, sidewalks, street lamps, street trees, and stormwater management facilities
- The dedication of land or fees-in-lieu of dedication for public parks, streets, or trails

Official Mapping Ordinances

Official mapping authority, granted under Section 62.23(6) of the *Wisconsin Statutes* to cities, villages, and towns with village powers, is an important but not widely used comprehensive plan implementation tool. An official map, which must be adopted as an ordinance by the governing body, is an effective and efficient device to reserve land for future public use, and to ensure that such lands are dedicated to the public when an area is subdivided. An official map is intended to identify the location and width of existing and proposed public streets, highways, parkways, drainageways, and airports; and the location and extent of railway right-of-ways, public transit facilities, parks, and playgrounds. An official map for a city or village may include those areas within its extraterritorial plat approval jurisdiction. Counties do not have authority under State law to adopt official mapping ordinances. Counties may consider the development of a county official right-of-way map to show proposed widenings of existing streets and highways and to show the location and width of proposed future streets and highways as identified in the transportation element of their comprehensive plan.

Official maps are used to reserve land for future public uses, such as streets, highways, public transit facilities, parks, and playgrounds.

The comprehensive planning law requires comprehensive plans to be reviewed and updated at least once every 10 years.

Plan Updates and Amendments
The comprehensive planning law requires that adopted comprehensive plans be reviewed and updated at least once every 10 years. County and local governments may choose to update the plan more frequently. While there is no limit on the number or frequency of amendments made to a comprehensive plan, the public participation, public hearing, and plan adoption procedures required for a full comprehensive plan also apply to plan amendments.

COMPREHENSIVE PLANS IN SOUTHEASTERN WISCONSIN

The maps in this appendix do not reflect amendments to comprehensive plan land use plan maps made subsequent to the date noted on each appendix map.

Map B.1 shows that almost every city, village, and town in the Region has adopted a comprehensive plan per State legislation. Six of the seven counties in the Region (all except Milwaukee County) have also adopted comprehensive plans.[46] These six counties, numerous local governments within each county, and the regional planning commission participated in cooperative multi-jurisdictional planning efforts. These cooperative efforts allowed county and local governments to meet the State comprehensive planning law requirements in an efficient and cost-effective manner through data sharing and other planning assistance. They also encouraged the development of planning documents with consistent land use classification, policy development, and mapping within the Region.

The focus of this section is the land use element of local government comprehensive plans. The land use element, including the land use plan map, is one of the key components of a comprehensive plan because of the consistency requirement of the State comprehensive planning law.

Comprehensive Plan Land Use Maps
The land use plan in a community's comprehensive plan must be consistent with other community land use control ordinances, including zoning ordinances, and together they establish the location and density of development in a community. Together, the land use plans and zoning ordinances of the communities and counties of the Region influence and guide the overall development pattern of the Region.

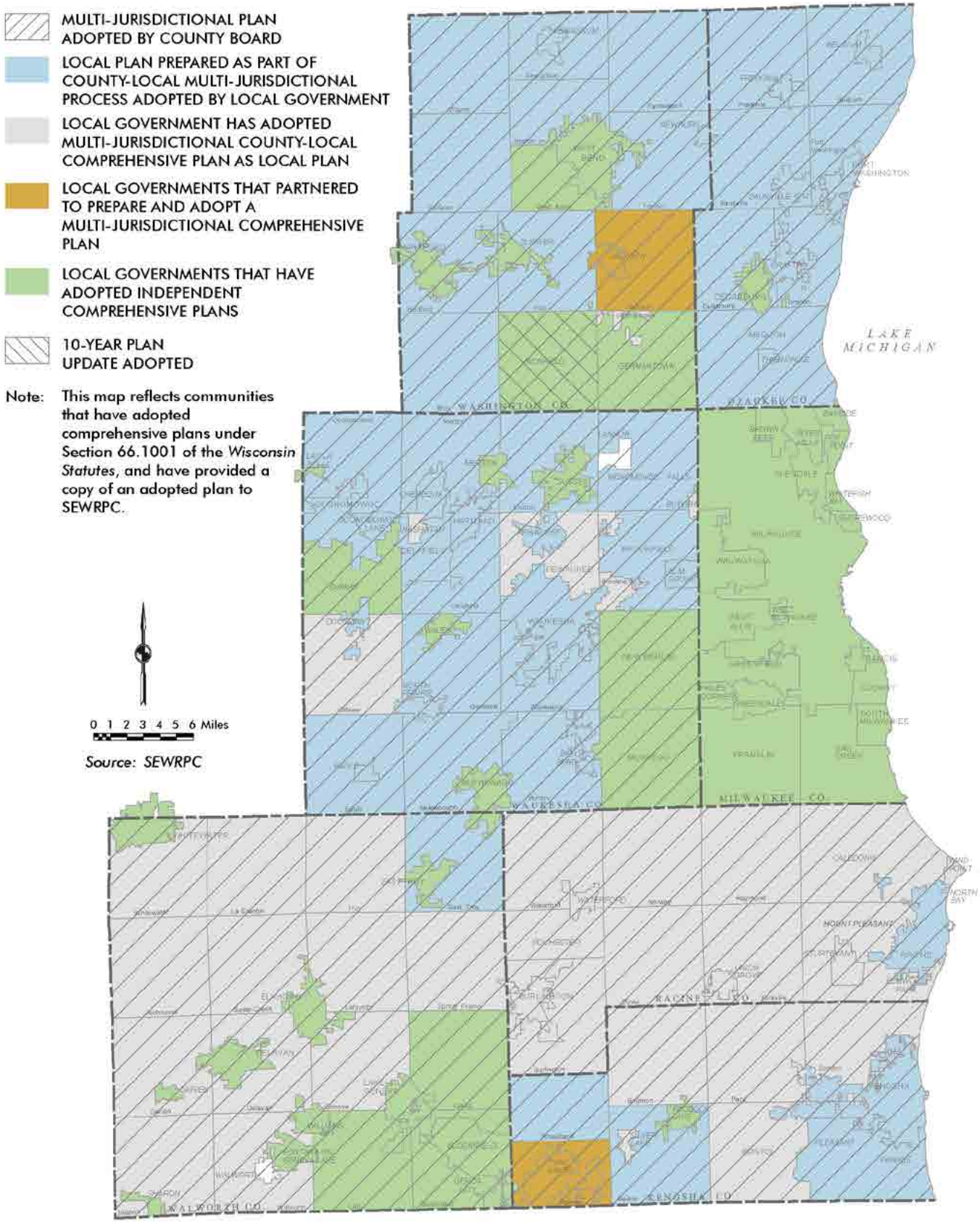
This section includes a set of comprehensive plan land use plan maps for each county in the Region (Maps B.2 through B.14). Each set includes the land use plan map from the comprehensive plan adopted by the county[47] (with the exception of Milwaukee County) and land use plan maps adopted as part of comprehensive plans by sewered communities[48] within each respective county. The adopted county maps typically include planned land uses from

[46] Milwaukee County has not prepared a comprehensive plan because it does not administer a zoning, subdivision, or official mapping ordinance.

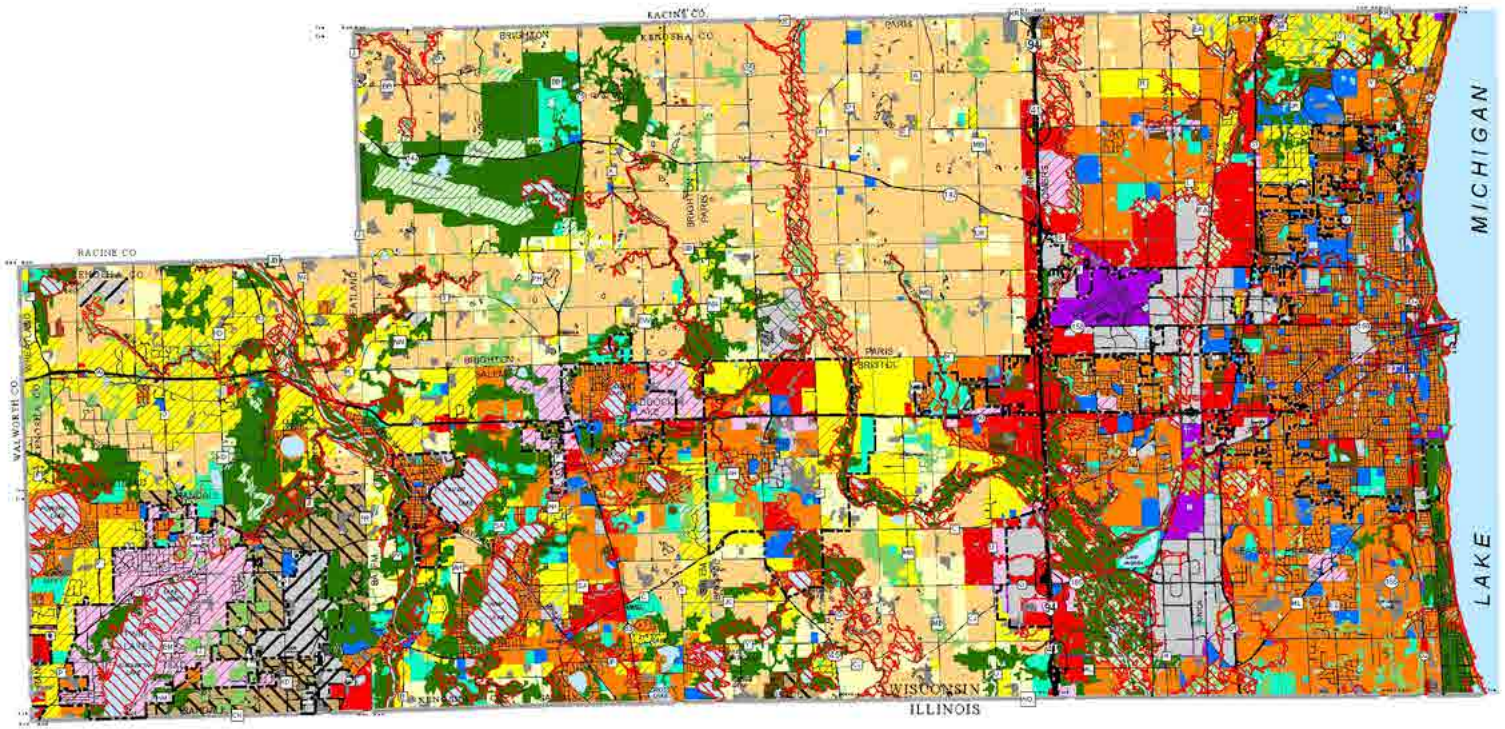
[47] Map B.9 includes a compilation of the land use map adopted by the Walworth County Board for unincorporated areas (towns) and the land use plan maps adopted as part of city and village comprehensive plans within the incorporated portions of Walworth County.

[48] The analysis was limited to focus on sewer service areas that are projected to support significant employment. Consequently, the few sewer service areas that support largely residential development only are not included.

Map B.1
Comprehensive Plan Status in the Region: 2014

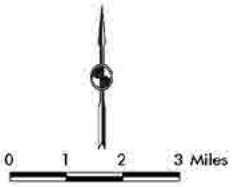


Map B.2
Land Use Plan Map for Kenosha County: 2035



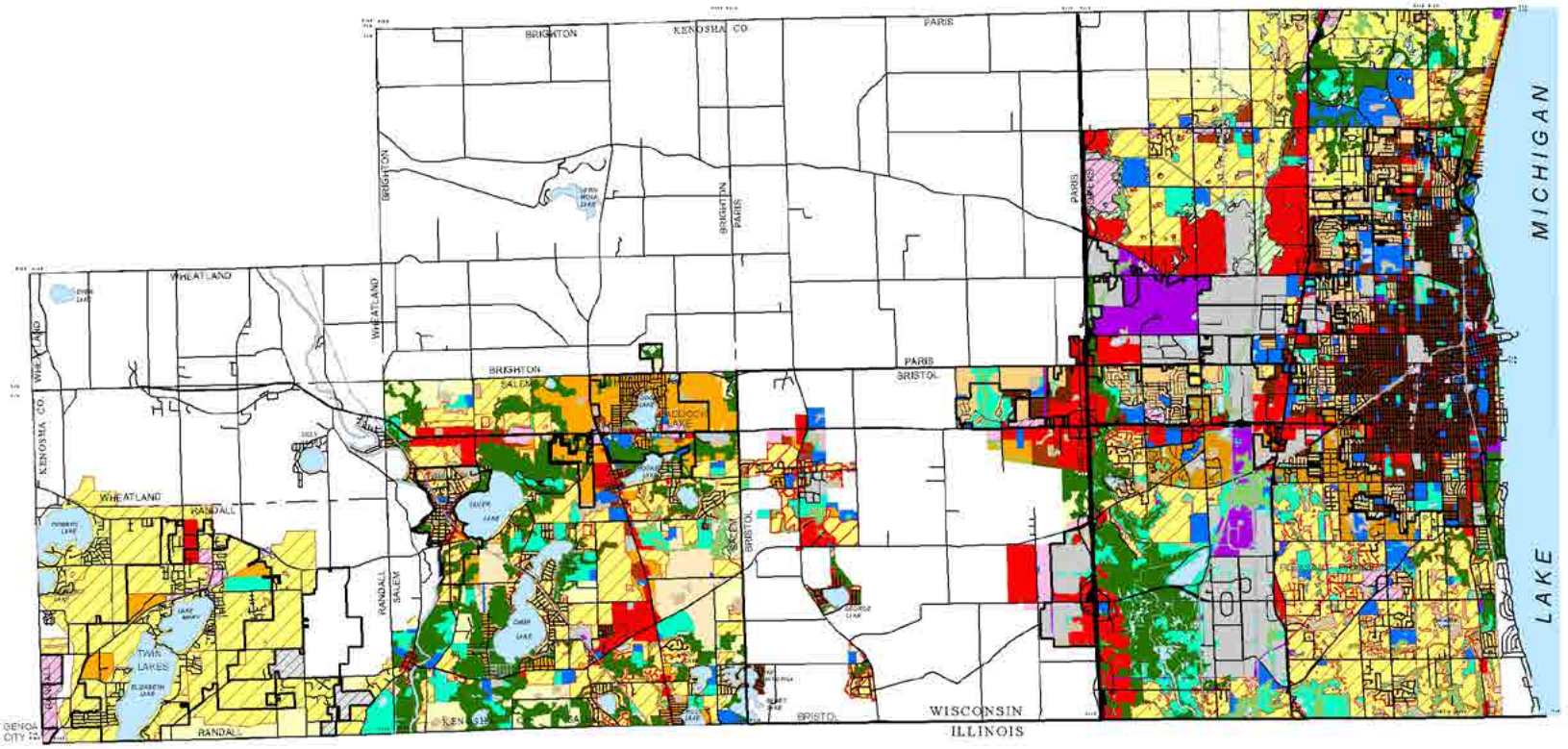
- FARMLAND PROTECTION
- GENERAL AGRICULTURAL AND OPEN LAND
- RURAL-DENSITY RESIDENTIAL
- AGRICULTURAL AND RURAL-DENSITY RESIDENTIAL
- SUBURBAN-DENSITY RESIDENTIAL
- MEDIUM-DENSITY RESIDENTIAL
- HIGH-DENSITY RESIDENTIAL
- MIXED USE
- COMMERCIAL
- OFFICE/PROFESSIONAL SERVICES
- INDUSTRIAL
- BUSINESS/INDUSTRIAL PARK
- GOVERNMENTAL AND INSTITUTIONAL
- PARK AND RECREATIONAL
- STREET AND HIGHWAY RIGHT-OF-WAY
- OTHER TRANSPORTATION, COMMUNICATION, AND UTILITY
- EXTRACTIVE
- LANDFILL
- PRIMARY ENVIRONMENTAL CORRIDOR
- SECONDARY ENVIRONMENTAL CORRIDOR
- ISOLATED NATURAL RESOURCE AREA
- OTHER CONSERVANCY LAND TO BE PRESERVED
- NONFARMED WETLAND OUTSIDE ENVIRONMENTAL CORRIDOR, ISOLATED NATURAL RESOURCE AREA, AND OTHER CONSERVANCY LAND TO BE PRESERVED
- SURFACE WATER
- FARMED WETLAND (OVERLAY)
- 100-YEAR FLOODPLAIN (OVERLAY)

Note: This map was adopted by the Kenosha County Board on April 20, 2010, as part of the Multi-Jurisdictional Comprehensive Plan for Kenosha County. Land use plan maps adopted by cities, towns and villages may differ from this map.



Source: *Wisconsin Department of Natural Resources, Federal Emergency Management Agency, Kenosha County, Local Governments, and SEWRPC*

Map B.3
Land Use Plan Maps Adopted as Part of Comprehensive Plans by Sewered Communities in Kenosha County: 2035



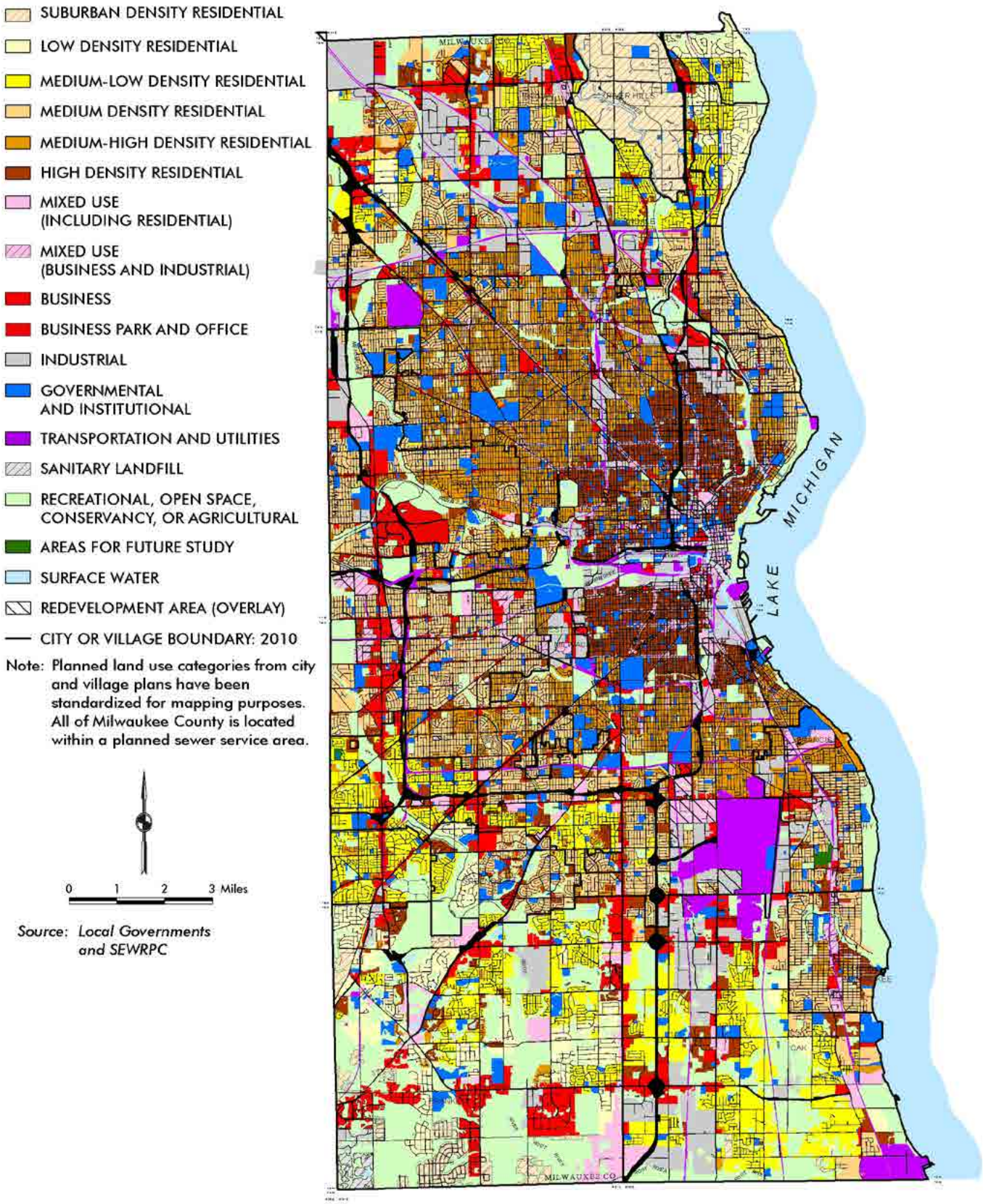
- RURAL DENSITY RESIDENTIAL
- SUBURBAN DENSITY RESIDENTIAL
- LOW DENSITY RESIDENTIAL
- MEDIUM DENSITY RESIDENTIAL
- HIGH DENSITY RESIDENTIAL
- FARMLAND PROTECTION
- GENERAL AGRICULTURAL
- MIXED USE
- COMMERCIAL
- OFFICE AND PROFESSIONAL SERVICES
- INDUSTRIAL
- BUSINESS/INDUSTRIAL PARK
- GOVERNMENTAL AND INSTITUTIONAL
- PARK AND RECREATIONAL
- TRANSPORTATION AND UTILITIES
- EXTRACTIVE
- PRIMARY ENVIRONMENTAL CORRIDOR
- SECONDARY ENVIRONMENTAL CORRIDOR
- ISOLATED NATURAL RESOURCE AREA
- OTHER OPEN LANDS TO BE PRESERVED (INCLUDES WETLANDS OUTSIDE ENVIRONMENTAL CORRIDORS AND ISOLATED NATURAL RESOURCE AREAS)
- SURFACE WATER
- REDEVELOPMENT AREA (OVERLAY)
- CITY OR VILLAGE BOUNDARY: 2010

Note: Planned land use categories from city, village and town plans have been standardized for mapping purposes. This map includes areas within planned sewer service areas and additional areas proposed to be served by sanitary sewers in local comprehensive plans.

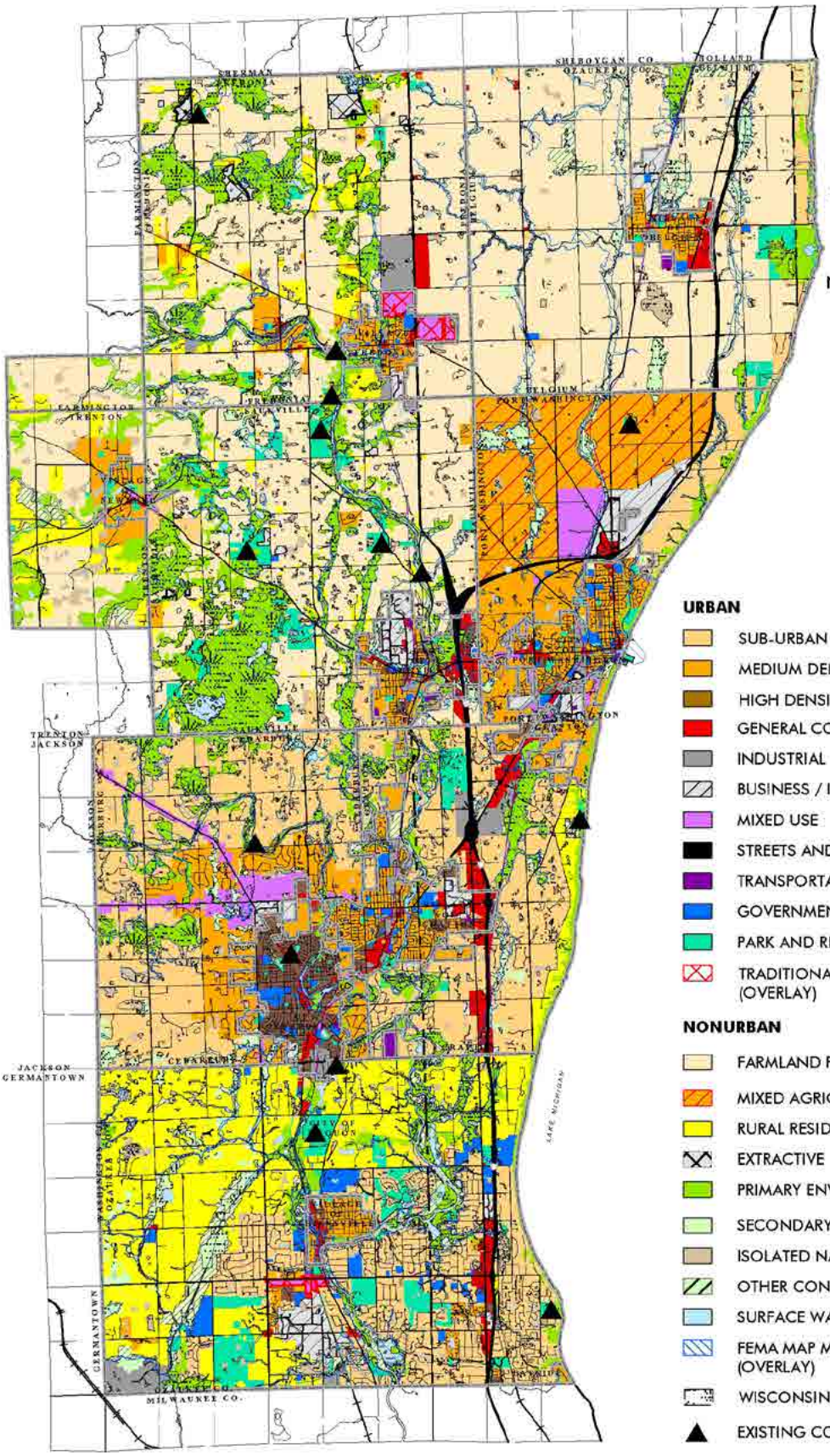
0 1 2 3 Miles

Source: *Kenosha County, Local Governments, and SEWRPC*

Map B.4
Land Use Plan Maps Adopted as Part of Comprehensive Plans by Sewered Communities in Milwaukee County



Map B.5
Land Use Plan Map for the Ozaukee County Planning Area: 2035



0 1 2 3 Miles

Source: Local Governments, Ozaukee County, and SEWRPC

Notes: Lake Michigan bluffs should be protected in accordance with county shoreland and local ordinance requirements.

This map was adopted by the Ozaukee County Board on May 6, 2009, as part of the Multi-Jurisdictional Comprehensive Plan for Ozaukee County. Land use plan maps adopted by cities, towns, and villages may differ from this map.

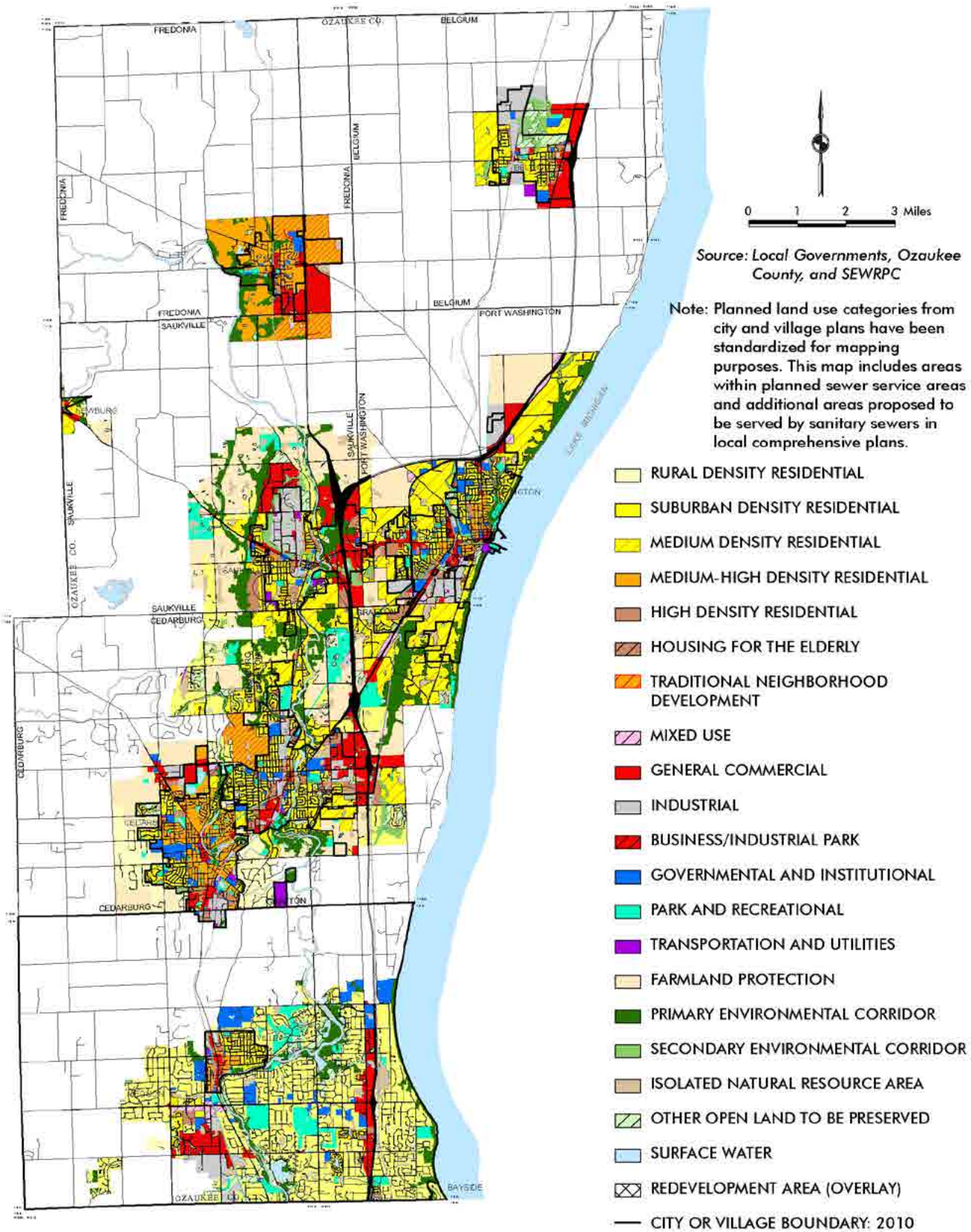
URBAN

- SUB-URBAN DENSITY RESIDENTIAL
- MEDIUM DENSITY URBAN RESIDENTIAL
- HIGH DENSITY URBAN RESIDENTIAL
- GENERAL COMMERCIAL (RETAIL/SERVICE/OFFICE)
- INDUSTRIAL
- BUSINESS / INDUSTRIAL PARK
- MIXED USE
- STREETS AND HIGHWAYS
- TRANSPORTATION AND UTILITIES
- GOVERNMENTAL AND INSTITUTIONAL
- PARK AND RECREATIONAL
- TRADITIONAL NEIGHBORHOOD DEVELOPMENT (OVERLAY)

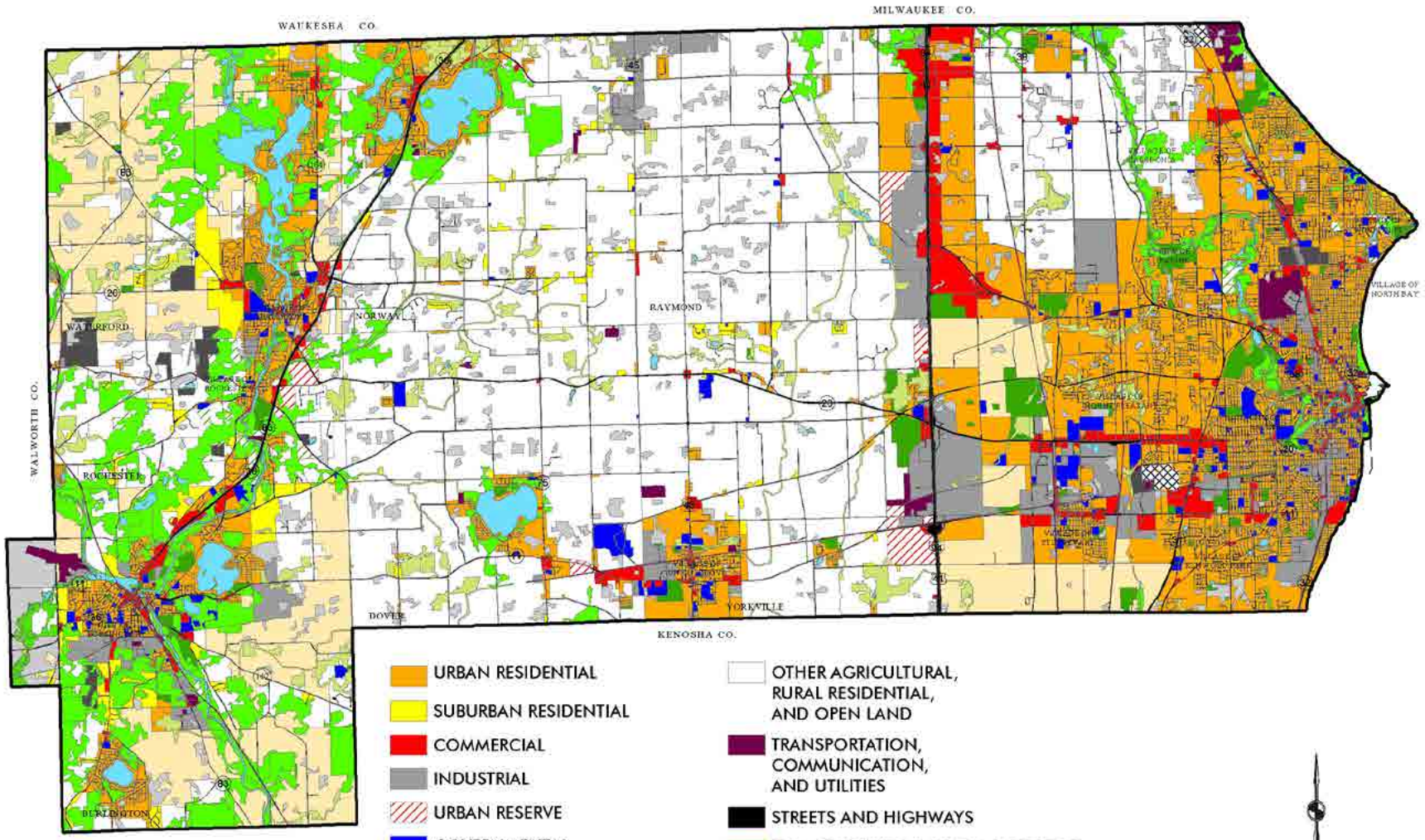
NONURBAN

- FARMLAND PROTECTION
- MIXED AGRICULTURAL/CONSERVATION SUBDIVISION
- RURAL RESIDENTIAL
- EXTRACTIVE
- PRIMARY ENVIRONMENTAL CORRIDOR
- SECONDARY ENVIRONMENTAL CORRIDOR
- ISOLATED NATURAL RESOURCE AREA
- OTHER CONSERVANCY LANDS TO BE PRESERVED
- SURFACE WATER
- FEMA MAP MODERNIZATION FLOODPLAIN: 2007 (OVERLAY)
- WISCONSIN WETLAND INVENTORY: 2007 (OVERLAY)
- EXISTING COUNTY PARK

Map B.6
Land Use Plan Maps Adopted as Part of Comprehensive Plans by Sewered Communities in Ozaukee County: 2035



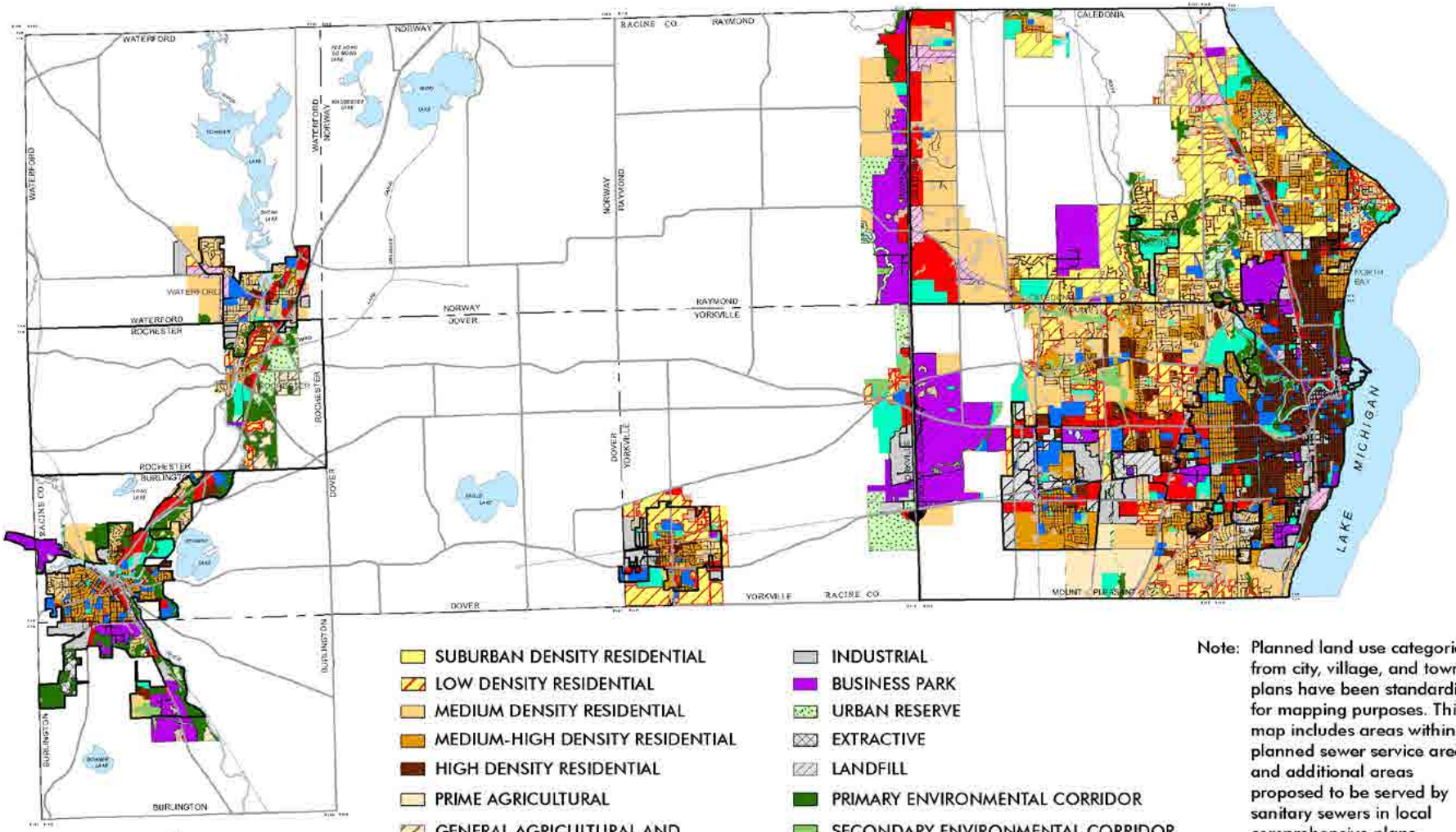
Map B.7
Land Use Plan Map for the Racine County Planning Area: 2035



Note: This map was adopted by the Racine County Board on October 13, 2009, as part of the Multi-Jurisdictional Comprehensive Plan for Racine County. Land use plan maps adopted by cities, towns, and villages may differ from this map.

Source: Racine County, Local Governments, and SEWRPC

Map B.8
Land Use Plan Maps Adopted as Part of Comprehensive Plans by Sewered Communities in Racine County: 2035

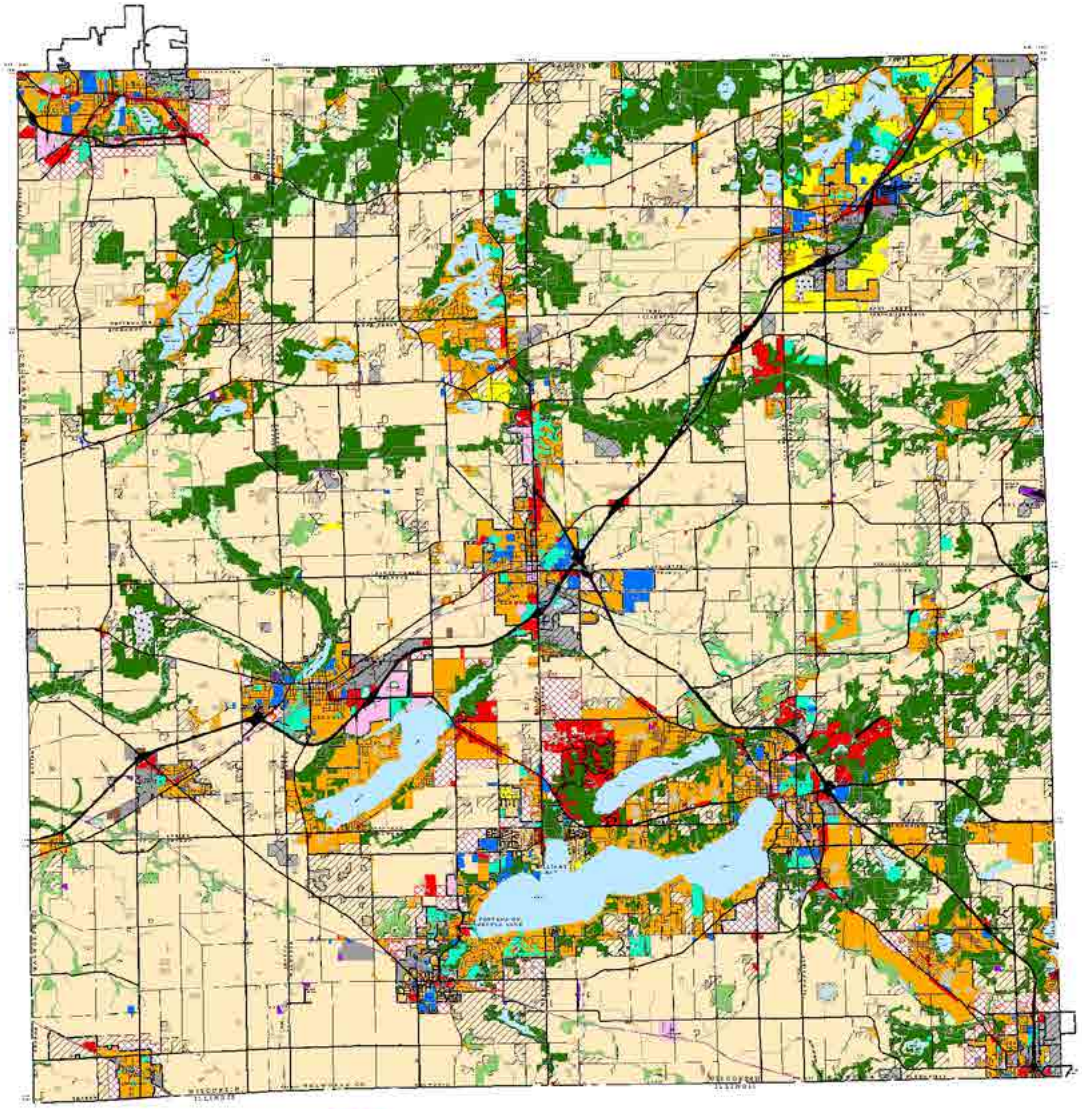


- SUBURBAN DENSITY RESIDENTIAL
- LOW DENSITY RESIDENTIAL
- MEDIUM DENSITY RESIDENTIAL
- MEDIUM-HIGH DENSITY RESIDENTIAL
- HIGH DENSITY RESIDENTIAL
- PRIME AGRICULTURAL
- GENERAL AGRICULTURAL AND RURAL RESIDENTIAL
- COMMERCIAL
- MIXED USE
- GOVERNMENTAL AND INSTITUTIONAL
- PARK AND RECREATIONAL
- TRANSPORTATION AND UTILITIES
- INDUSTRIAL
- BUSINESS PARK
- URBAN RESERVE
- EXTRACTIVE
- LANDFILL
- PRIMARY ENVIRONMENTAL CORRIDOR
- SECONDARY ENVIRONMENTAL CORRIDOR
- ISOLATED NATURAL RESOURCE AREA
- OTHER OPEN LAND TO BE PRESERVED
- SURFACE WATER
- CITY OR VILLAGE BOUNDARY: 2010

Note: Planned land use categories from city, village, and town plans have been standardized for mapping purposes. This map includes areas within planned sewer service areas and additional areas proposed to be served by sanitary sewers in local comprehensive plans.

Source: Racine County, Local Governments, and SEWRPC

Map B.9
Land Use Plan Map for Walworth County: 2035



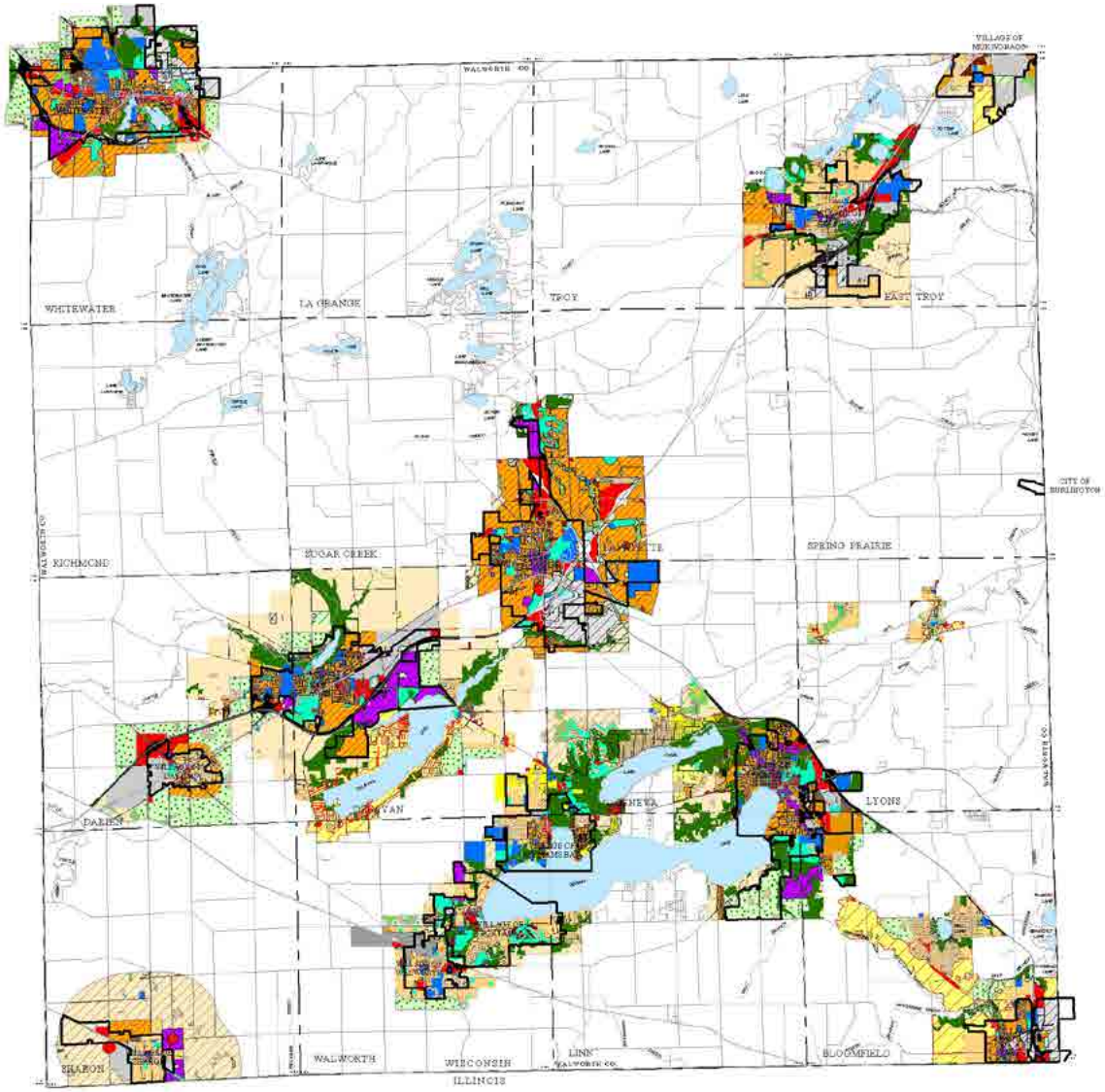
- URBAN DENSITY RESIDENTIAL (LESS THAN 5.0 ACRES PER DWELLING)
- RURAL DENSITY RESIDENTIAL (AT LEAST 5.0 ACRES PER DWELLING)
- COMMERCIAL
- COMMERCIAL/RECREATIONAL
- MIXED USE
- INDUSTRIAL
- BUSINESS/INDUSTRIAL PARK
- GOVERNMENTAL AND INSTITUTIONAL
- RECREATIONAL
- TRANSPORTATION, COMMUNICATIONS, AND UTILITIES
- STREETS AND HIGHWAYS
- AGRICULTURAL RELATED MANUFACTURING, WAREHOUSING, AND MARKETING
- URBAN RESERVE
- EXTRACTIVE
- SANITARY LANDFILL
- PRIME AGRICULTURAL (MINIMUM PARCEL SIZE: 35 ACRES)
- OTHER AGRICULTURAL, RURAL RESIDENTIAL, AND OTHER OPEN LAND (5 TO 34 ACRES PER DWELLING)
- PRIMARY ENVIRONMENTAL CORRIDOR
- SECONDARY ENVIRONMENTAL CORRIDOR
- ISOLATED NATURAL RESOURCE AREA
- DNR/DOT LAND OUTSIDE ENVIRONMENTAL CORRIDORS
- OTHER OPEN LAND TO BE PRESERVED
- SURFACE WATER

0 1 2 3 Miles

Source: Walworth County, Local Governments, and SEWRPC

Note: This map is a compilation of the land use plan map for unincorporated areas adopted by the Walworth County Board as part of the Multi-Jurisdictional Comprehensive Plan for Walworth County, and the land use plan maps adopted by village boards and common councils as part of village and city comprehensive plans. City and village land use plan maps are shown only for those areas within existing corporate boundaries. Planned land uses in the Village of Walworth are based on the Village master plan adopted in 2001. The Village had not adopted a comprehensive plan under Section 66.1001 of the *Wisconsin Statutes* as of March 13, 2013. This is not the land use plan map adopted by the county board or by cities, towns, and villages in the county.

Map B.10
Land Use Plan Maps Adopted as Part of Comprehensive Plans by Sewered Communities in Walworth County: 2035



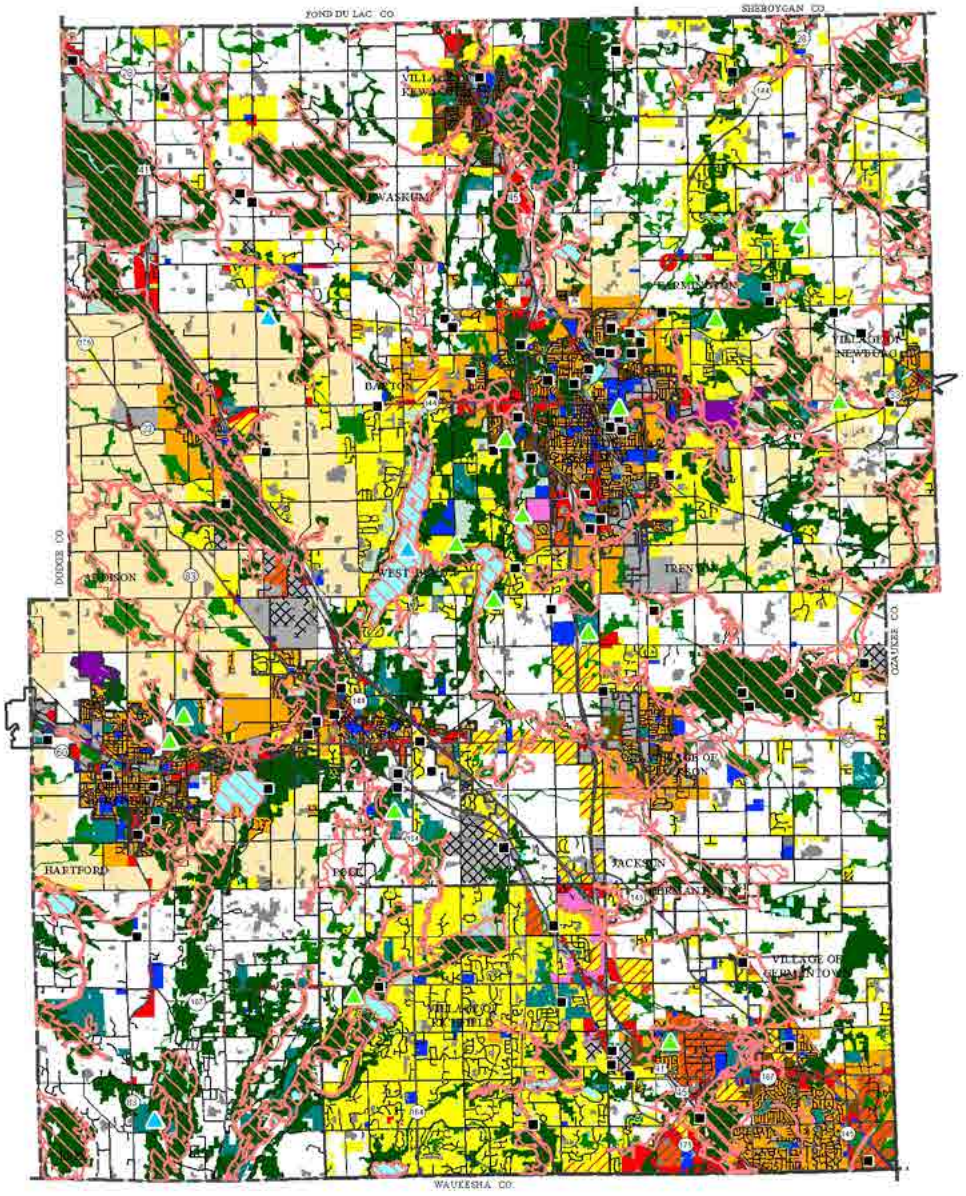
- SUBURBAN DENSITY RESIDENTIAL
- LOW DENSITY RESIDENTIAL
- MEDIUM-LOW DENSITY RESIDENTIAL
- MEDIUM DENSITY RESIDENTIAL
- MEDIUM-HIGH DENSITY RESIDENTIAL
- HIGH DENSITY RESIDENTIAL
- PRIME AGRICULTURAL
- GENERAL AGRICULTURAL AND RURAL RESIDENTIAL
- COMMERCIAL
- COMMERCIAL/RECREATIONAL
- MIXED USE
- GOVERNMENTAL AND INSTITUTIONAL
- PARK AND RECREATIONAL
- TRANSPORTATION AND UTILITIES
- INDUSTRIAL
- BUSINESS PARK
- URBAN RESERVE
- EXTRACTIVE
- PRIMARY ENVIRONMENTAL CORRIDOR
- SECONDARY ENVIRONMENTAL CORRIDOR
- ISOLATED NATURAL RESOURCE AREA
- OTHER OPEN LAND TO BE PRESERVED
- SURFACE WATER
- CITY OR VILLAGE BOUNDARY: 2010

0 1 2 3 Miles

Source: Walworth County, Local Governments, and SEWRPC

Note: Planned land use categories from city, village, and town plans have been standardized for mapping purposes. This map includes areas within planned sewer service areas and additional areas proposed to be served by local comprehensive plans.

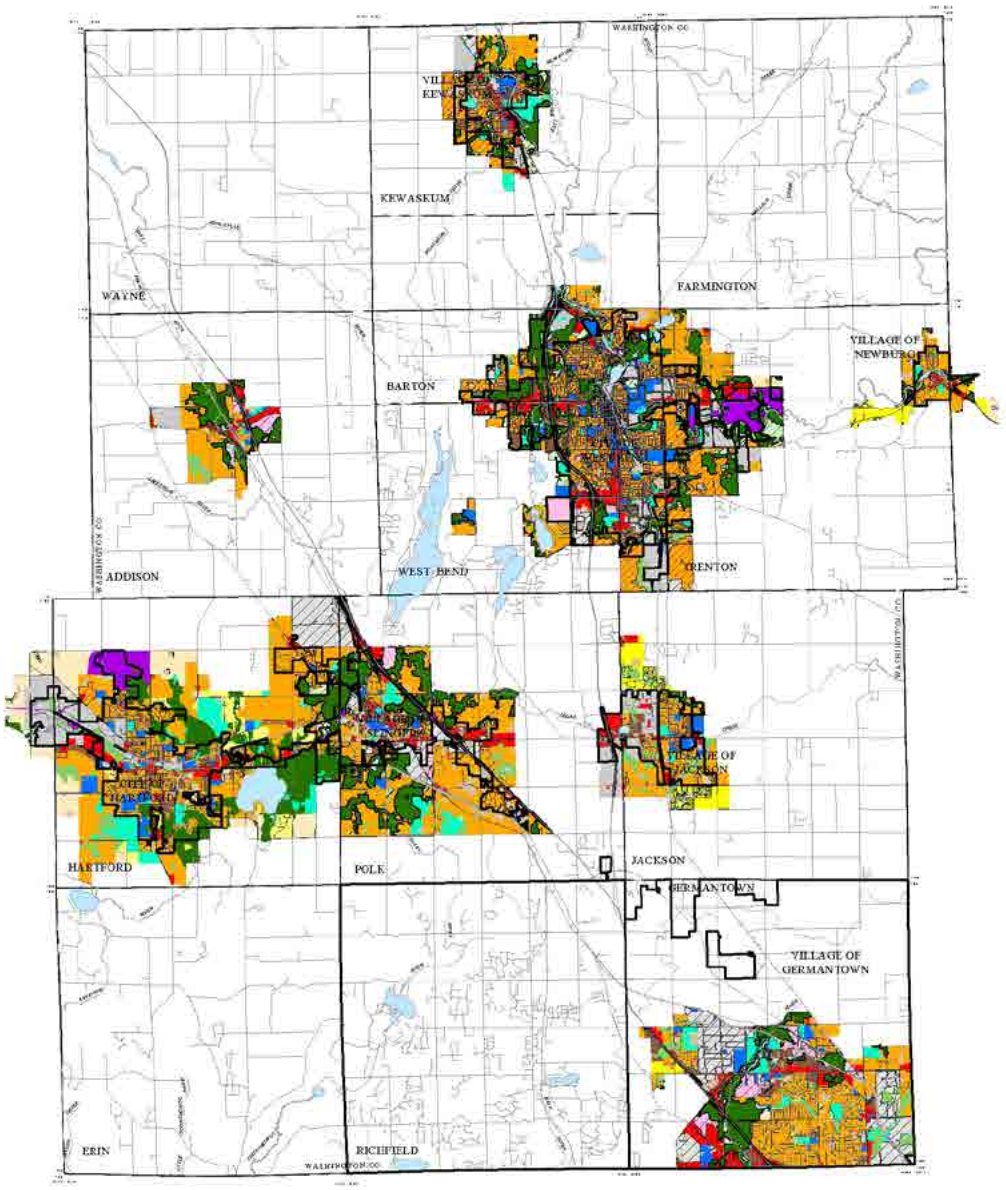
Map B.11
Washington County Land Use Plan Map: 2035



Source: Washington County, Local Governments, and SEWRPC

Note: This map was adopted by the Washington County Board on April 15, 2008, as part of the Multi-Jurisdictional Comprehensive Plan for Washington County. Land use maps adopted by cities, towns, and villages may differ from this map.

Map B.12
Land Use Plan Maps Adopted as Part of Comprehensive Plans by Sewered Communities in Washington County: 2035



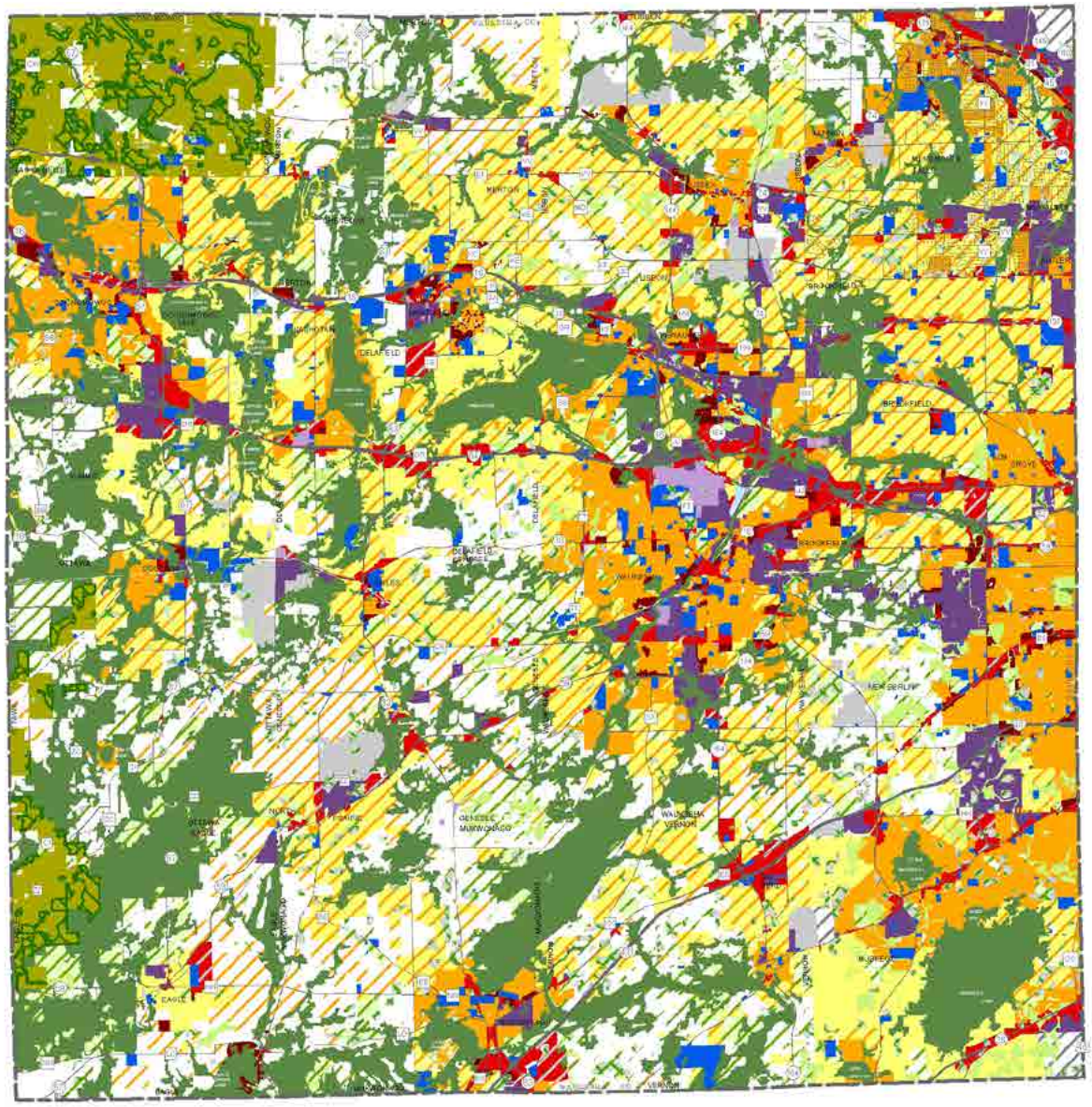
- AGRICULTURAL AND RURAL RESIDENTIAL
- SUBURBAN DENSITY RESIDENTIAL
- MEDIUM DENSITY URBAN RESIDENTIAL
- MEDIUM-HIGH DENSITY URBAN RESIDENTIAL
- HIGH DENSITY URBAN RESIDENTIAL
- HOUSING FOR THE ELDERLY
- MIXED USE
- GENERAL COMMERCIAL
- OFFICE / PROFESSIONAL SERVICES
- BUSINESS / INDUSTRIAL
- INDUSTRIAL
- GOVERNMENTAL AND INSTITUTIONAL
- PARK AND RECREATIONAL
- TRANSPORTATION AND UTILITIES
- REDEVELOPMENT AREA (OVERLAY)
- FORMER LANDFILL
- PRIMARY ENVIRONMENTAL CORRIDOR
- SECONDARY ENVIRONMENTAL CORRIDOR
- ISOLATED NATURAL RESOURCE AREA
- SURFACE WATER
- OTHER OPEN LAND TO BE PRESERVED (INCLUDES WETLANDS OUTSIDE OF ENVIRONMENTAL CORRIDORS AND ISOLATED NATURAL RESOURCE AREAS)
- CITY OR VILLAGE BOUNDARY: 2010

0 1 2 3 Miles

Source: Washington County, Local Governments, and SEWRPC

Note: Planned land use categories from city, village, and town plans have been standardized for mapping purposes. This map includes areas within planned sewer service areas and additional areas proposed to be served by sanitary sewers in local comprehensive plans.

Map B.13
Land Use Plan Map for Waukesha County: 2035



LAND USE PLAN CATEGORIES

- HIGH DENSITY RESIDENTIAL (Less than 6,000 square feet of area per dwelling unit)
- MEDIUM DENSITY RESIDENTIAL (6,000-19,999 square feet of area per dwelling unit)
- LOW DENSITY RESIDENTIAL (20,000 square feet to 1.4 acres of area per dwelling unit)
- SUBURBAN I DENSITY RESIDENTIAL (1.5 to 2.9 acres of area per dwelling unit)
- SUBURBAN II DENSITY RESIDENTIAL (3.0 to 4.9 acres of area per dwelling unit)
- RURAL DENSITY AND OTHER AGRICULTURAL LAND* (5.0 to 34.9 acres of area per dwelling unit or equivalent density)
- FARMLAND PRESERVATION (>35 acres of area per dwelling unit)
- FARMLAND PRESERVATION W/EC OVERLAY (>35 acres of area per dwelling unit)
- OTHER OPEN LANDS TO BE PRESERVED
- RECREATIONAL
- PRIMARY ENVIRONMENTAL CORRIDOR
- SECONDARY ENVIRONMENTAL CORRIDOR
- ISOLATED NATURAL RESOURCE AREA
- SURFACE WATER
- GOVERNMENTAL & INSTITUTIONAL
- COMMERCIAL AND OFFICE PARK
- MIXED USE
- INDUSTRIAL
- TRANSPORTATION, COMMUNICATION & UTILITIES
- HIGHWAY AND RAILWAY RIGHTS OF WAY
- LANDFILL
- EXTRACTIVE

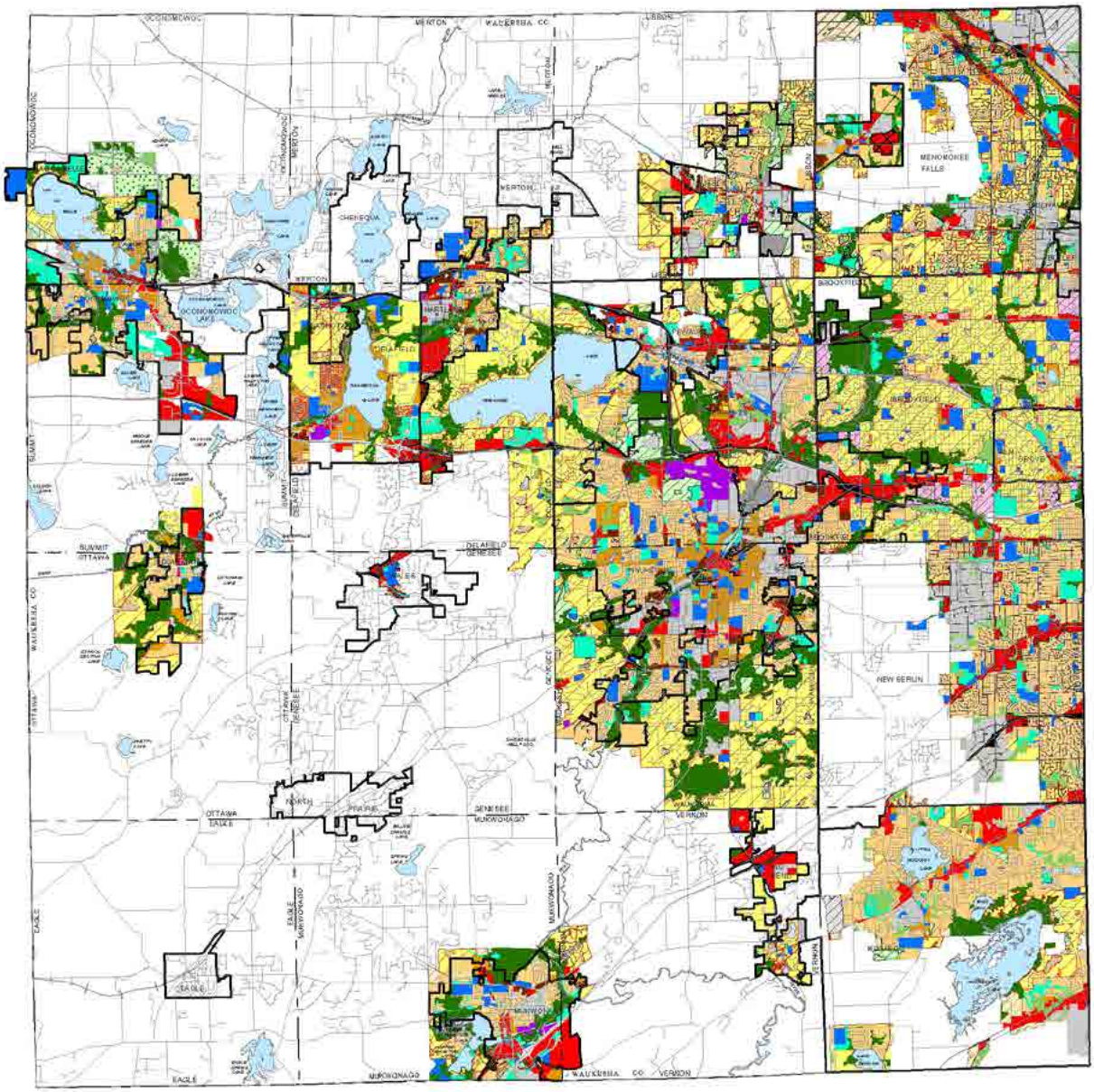
Note: Environmental Corridor information from SEWRPC Environmental Corridor Inventory: 2000. Adopted by the Waukesha County Board of Supervisors February 24, 2009. Updated and Prepared by the Waukesha County Department of Parks and Land Use December 1, 2011.

* Refer to Town of Ottawa, Town of Mukwonago, and Village of Menomonee Falls Land Use Plans, and Town of Delafield Land Use Plan Unit Determination for permissible rural densities.

0 1 2 3 Miles

Source: Waukesha County

Map B.14
Land Use Plan Maps Adopted as Part of Comprehensive Plans by Sewered Communities in Waukesha County: 2035



- SUBURBAN DENSITY RESIDENTIAL
- LOW DENSITY RESIDENTIAL
- MEDIUM DENSITY RESIDENTIAL
- MEDIUM-HIGH DENSITY RESIDENTIAL
- HIGH DENSITY RESIDENTIAL
- HOUSING FOR THE ELDERLY
- GENERAL AGRICULTURAL AND RURAL RESIDENTIAL
- GOVERNMENTAL AND INSTITUTIONAL
- COMMERCIAL AND BUSINESS PARK
- MIXED USE (RESIDENTIAL AND COMMERCIAL)
- MIXED USE (BUSINESS AND LIGHT INDUSTRIAL)
- INDUSTRIAL
- TRANSPORTATION AND UTILITIES
- SANITARY LANDFILL
- EXTRACTIVE
- PARK AND RECREATIONAL
- PRIMARY ENVIRONMENTAL CORRIDOR
- SECONDARY ENVIRONMENTAL CORRIDOR
- ISOLATED NATURAL RESOURCE AREA
- OTHER OPEN LAND TO BE PRESERVED
- SURFACE WATER
- URBAN RESERVE
- REDEVELOPMENT AREA (OVERLAY)
- CITY OR VILLAGE BOUNDARY: 2010

0 1 2 3 Miles

Source: Waukesha County, Local Governments, and SEWRPC

Note: Planned land use categories from city, village, and town plans have been standardized for mapping purposes. This map does not include unrefined sewer service areas or sewer service areas that serve isolated lake areas. Areas within other adopted sewer service areas are shown on this map.

town comprehensive plans in the extraterritorial areas[49] of cities and villages, because towns have the primary zoning authority[50] within extraterritorial areas unless the area is subject to extraterritorial zoning regulations.

In addition, the land use plan maps adopted by communities that provide sanitary sewer service, or plan to provide such service in the future, were compiled in the sewered community maps to identify areas that may support significant residential or job supporting land uses. These maps show planned land uses for areas within adopted (refined) sanitary sewer service areas and additional areas proposed to be provided with sewer service in local comprehensive plans. These maps also include planned land uses from city and village comprehensive plans for their extraterritorial areas, because cities and villages typically require land to be annexed before extending sanitary sewers to serve urban development.

Quantitative Analysis

This section draws on an analysis of comprehensive plans adopted by communities with sewer service that was undertaken by the Commission during preparation of the year 2035 regional housing plan.[51] The findings of this analysis provide an understanding of the amount of residential and job supporting development that could potentially be accommodated by local government comprehensive plans compared to the regional projected increases in households and employment to the year 2050.

Basis for Analysis

The land use plan map included in sewered community comprehensive plans was the basis for determining the potential jobs and housing units that could be accommodated in each community. The categories shown on the community maps were converted to uniform categories for each county as part of the analysis. In some cases the existing zoning map was used in combination with the land use plan map where a community used very broad land use categories or used categories based on structure type.

Community comprehensive plans call for significantly more housing units (1,052,000 compared to 864,00) and jobs (2,091,000 compared to 1,327,000) than reasonably expected under the 2035 regional land use plan.

Housing and Employment Growth

Table B.1 shows that local comprehensive plans in sewered communities would accommodate substantial growth in housing and employment levels in the Region. It is estimated that comprehensive plans for sewered communities could potentially accommodate a total of about 1,052,000 housing units and 2,091,000 jobs under full development, or "buildout," conditions. In comparison, the year 2035 regional land use plan, which has the same design year as many local comprehensive plans, indicates that sewered communities in the Region may be expected to accommodate a total of 864,000 housing units and 1,327,000 jobs by the year 2035.

---

[49] Under the Wisconsin Statutes*, cities of the first, second, and third class may exercise specified extraterritorial platting and planning authority within three miles of their boundary, and cities of the fourth class and villages may exercise extraterritorial authority within 1.5 miles of their boundary. Cities and villages may also adopt extraterritorial zoning regulations if such regulations are approved by a joint committee composed of representatives of the city or village and the affected town. Extraterritorial zoning is uncommon within the Region.*

[50] Towns regulated under a general County zoning ordinance share primary zoning authority with the County. General County zoning ordinances are in effect in the towns shown in blue on Map B.15.

[51] Many of the Region's communities used a design year of 2035 to be consistent with the fifth generation regional land use and transportation plans.

Table B.1
Housing and Employment Accommodated by Sewered Community Comprehensive Plans and the Year 2035 Regional Land Use Plan[a]

County	Housing Units			Jobs		
	Year 2035 Regional Land Use Plan[b]	Community Comprehensive Plans	Difference	Year 2035 Regional Land Use Plan	Community Comprehensive Plans	Difference
Kenosha	79,000	84,100	5,100	86,200	306,200	220,000
Milwaukee	427,400	448,000	20,600	628,000	787,000	159,000
Ozaukee	34,800	61,900	27,100	59,800	99,800	40,000
Racine	77,500	92,300	14,800	101,100	186,300	85,200
Walworth	43,800	77,900	34,100	62,300	153,700	91,400
Washington	46,400	61,600	15,200	68,900	144,900	76,000
Waukesha	155,100	225,800	70,700	320,000	412,900	92,900
Region	864,000	1,051,600	187,600	1,327,200	2,090,800	763,600

[a] *Limited to areas planned by local governments to be provided with sanitary sewer service.*

[b] *Refers to the number of occupied housing units, or households, under the regional land use plan.*

Source: SEWRPC

Table B.1 also shows that sewered communities have planned for more housing and significantly more jobs than forecasted in the year 2035 regional land use plan when compared by County. The difference between housing units that could be accommodated by sewered community comprehensive plans and the regional land use plan ranges from 5,100 units in Kenosha County to 70,700 units in Waukesha County. The difference between jobs that could be accommodated by sewered community comprehensive plans and the regional land use plan ranges from 40,000 jobs in Ozaukee County to 220,000 jobs in Kenosha County.

The higher level of growth associated with the comprehensive plans is primarily due to the practice of many communities to plan for the full buildout of the community and adjacent areas that may be annexed over a relatively long period of time. In many cases these conditions would not likely materialize until long after the stated plan design year (typically 2035). In a number of communities, planned future growth areas extend beyond the long-range planned sewer service areas embodied in the regional land use plan.

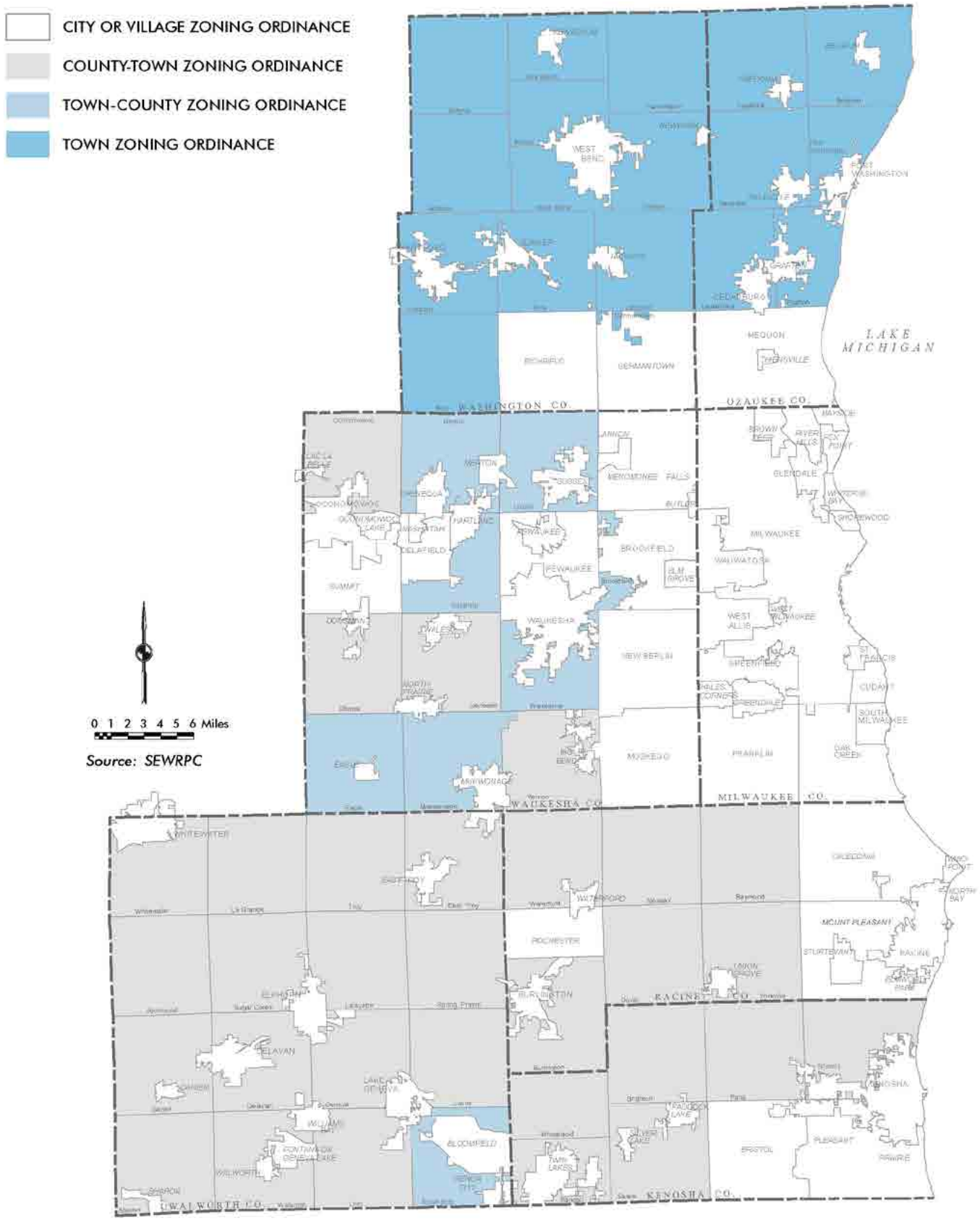
Local comprehensive plans were carefully considered in the VISION 2050 planning process.

Consideration of Comprehensive Plans in VISION 2050

The VISION 2050 planning process resulted in a systems level regional land use plan. It includes generalized boundaries for urban service areas; allocations of population, households, employment, and associated land uses to urban and rural areas; and recommended density ranges for urban service areas. It provides an overall regional land use planning framework for consideration, refinement, and detailing through community planning, which is done through local government comprehensive plans. Currently adopted local government comprehensive plans were carefully considered in the VISION 2050 planning process. Major considerations in the development of VISION 2050 with respect to comprehensive plans were:

1. Commission regional land use plans have historically included recommendations for preserving and protecting environmentally significant lands and prime agricultural lands. VISION 2050 carries forward those recommendations. Local comprehensive plans have typically included plan recommendations with respect to such areas consistent with regional plans, particularly with respect to environmentally significant lands.

Map B.15
General Zoning Ordinances in the Region: 2014



Local comprehensive plans could potentially accommodate 8% more households and 50% more jobs regionwide than projected for the year 2050 by the Commission.

2. VISION 2050 would propose less development regionwide than could potentially be accommodated under comprehensive plans. The number of households in the Region is projected to increase to 970,000 households under the Commission's year 2050 intermediate-growth projection.[52] As shown in Table B.1, local comprehensive plans for sewered communities could potentially accommodate about 1.05 million households, about 8 percent higher than the 2050 projection. Similarly, the number of jobs in the Region is projected[53] to increase to about 1.4 million jobs under the intermediate-growth projection. As shown in Table B.1, local comprehensive plans for sewered communities could potentially accommodate a total of about 2.1 million jobs, about 50 percent higher than the 2050 projection.

3. VISION 2050 considered the types of land uses and densities set forth in local comprehensive plans.

VISION 2050 land use alternatives may allocate development to TOD areas at higher densities than identified in local comprehensive plans.

4. VISION 2050 identified and evaluated the implications of a series of future alternative regional development patterns extending to the year 2050. These alternatives include transit-oriented developments (TOD) and other regionally significant land uses that may not be included in local comprehensive plans. TODs are compact, mixed-use, higher-density development focused around fixed-guideway transit stations. VISION 2050 land use alternatives may allocate residential development to TOD areas at somewhat higher densities than identified in local comprehensive plans. In addition, the identification of TOD areas may result in the allocation of other land uses and associated jobs in these areas that are not identified in local comprehensive plans. VISION 2050 land use alternatives generally included less land development, population, and jobs than identified in some community comprehensive plans as a result of local government comprehensive plans cumulatively providing for more development, population, and jobs than can reasonably be expected within the Region by the year 2050, and because VISION 2050 proposed and examined the implications of alternative regional development patterns not necessarily included in all local comprehensive plans.

5. The 2035 regional transportation system plan served as the basis for the transportation element of local comprehensive plans. VISION 2050 is a major reevaluation of the 2035 regional plan and an extension of the plan design year to 2050.

6. The final recommended VISION 2050 regional land use and transportation plan includes recommendations for changes with respect to both land use and transportation for consideration in local plans as local comprehensive plans are updated in the future.

[52] *As documented in SEWRPC Technical Report No. 11 (5th Edition),* The Population of Southeastern Wisconsin.

[53] *As documented in SEWRPC Technical Report No. 10 (5th Edition),* The Economy of Southeastern Wisconsin.

APPENDIX C

ACCURACY CHECKS OF THE YEAR 2011 TRAVEL SURVEYS

INTRODUCTION

During the years 2011 and 2012, the Southeastern Wisconsin Regional Planning Commission (SEWRPC) conducted an inventory of travel for the seven-county Southeastern Wisconsin Region. Historically, a large-scale travel inventory has been conducted approximately once every 10 years in conjunction with the U.S. Census and land use and transportation system inventories conducted as part of a major review and update of the Commission's land use and transportation plan. Similar travel inventories were previously conducted in 1963, 1972, 1991, and 2001. This travel inventory consisted of five major elements—a resident household travel survey, a group-quartered travel survey, a public transit travel survey, a truck travel survey, and an external travel survey. The following sections of this appendix describe the travel inventory and accuracy checks of the expanded data.

THE 2011 REGIONAL INVENTORY OF TRAVEL: MAJOR ELEMENTS

The 2011 survey of resident households was based on a sample of 15,400 households, or approximately 2 percent of the estimated total of 800,100 households in the Region. This large scale sample provides a rich set of data, permitting the description and analysis of resident household travel both by subarea and between subareas of the Region. Information obtained from each sampled household included detailed data concerning specific household characteristics, including the number of household members, number of vehicles available, structure type of residence, and household income range; specific data for each household member, such as relationship to head of household, age, license-to-drive status, race/ethnicity, gender, and employment status; and, for each trip made by people over the age of five on the assigned travel day, the origin and destination of trip, trip purpose, time of day, mode of travel, and, for drivers of personal vehicles—automobiles, vans, sport utility vehicles, or pickup trucks—the number of passengers in the vehicle, parking location, type of parking, and cost of parking.

In addition, 900 samples, representing approximately 2 percent of the 45,400 residents of the Region living in group quarters, such as Huber jail facilities, shelters, and schools and other institutions, were surveyed. The sample was drawn from a list of such facilities compiled by the Commission using telephone directories and consultations with various agencies of government. Group quartered residents who were severely restricted in their ability to travel were not surveyed. This group included residents of mental health facilities, prisons, and nursing homes.

The five major public transit systems operating in the Region in 2011 were also surveyed. Each of the five systems was sampled at rates designed to permit analysis of the characteristics of existing transit system ridership. For

the Kenosha area transit system, 390 samples were obtained, an 11 percent sample of its estimated 3,600 average weekday boarding passengers. For the Milwaukee area transit system, 6,400 samples were obtained, representing a 4 percent sample of its estimated 157,500 average weekday boarding passengers. For the Racine area transit system, 290 samples were obtained, representing a 6 percent sample of its estimated 4,600 average weekday boarding passengers. For the City of Waukesha transit system, 180 samples were obtained, representing a 7 percent sample of its estimated 2,600 average weekday boarding passengers. For the Waukesha County transit system, 210 samples were obtained, representing a 31 percent sample of its estimated 670 average weekday boarding passengers. Information obtained through mail-back survey forms included detailed data concerning specific household characteristics, including the location of each tripmaker's home, number of household members, number of vehicles available, and household income range; specific data regarding each tripmaker, such as age, sex, license-to-drive status, and race/ethnicity; and for each trip, the origin and destination of the trip, trip purpose, time of day, transfer information, mode of travel to the bus stop, fares, round-trip frequency, and length of time using transit.

The 2011 regional travel inventory also included a commercial truck survey. The truck survey was intended to provide information regarding the movement of freight and the delivery of services within the Region by commercial trucks registered and garaged within the Region. The survey of commercial truck travel was based on a sample of about 640 commercial trucks, or approximately 0.5 percent of the estimated 121,600 commercial trucks registered in the Region. Information obtained through a mail-back survey for each sampled truck included detailed data concerning the business or industry of the truck owner; the truck garaging location, carrier type, odometer reading at the beginning and end of the travel day, and vehicle type; and for each trip made using the truck on the assigned travel survey day, the origin and destination of the trip, trip purpose, and time of day.

The 2011 survey also included an external cordon survey of interregional vehicle traffic. Interregional or external travel is travel where one or both ends of the trip are located outside of Southeastern Wisconsin. In the external cordon survey, roadside interview stations were established on 38 major streets and highways crossing the boundaries of the Region. At these stations, mail-back survey forms were distributed to 161,900 motorists crossing these stations during the hours of 8:00 a.m. to 6:00 p.m. in the spring of 2011 and spring of 2012. Approximately 20,100 usable survey forms were returned, representing more than 6 percent of the 363,800 regional boundary crossings by vehicles estimated to occur at the interview stations during an average weekday. Information obtained through the mail-back survey included: the vehicle used in making the trip, the garaging address of the vehicle, type of vehicle, and number of passengers carried; and, for trucks, the carrier type. For trips crossing the cordon line, data regarding the origin, destination, and purpose of each trip were also obtained.

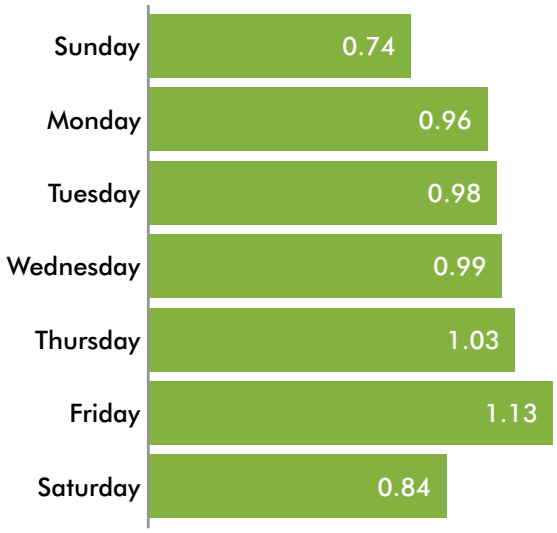
The external cordon survey also included a survey of interregional personal travel by other modes to provide information regarding the movement of individuals not using a personal vehicle to enter or exit the Region. The 2011 interregional travel survey captured travel by airplane, intercity rail, intercity bus, and the Lake Express Ferry. The survey of airport travel sampled approximately 1,100 deplaning weekday passengers at General Mitchell International Airport from Tuesday, September 27, through Thursday, September 29, 2011, for 12 hours each day (7:00 a.m. – 7:00 p.m. on

Tuesday, 9:00 a.m. – 9:00 p.m. on Wednesday, 11:00 a.m. – 11:00 p.m. on Thursday). This sample represents approximately 6 percent of the estimated 18,800 average weekday passengers utilizing the Airport in 2011. The intercity rail survey, which was conducted on September 13 and 22, 2011, captured travel on Amtrak and Metra intercity rail services operating within the Region. The sample of 150 boarding Amtrak passengers and 80 boarding Metra passengers represents an approximately 8 percent sample of the estimated 2,800 average weekday intercity rail passengers in 2011. The survey of intercity bus travel, which was conducted on September 14, 15, 20, and 22, 2011, captured travel on routes operated by Greyhound, Megabus, Badger Bus, Coach USA, Lamers, Indian Trails, and Jefferson Bus Lines. The sample of 170 boarding intercity bus passengers represents an approximately 11 percent sample of the estimated 1,600 average weekday intercity bus passengers in 2011. The survey of the Lake Express Ferry, which was conducted on September 15, 2011, elicited a sample of 100 boarding passengers representing approximately 33 percent of the estimated 300 average weekday passengers. Information on interregional travel was obtained through a handout/mail-back survey for each individual boarding the Amtrak, Metra, interregional bus, and the Lake Express Ferry, and approximately 20 percent of the deplaning passengers exiting a concourse at General Mitchell International Airport. The interregional travel surveys included detailed data concerning origin, destination, and purpose of each trip; information about transport to and from the terminal end of the interregional mode surveyed; and the gender, age, and household income of the individual completing the survey.

The expanded data obtained in these surveys and estimates provided a representation of the total travel occurring within the Region on an average weekday in 2011. In each survey, careful attention was given to data collection scheduling to prevent any day-related or seasonal bias in the information. Travel surveys are usually conducted by the Commission in either the spring (March through May), or in the fall (September through November), in order to obtain travel data representative of average weekday conditions. Traffic volume counts collected by the Wisconsin Department of Transportation (WisDOT) in Southeastern Wisconsin indicate that traffic volumes on Tuesdays, Wednesdays, and Thursdays most closely approximate average weekday traffic volumes, while those on Fridays are slightly higher, and on Mondays are slightly lower, than the average weekday (see Figure C.1). Traffic volumes on Saturdays and Sundays are substantially lower than the average weekday. With respect to monthly variations, traffic volumes in the spring and the fall generally approximate average weekday traffic volumes (see Figure C.2). Traffic volumes in the summer months of June, July, and August are generally higher than average, and traffic volumes in the winter months of January and February are lower than average.

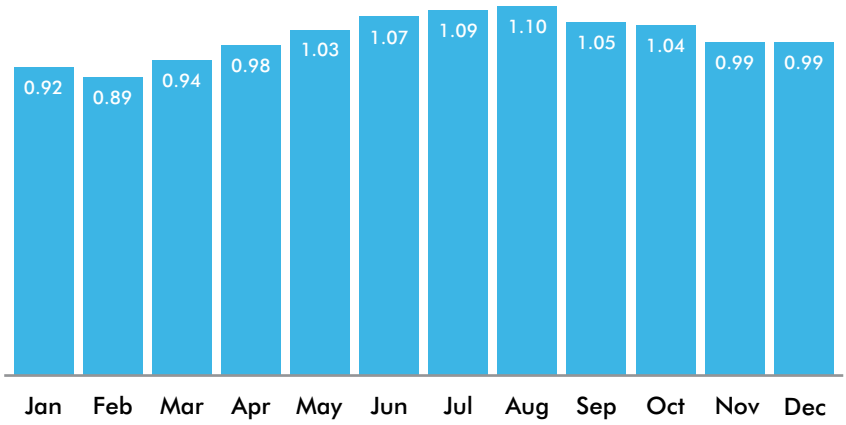
Two distinct sets of accuracy checks were employed to determine the degree of accuracy and completeness of data obtained in the major travel surveys. In one set, data on socioeconomic characteristics obtained from the major surveys were compared with data from the 2010 Census, 2006-2010 Federal Census American Community Survey (ACS), and other independent sources. In the other set of accuracy checks, vehicle trip volumes derived from travel surveys were compared to vehicle trip volumes obtained by classification

Figure C.1
Comparison of the Ratio of Daily Traffic Volumes to Average Weekday Traffic Volumes by Day of Week: 2011



Source: Wisconsin Department of Transportation and SEWRPC

Figure C.2
Comparison of the Ratio of Average Monthly Weekday Traffic Volumes to Average Weekday Traffic Volumes by Month of Year: 2011



Source: Wisconsin Department of Transportation and SEWRPC

counts made at screenlines and cordon lines.[54] The level of vehicle-miles of travel (VMT) derived from travel surveys was also compared to actual VMT estimated from traffic counts. The following sections document the results of accuracy checks.

SOCIOECONOMIC ACCURACY CHECKS

The socioeconomic data from the 2011 household travel survey was compared to data from the 2010 Census, Census Transportation Planning Package (CTPP), ACS, and other sources. The data comparisons included the distribution of households by household size, vehicles available, income, and lifestyle;[55] the distribution of population by age, gender, and employment status; and estimated total regional personal vehicle and commercial truck availability.

The percentage distribution of households by household size, as established by the survey, was essentially the same as that identified by the 2010 Census at county and regional levels. Table C.1 provides a comparison of the distribution of households by household size within each county as measured by the 2010 Census and as derived from the year 2011 resident household survey. The county-level survey data on household size are within 0.2 percent of corresponding 2010 Census data in almost all categories. At the regional level, the Census and survey data were essentially the same.

The next socioeconomic accuracy check compared vehicle availability as measured by the 2006-2010 CTPP and SEWRPC estimates based on 2011 WisDOT vehicle registration data, to vehicle availability as estimated by the 2011 resident household survey. Table C.2 compares estimates of the total number of vehicles available to households in the Region from the travel survey to those of the 2006-2010 CTPP and WisDOT vehicle registrations. The total distribution of vehicles available was accurately estimated by the survey, varying from 2006-2010 CTPP estimates by no more than 0.5 percent at the regional and county levels. As compared to 2011 estimates based on WisDOT vehicle registration data, the vehicle availability estimates from the survey were within 7.3 percent at the county level and within 0.5 percent for the Region.

Table C.3 compares the distribution of households by vehicles available, and indicates that the distribution of households by vehicle availability is accurately estimated by the travel survey as compared to the 2006-2010 CTPP. The county-level survey data on vehicle availability are within 1.0 percent of the corresponding 2006-2010 CTPP data in almost all categories.

The distribution of annual household income estimated from the travel survey was also compared with similar data estimated from the 2006-2010 CTPP as shown in Table C.4. The estimated household income based upon

[54] A screenline is an imaginary line extending through a selected portion of a geographic area along natural or built barriers, providing a limited number of crossing points established for the purpose of comparing and analyzing travel data, as estimated from traffic counts, with data derived from travel surveys. A cordon line is an imaginary line extending around a selected geographic area for the purpose of comparing and analyzing external travel data, as estimated from traffic counts, with data derived from travel surveys.

[55] The lifestyle of a household is defined by whether a household is a retired or working household, determined by whether age of head of household is less than or greater than 65, respectively, and whether the working household includes children.

Table C.1
Comparison of the Estimated Distribution of Households by Household Size in the Region

	Household Size	2010 Federal Census		2011 Household Survey		Difference in Percent
		Number of Households	Percent Distribution	Number of Households	Percent Distribution	
Kenosha County	One Person	16,388	26.2	16,427	26.2	--
	Two People	19,968	31.9	19,978	31.9	--
	Three People	10,484	16.7	10,509	16.7	--
	Four People	9,088	14.5	9,110	14.5	--
	Five or More People	6,722	10.7	6,738	10.7	--
	Total	62,650	100.0	62,762	100.0	--
Milwaukee County	One Person	129,317	33.7	129,573	33.7	--
	Two People	116,827	30.5	117,073	30.5	--
	Three People	57,206	14.9	57,327	14.9	--
	Four People	42,925	11.2	43,015	11.2	--
	Five or More People	37,316	9.7	37,395	9.7	--
	Total	383,591	100.0	384,383	100.0	--
Ozaukee County	One Person	8,475	24.8	8,509	24.7	-0.1
	Two People	12,791	37.4	12,864	37.4	--
	Three People	5,321	15.5	5,359	15.6	0.1
	Four People	4,802	14.0	4,812	14.0	--
	Five or More People	2,839	8.3	2,845	8.3	--
	Total	34,228	100.0	34,389	100.0	--
Racine County	One Person	19,958	26.4	19,997	26.4	--
	Two People	26,130	34.5	26,213	34.6	0.1
	Three People	11,955	15.8	11,979	15.8	--
	Four People	10,185	13.5	10,205	13.4	-0.1
	Five or More People	7,423	9.8	7,438	9.8	--
	Total	75,651	100.0	75,832	100.0	--
Walworth County	One Person	10,554	26.6	10,581	26.6	--
	Two People	14,008	35.3	14,044	35.4	0.1
	Three People	6,068	15.3	6,083	15.3	--
	Four People	5,090	12.8	5,018	12.6	-0.2
	Five or More People	3,979	10.0	3,989	10.1	0.1
	Total	39,699	100.0	39,715	100.0	--
Washington County	One Person	11,839	22.9	11,908	23.0	0.1
	Two People	19,195	37.2	19,222	37.1	-0.1
	Three People	8,336	16.2	8,341	16.1	-0.1
	Four People	7,719	15.0	7,748	15.0	--
	Five or More People	4,516	8.7	4,533	8.8	0.1
	Total	51,605	100.0	51,752	100.0	--
Waukesha County	One Person	36,286	23.8	36,366	23.7	-0.1
	Two People	56,297	36.9	56,464	36.9	--
	Three People	24,083	15.8	24,152	15.8	--
	Four People	22,846	14.9	22,996	15.0	0.1
	Five or More People	13,151	8.6	13,189	8.6	--
	Total	152,663	100.0	153,167	100.0	--
Region	One Person	232,817	29.1	233,361	29.1	--
	Two People	265,216	33.2	265,858	33.2	--
	Three People	123,453	15.4	123,750	15.4	--
	Four People	102,655	12.8	102,904	12.8	--
	Five or More People	75,946	9.5	76,127	9.5	--
	Total	800,087	100.0	802,000	100.0	--

Source: U.S. Bureau of the Census and SEWRPC

Table C.2
Comparison of the Estimated Number of Vehicles Available in the Region

County	2006-2010 CTPP		2011 Household Survey		Difference	
	Number of Vehicles	Percent of Total	Number of Vehicles	Percent of Total	Number	Percent
Kenosha	114,600	8.5	118,456	8.6	3,856	0.1
Milwaukee	553,250	40.8	556,404	40.6	3,154	-0.2
Ozaukee	66,765	4.9	69,221	5.0	2,456	0.1
Racine	135,560	10.0	140,145	10.2	4,585	0.2
Walworth	77,300	5.7	78,072	5.7	772	--
Washington	104,245	7.7	109,253	8.0	5,008	0.3
Waukesha	303,585	22.4	300,359	21.9	-3,226	-0.5
Region	1,355,305	100.0	1,371,910	100.0	16,605	--

County	2011 Estimate Based on Vehicle Registrations		2011 Household Survey		Difference	
	Number of Vehicles	Percent of Total	Number of Vehicles	Percent of Total	Number	Percent
Kenosha	120,050	8.7	118,456	8.6	-1,594	-1.3
Milwaukee	544,540	39.5	556,404	40.6	11,864	2.2
Ozaukee	70,280	5.1	69,221	5.0	-1,059	-1.5
Racine	146,840	10.7	140,145	10.2	-6,695	-4.6
Walworth	84,230	6.1	78,072	5.7	-6,158	-7.3
Washington	105,420	7.6	109,253	8.0	3,833	3.6
Waukesha	307,310	22.3	300,359	21.9	-6,951	-2.3
Region	1,378,670	100.0	1,371,910	100.0	-6,760	-0.5

Source: 2006-2010 Census Transportation Planning Package, WisDOT, and SEWRPC

the travel survey data by county varied by 0.1 to 26.6 percent from CTPP derived distributions, and at the regional level, the percentage of households in any given income range based on the 2011 resident household survey did not differ from the corresponding percentage of households based on CTPP data by more or less than 12.4 percent. Given that only 59 percent of the households provided income data and that the two datasets both represent sampled data, the variation in the travel survey distribution as compared with the CTPP is not unexpected.

The distribution of households based on household lifestyle from the travel survey was compared to the distribution obtained from the 2010 Census and is set forth in Table C.5. As shown in Table C.5, the comparison indicates that the distribution of households was accurately estimated by the 2011 resident household survey, varying from the 2010 Census by 0.0 to 4.7 percent at the county level, and 1.1 to 2.5 percent for the Region.

Table C.6 provides comparisons of data on the distribution of regional population by age category from the 2010 Census data and from the 2011 household travel survey. This comparison indicates that the distribution of population by age category was accurately estimated by the survey, with a difference no greater or less than 1.2 percent from Census estimates.

Table C.7 provides comparisons of data on the distribution of regional and county population by gender from the 2010 Census data and from the 2011 household travel survey. The comparison indicates that the distribution of population by gender by county was accurately estimated by the survey, with a difference no greater or less than 0.8 percent from 2010 Census estimates. Figure C.3 compares the composition of regional population by age and gender. This comparison indicates that the distribution of population by age and gender is accurately estimated by the 2011 resident household survey.

Table C.3
Comparison of the Distribution of Households by Vehicle Availability in the Region

	Vehicle Availability	2006-2010 CTPP		2011 Household Survey		Difference in Percent
		Number of Households	Percent Distribution	Number of Households	Percent Distribution	
Kenosha County	No Vehicles	4,285	6.7	3,828	6.1	-0.6
	One Vehicle	21,109	33.2	19,943	31.8	-1.4
	Two Vehicles	25,807	40.6	26,179	41.7	1.1
	Three Vehicles	8,170	12.9	8,428	13.4	0.5
	Four or More Vehicles	4,194	6.6	4,384	7.0	0.4
	Total	63,565	100.0	62,762	100.0	--
Milwaukee County	No Vehicles	51,500	13.6	51,052	13.3	-0.3
	One Vehicle	164,488	43.4	163,493	42.5	-0.9
	Two Vehicles	125,798	33.2	130,867	34.0	0.8
	Three Vehicles	28,080	7.4	29,470	7.7	0.3
	Four or More Vehicles	9,010	2.4	9,501	2.5	0.1
	Total	378,876	100.0	384,383	100.0	--
Ozaukee County	No Vehicles	723	2.1	712	2.1	--
	One Vehicle	10,127	29.8	9,911	28.8	-1.0
	Two Vehicles	16,597	48.7	16,924	49.2	0.5
	Three Vehicles	5,296	15.6	5,515	16.0	0.4
	Four or More Vehicles	1,284	3.8	1,327	3.9	0.1
	Total	34,027	100.0	34,389	100.0	--
Racine County	No Vehicles	6,582	8.8	5,052	6.7	-2.1
	One Vehicle	25,725	34.4	24,528	32.3	-2.1
	Two Vehicles	28,519	38.2	30,650	40.5	2.3
	Three Vehicles	9,386	12.5	10,574	13.9	1.4
	Four or More Vehicles	4,596	6.1	5,028	6.6	0.5
	Total	74,808	100.0	75,832	100.0	--
Walworth County	No Vehicles	2,000	5.1	2,351	5.9	0.8
	One Vehicle	10,163	26.0	11,293	28.4	2.4
	Two Vehicles	16,647	42.6	16,383	41.3	-1.3
	Three Vehicles	7,487	19.1	6,941	17.5	-1.6
	Four or More Vehicles	2,811	7.2	2,747	6.9	-0.3
	Total	39,108	100.0	39,715	100.0	--
Washington County	No Vehicles	2,573	5.0	1,816	3.5	-1.5
	One Vehicle	12,646	24.7	12,690	24.5	-0.2
	Two Vehicles	21,899	42.7	22,450	43.4	0.7
	Three Vehicles	10,180	19.9	10,709	20.7	0.8
	Four or More Vehicles	3,930	7.7	4,087	7.9	0.2
	Total	51,228	100.0	51,752	100.0	--
Waukesha County	No Vehicles	7,422	4.9	7,039	4.6	-0.3
	One Vehicle	40,396	26.7	41,316	27.0	0.3
	Two Vehicles	69,215	45.9	70,183	45.8	-0.1
	Three Vehicles	24,087	15.9	24,454	16.0	0.1
	Four or More Vehicles	9,993	6.6	10,175	6.6	--
	Total	151,113	100.0	153,167	100.0	--
Region	No Vehicles	75,085	9.5	71,850	9.0	-0.5
	One Vehicle	284,654	35.9	283,174	35.3	-0.6
	Two Vehicles	304,482	38.4	313,636	39.1	0.7
	Three Vehicles	92,686	11.7	96,091	12.0	0.3
	Four or More Vehicles	35,818	4.5	37,249	4.6	0.1
	Total	792,725	100.0	802,000	100.0	--

Source: 2006-2010 Census Transportation Planning Package and SEWRPC

Table C.4
Comparison of the Distribution of the Percentage of Households by Income in the Region

Household Income (in dollars)	Kenosha County 2006-2010 CTPP	Kenosha County 2011 Household Survey	Kenosha County Difference in Percent	Milwaukee County 2006-2010 CTPP	Milwaukee County 2011 Household Survey	Milwaukee County Difference in Percent
Under 20,000	5.1	8.9	3.8	8.8	11.8	3.0
20,000 to 39,999	13.7	22.1	8.4	18.4	18.8	0.4
40,000 to 49,999	9.1	8.8	-0.3	9.9	10.9	1.0
50,000 to 74,999	20.6	19.7	-0.9	22.2	25.0	2.8
75,000 to 99,999	19.3	18.5	-0.8	16.6	14.5	-2.1
100,000 or Over	32.2	22.0	-10.2	24.1	19.0	-5.1
Total	100.0	100.0	--	100.0	100.0	--

Household Income (in dollars)	Ozaukee County 2006-2010 CTPP	Ozaukee County 2011 Household Survey	Ozaukee County Difference in Percent	Racine County 2006-2010 CTPP	Racine County 2011 Household Survey	Racine County Difference in Percent
Under 20,000	2.1	11.9	9.8	4.6	11.4	6.8
20,000 to 39,999	9.2	22.6	13.4	14.5	18.1	3.6
40,000 to 49,999	5.8	9.5	3.7	7.0	11.1	4.1
50,000 to 74,999	17.5	21.5	4.0	23.4	23.7	0.3
75,000 to 99,999	20.7	13.6	-7.1	19.4	14.9	-4.5
100,000 or Over	44.7	20.9	-23.8	31.1	20.8	-10.3
Total	100.0	100.0	--	100.0	100.0	--

Household Income (in dollars)	Walworth County 2006-2010 CTPP	Walworth County 2011 Household Survey	Walworth County Difference in Percent	Washington County 2006-2010 CTPP	Washington County 2011 Household Survey	Washington County Difference in Percent
Under 20,000	5.4	11.4	6.0	2.6	9.6	7.0
20,000 to 39,999	14.0	20.8	6.8	9.7	20.9	11.2
40,000 to 49,999	8.4	11.0	2.6	6.9	13.6	6.7
50,000 to 74,999	25.6	25.5	-0.1	21.8	22.2	0.4
75,000 to 99,999	20.0	14.3	-5.7	22.8	14.8	-8.0
100,000 or Over	26.6	17.0	-9.6	36.2	18.9	-17.3
Total	100.0	100.0	--	100.0	100.0	--

Household Income (in dollars)	Waukesha County 2006-2010 CTPP	Waukesha County 2011 Household Survey	Waukesha County Difference in Percent	Region 2006-2010 CTPP	Region 2011 Household Survey	Region Difference in Percent
Under 20,000	2.2	10.5	8.3	5.8	11.1	5.3
20,000 to 39,999	7.4	19.2	11.8	14.1	19.5	5.4
40,000 to 49,999	5.6	10.7	5.1	8.2	10.8	2.6
50,000 to 74,999	17.2	22.5	5.3	21.1	23.7	2.6
75,000 to 99,999	20.1	16.2	-3.9	18.6	15.1	-3.5
100,000 or Over	47.5	20.9	-26.6	32.2	19.8	-12.4
Total	100.0	100.0	--	100.0	100.0	--

Source: 2006-2010 Census Transportation Planning Package and SEWRPC

Table C.5
Comparison of the Distribution of the Percentage of Households by Lifestyle in the Region

	Age of Head of Household	2010 Federal Census		2011 Household Survey		Difference in Percent
		Number	Percent Distribution	Number	Percent Distribution	
Kenosha County	65 or Older	12,208	19.5	11,658	18.6	-0.9
	Under 65					
	without Children	28,834	46.0	29,639	47.2	1.2
	with Children	21,608	34.5	21,465	34.2	-0.3
	Total	62,650	100.0	62,762	100.0	--
Milwaukee County	65 or Older	74,402	19.4	68,329	17.8	-1.6
	Under 65					
	without Children	193,543	50.5	212,416	55.2	4.7
	with Children	115,646	30.1	103,638	27.0	-3.1
	Total	383,591	100.0	384,383	100.0	--
Ozaukee County	65 or Older	8,559	25.0	8,290	24.1	-0.9
	Under 65					
	without Children	15,121	44.2	15,682	45.6	1.4
	with Children	10,548	30.8	10,417	30.3	-0.5
	Total	34,228	100.0	34,389	100.0	--
Racine County	65 or Older	16,953	22.4	15,688	20.7	-1.7
	Under 65					
	without Children	34,456	45.6	35,844	47.3	1.7
	with Children	24,242	32.0	24,300	32.0	--
	Total	75,651	100.0	75,832	100.0	--
Walworth County	65 or Older	8,981	22.6	9,208	23.2	0.6
	Under 65					
	without Children	18,707	47.1	18,643	46.9	-0.2
	with Children	12,011	30.3	11,864	29.9	-0.4
	Total	39,699	100.0	39,715	100.0	--
Washington County	65 or Older	11,377	22.0	11,314	21.9	-0.1
	Under 65					
	without Children	23,420	45.4	24,014	46.4	1.0
	with Children	16,808	32.6	16,424	31.7	-0.9
	Total	51,605	100.0	51,752	100.0	--
Waukesha County	65 or Older	36,142	23.7	36,146	23.6	-0.1
	Under 65					
	without Children	68,092	44.6	67,193	43.9	-0.7
	with Children	48,429	31.7	49,828	32.5	0.8
	Total	152,663	100.0	153,167	100.0	--
Region	65 or Older	168,622	21.1	160,633	20.0	-1.1
	Under 65					
	without Children	382,173	47.8	403,431	50.3	2.5
	with Children	249,292	31.1	237,936	29.7	-1.4
	Total	800,087	100.0	802,000	100.0	--

Source: U.S. Bureau of the Census and SEWRPC

Table C.6
Comparison of the Distribution of Population by Age Group in the Region

Age Group	2010 Federal Census		2011 Resident Household Survey		Difference in Percent
	Number	Percent	Number	Percent	
Under 5 years	133,503	6.6	156,270	7.8	1.2
5 to 9 years	137,010	6.8	138,254	6.9	0.1
10 to 14 years	140,118	6.9	141,294	7.0	0.1
15 to 17 years	87,644	4.3	87,652	4.4	0.1
18 and 19 years	57,282	2.8	47,080	2.3	-0.5
20 years	28,168	1.4	21,600	1.1	-0.3
21 years	27,476	1.4	22,563	1.1	-0.3
22 to 24 years	81,951	4.1	80,221	4.0	-0.1
25 to 29 years	137,321	6.8	136,433	6.8	--
30 to 34 years	128,174	6.3	127,601	6.3	--
35 to 39 years	125,851	6.2	125,641	6.2	--
40 to 44 years	136,456	6.8	136,229	6.8	--
45 to 49 years	153,577	7.6	153,340	7.6	--
50 to 54 years	153,402	7.6	153,326	7.6	--
55 to 59 years	132,272	6.5	132,335	6.6	0.1
60 and 61 years	46,132	2.3	46,134	2.3	--
62 to 64 years	59,626	3.0	59,665	3.0	--
65 and 66 years	31,045	1.5	31,033	1.5	--
67 to 69 years	41,577	2.1	41,519	2.1	--
70 to 74 years	54,925	2.7	54,620	2.7	--
75 to 79 years	46,609	2.3	45,731	2.3	--
80 to 84 years	39,940	2.0	38,193	1.9	-0.1
85 years and older	39,911	2.0	34,544	1.7	-0.3
Total	2,019,970	100.0	2,011,278	100.0	--

Source: U.S. Bureau of the Census and SEWRPC

Table C.8 compares employed population estimates at the county and Region levels from the U.S. Bureau of Labor Statistics 2011 Local Area Unemployment Statistics (LAUS) and 2011 household travel survey. This comparison shows that the distribution of population by employment status was accurately estimated by the survey, with the distribution of employed people varying by no more than 0.4 percent at the county and Region levels.

Lastly, estimates of commercial truck availability, including estimates by type, as determined by the 2011 travel survey, were compared with corresponding estimates as derived from 2011 WisDOT Division of Motor Vehicles (DMV), registration records. This comparison, shown in Table C.9, indicates a high degree of accuracy for the commercial truck data derived from the survey, within the Region.

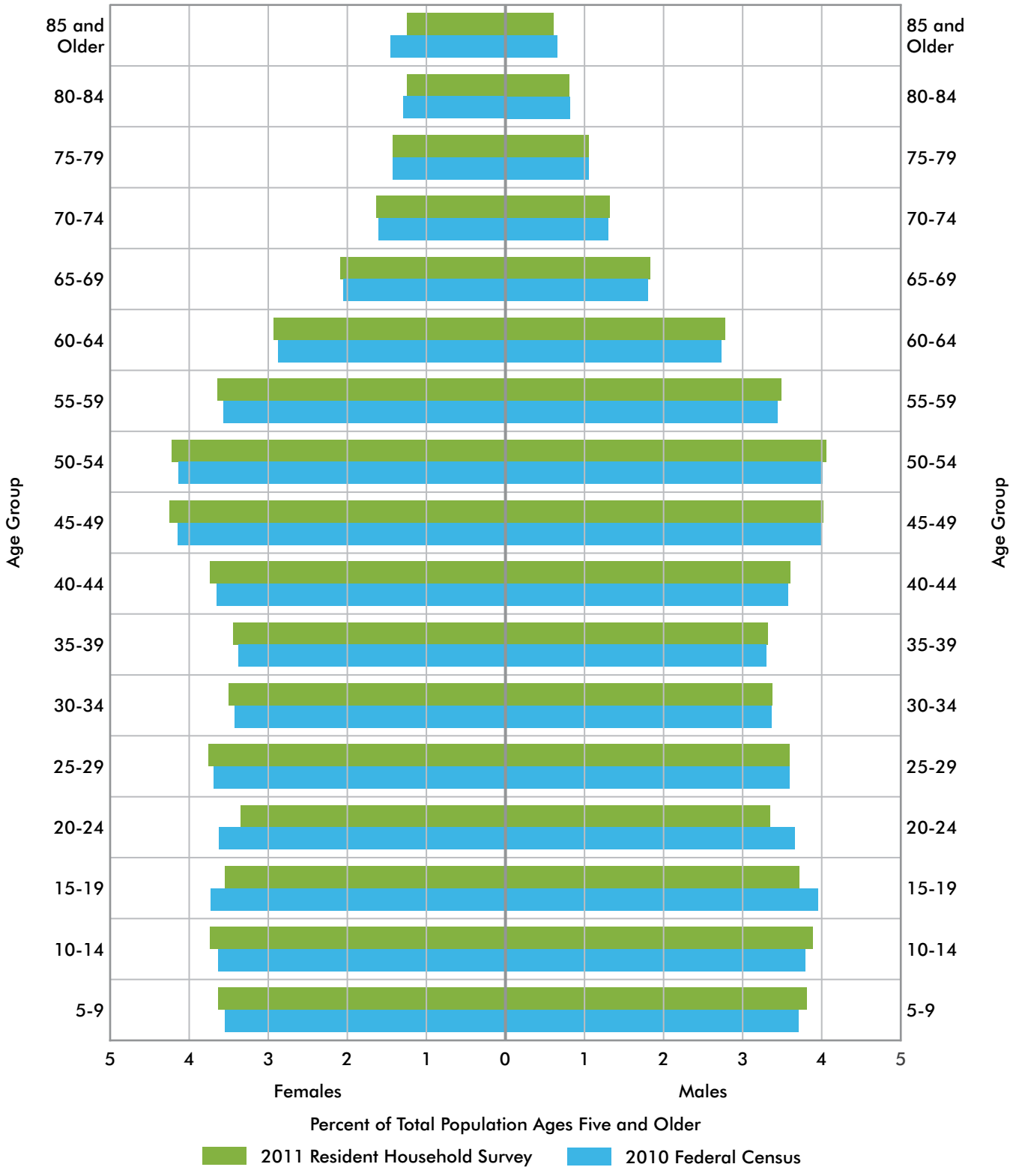
The results of the accuracy checks of the household and truck travel survey with respect to socioeconomic characteristics and vehicle availability data indicate that the survey data demonstrate a high degree of accuracy and completeness, particularly considering that the surveys, Census, CTPP, and ACS were conducted in different years; the Census, CTPP, and ACS include the Region's group-quartered population and the household travel survey does not; and with respect to certain socioeconomic characteristics, the travel survey, CTPP, and ACS are all sample surveys.

Table C.7
Comparison of the Distribution of Population Ages Five and Older by Gender in the Region

	Gender	2010 Federal Census		2011 Household Survey		Difference in Percent
		Population	Percent Distribution	Population	Percent Distribution	
Kenosha County	Male	76,861	49.5	74,546	49.2	-0.3
	Female	78,570	50.5	76,901	50.8	0.3
	Total	155,431	100.0	151,446	100.0	--
Milwaukee County	Male	422,425	48.1	413,540	47.9	-0.2
	Female	455,946	51.9	450,168	52.1	0.2
	Total	878,371	100.0	863,708	100.0	--
Ozaukee County	Male	39,994	48.9	39,509	49.0	0.1
	Female	41,853	51.1	41,051	51.0	-0.1
	Total	81,847	100.0	80,561	100.0	--
Racine County	Male	90,251	49.4	86,536	48.6	-0.8
	Female	92,410	50.6	91,506	51.4	0.8
	Total	182,661	100.0	178,039	100.0	--
Walworth County	Male	48,069	50.1	47,512	50.8	0.7
	Female	47,963	49.9	46,070	49.2	-0.7
	Total	96,032	100.0	93,581	100.0	--
Washington County	Male	61,260	49.5	60,780	49.4	-0.1
	Female	62,448	50.5	62,271	50.6	0.1
	Total	123,708	100.0	123,052	100.0	--
Waukesha County	Male	180,487	49.0	178,933	49.1	0.1
	Female	187,930	51.0	185,685	50.9	-0.1
	Total	368,417	100.0	364,620	100.0	--
Region	Male	919,347	48.7	901,356	48.6	-0.1
	Female	967,120	51.3	953,652	51.4	0.1
	Total	1,886,467	100.0	1,855,008	100.0	--

Source: U.S. Bureau of the Census and SEWRPC

Figure C.3
Comparison of Age and Gender Composition of the Population Ages Five and Older in the Region



Source: U.S. Census Bureau and SEWRPC

Table C.8
Comparison of Employment Status in the Region

County	Employment Status				
	2011 Local Area Unemployment Statistics		2011 Household Survey		Difference in Percent
	Employed People	Percent Distribution	Employed People	Percent Distribution	
Kenosha	78,800	8.3	76,600	7.9	-0.4
Milwaukee	420,900	44.1	428,700	44.4	0.3
Ozaukee	44,200	4.6	44,100	4.6	--
Racine	88,600	9.3	92,100	9.5	0.2
Walworth	51,000	5.3	50,300	5.2	-0.1
Washington	69,300	7.3	71,700	7.4	0.1
Waukesha	201,100	21.1	202,300	21.0	-0.1
Region	953,900	100.0	965,800	100.0	--

Source: U.S. Bureau of Labor Statistics and SEWRPC

Table C.9
Comparison of Truck Registrations and Truck Availability in the Region

Truck Classification	2011 Truck Registrations		2011 Truck Survey		Difference	
	Number	Percent Distribution	Number	Percent Distribution	Number	Percent
Light	71,400	60.1	67,300	55.3	-4,100	-5.7
Medium and Heavy	36,700	30.9	43,600	35.9	6,900	18.8
Municipal	10,700	9.0	10,700	8.8	--	--
Total	118,800	100.0	121,600	100.0	2,800	2.4

Source: Wisconsin Department of Transportation and SEWRPC

TRAVEL ACCURACY CHECKS

The travel accuracy checks include comparisons of travel to work characteristics as obtained from the ACS datasets and from the 2011 travel survey. The comparisons include mode of travel to work and work purpose travel between the counties of the Region. In considering these comparisons, it must be recognized that the ACS data and travel survey data are both from sample surveys, and that the ACS data are not the same as the travel survey data. The ACS data represent the "usual" mode and location of work travel over the prior week, and the Commission travel survey data represent travel on a specific assigned survey day. Therefore, some difference between the travel survey and Census data should be expected.

Table C.10 provides comparisons of the distribution of mode of travel to work by county as obtained from the 2009-2011 ACS data and from the 2011 travel survey. Table C.11 compares county-to-county travel within the Region from place of residence to place of employment. The data from the two sources closely compare, particularly when the differences between the two surveys are considered.

To verify that travel into and out of the Region was adequately represented by the 2011 travel inventory, travel accuracy checks were conducted at the boundaries of the Region along a defined cordon line as shown on Map C.1. The findings shown in Table C.12 indicated that the travel survey data accurately represented external travel affecting the Southeastern Wisconsin Region.

Another set of travel accuracy checks included comparisons of the travel survey data with traffic counts of vehicle crossings at selected east-west screenlines within the Region. Three screenlines, as shown on Map C.1, were defined

Table C.10
Comparison of Mode Share for Travel to Work in the Region

	Source	Mode					Total
		Drive Alone	Carpool	Public Transit	Taxi/ Motorcycle	Bicycle/Walk	
Kenosha County	2009-2011 ACS	86.1	9.1	1.5	1.1	2.2	100.0
	2011 Household Survey	87.7	5.8	1.3	0.8	4.4	100.0
	Difference in Percent	1.6	-3.3	-0.2	-0.3	2.2	--
Milwaukee County	2009-2011 ACS	77.4	11.3	6.0	0.8	4.5	100.0
	2011 Household Survey	79.2	6.5	5.3	0.5	8.5	100.0
	Difference in Percent	1.8	-4.8	-0.7	-0.3	4.0	--
Ozaukee County	2009-2011 ACS	88.2	8.0	0.5	0.6	2.7	100.0
	2011 Household Survey	92.4	4.4	0.8	0.3	2.1	100.0
	Difference in Percent	4.2	-3.6	0.3	-0.3	-0.6	--
Racine County	2009-2011 ACS	86.9	8.8	1.5	1.0	1.8	100.0
	2011 Household Survey	91.2	4.5	0.9	0.3	3.1	100.0
	Difference in Percent	4.3	-4.3	-0.6	-0.7	1.3	--
Walworth County	2009-2011 ACS	83.1	10.2	0.7	1.3	4.7	100.0
	2011 Household Survey	93.6	3.4	0.2	1.3	1.5	100.0
	Difference in Percent	10.5	-6.8	-0.5	--	-3.2	--
Washington County	2009-2011 ACS	89.2	8.0	0.5	0.9	1.4	100.0
	2011 Household Survey	93.4	2.7	0.5	1.7	1.7	100.0
	Difference in Percent	4.2	-5.3	--	0.8	0.3	--
Waukesha County	2009-2011 ACS	90.2	7.0	0.7	0.6	1.5	100.0
	2011 Household Survey	95.0	2.6	0.2	0.9	1.3	100.0
	Difference in Percent	4.8	-4.4	-0.5	0.3	-0.2	--
Region	2009-2011 ACS	83.2	9.6	3.2	0.8	3.2	100.0
	2011 Household Survey	86.9	4.9	2.6	0.7	4.9	100.0
	Difference in Percent	3.7	-4.7	-0.6	-0.1	1.7	--

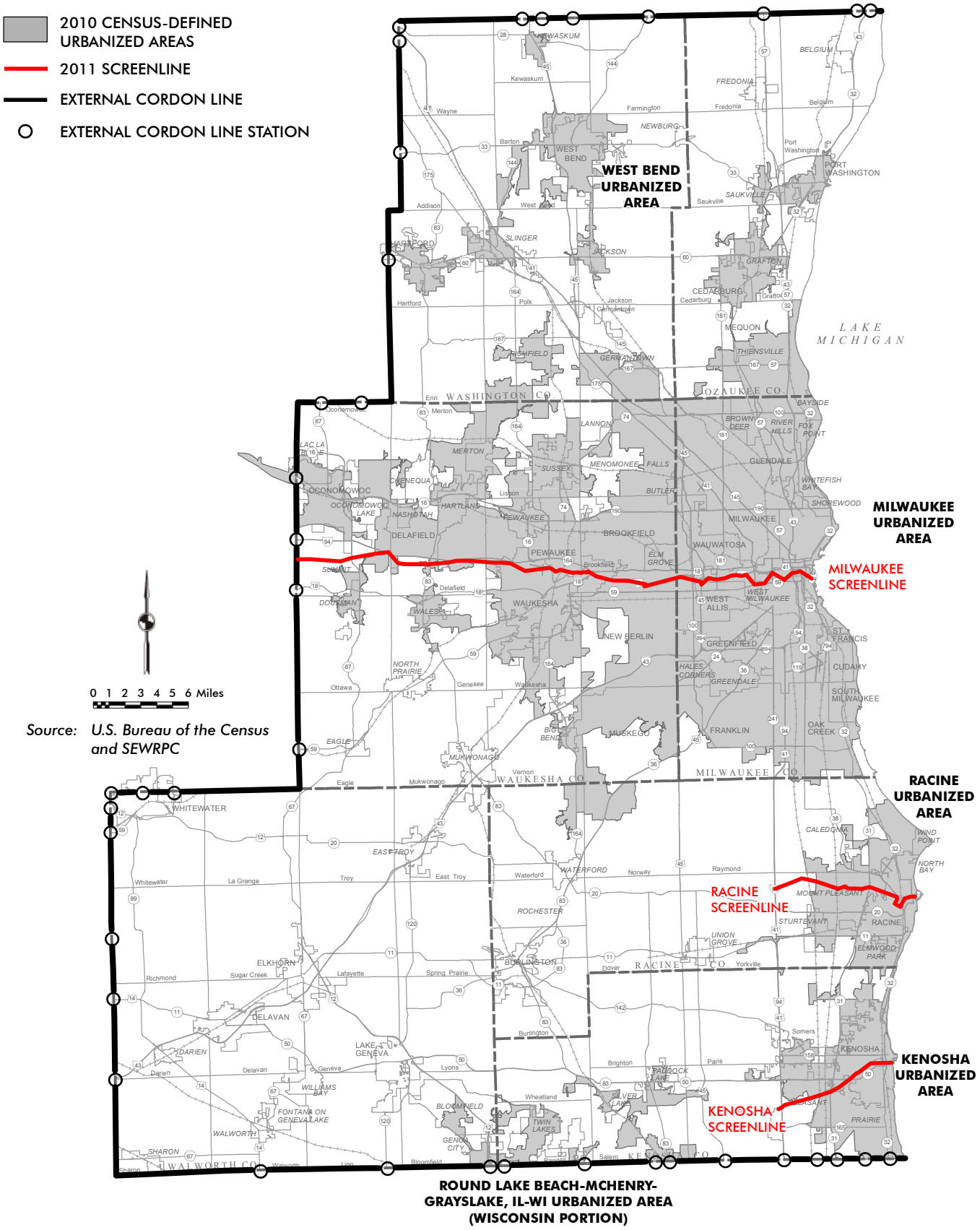
Source: 2009-2011 American Community Survey and SEWRPC

Table C.11
Comparison of the Distribution of the Percentage of County-to-County Work Travel in the Region

County of Residence	Source	County of Employment							
		Kenosha	Milwaukee	Ozaukee	Racine	Walworth	Washington	Waukesha	Total
Kenosha County	2006-2010 CTPP	76.25	5.90	0.16	14.05	1.79	0.03	1.82	100.00
	2011 Household Survey	75.66	4.94	--	13.56	4.16	0.07	1.61	100.00
	Difference in Percent	-0.59	-0.96	-0.16	-0.49	2.37	0.04	-0.21	--
Milwaukee County	2006-2010 CTPP	0.41	82.08	1.83	1.12	0.18	1.02	13.36	100.00
	2011 Household Survey	0.59	77.03	2.45	3.23	0.38	2.09	14.23	100.00
	Difference in Percent	0.18	-5.05	0.62	2.11	0.20	1.07	0.87	--
Ozaukee County	2006-2010 CTPP	0.14	34.52	52.93	0.21	0.08	4.59	7.53	100.00
	2011 Household Survey	0.13	33.74	48.21	0.20	0.05	10.78	6.89	100.00
	Difference in Percent	-0.01	-0.78	-4.72	-0.01	-0.03	6.19	-0.64	--
Racine County	2006-2010 CTPP	7.63	17.38	0.13	67.64	1.77	0.15	5.30	100.00
	2011 Household Survey	8.65	17.34	0.09	66.78	1.97	0.11	5.06	100.00
	Difference in Percent	1.02	-0.04	-0.04	-0.86	0.20	-0.04	-0.24	--
Walworth County	2006-2010 CTPP	2.91	6.50	0.12	5.06	76.03	0.22	9.16	100.00
	2011 Household Survey	5.01	5.77	--	4.32	78.71	--	6.19	100.00
	Difference in Percent	2.10	-0.73	-0.12	-0.74	2.68	-0.22	-2.97	--
Washington County	2006-2010 CTPP	0.10	21.37	6.99	0.33	0.02	51.52	19.67	100.00
	2011 Household Survey	0.10	17.56	6.06	0.05	--	60.29	15.94	100.00
	Difference in Percent	--	-3.81	-0.93	-0.28	-0.02	8.77	-3.73	--
Waukesha County	2006-2010 CTPP	0.28	31.59	0.83	1.07	0.64	1.80	63.79	100.00
	2011 Household Survey	0.31	31.23	1.11	1.81	0.97	4.06	60.51	100.00
	Difference in Percent	0.03	-0.36	0.28	0.74	0.33	2.26	-3.28	--

Source: 2006-2010 Census Transportation Planning Package and SEWRPC

Map C.1
Travel Inventory Cordon Line and Screenline Locations for Accuracy Checks



Source: U.S. Bureau of the Census and SEWRPC

Table C.12
Comparison of Estimated Average Weekday Traffic Volumes Crossing the Region Boundary: 2011

Region Boundary Cordon Line Segment	Estimated Average Weekday Traffic Volumes		Difference	
	Traffic Counts	Travel Survey Data	Number	Percent
Northern	46,700	51,000	4,300	9.2
Western	160,100	164,600	4,500	2.8
Southern	178,500	165,700	-12,800	-7.2
Total	385,300	381,300	-4,000	-1.0

Source: Wisconsin Department of Transportation and SEWRPC

Table C.13
Comparison of Estimated Average Weekday Vehicular Traffic Crossing Kenosha, Milwaukee, and Racine Screenlines: 2011

Screenline	Estimated Average Weekday Traffic Volumes		Difference	
	Traffic Counts	Travel Survey Data	Number	Percent
Kenosha	227,900	198,800	-29,100	-12.8
Milwaukee	957,300	959,400	2,100	0.2
Racine	215,200	212,200	-3,000	-1.4

Source: SEWRPC

in the Milwaukee, Racine, and Kenosha urbanized areas. These screenlines parallel natural or manmade barriers to minimize undetected crossings. The Milwaukee screenline, which roughly paralleled IH 94, extended across the Region from the Waukesha-Jefferson County line on the west to Lake Michigan on the east. The results of the screenline accuracy checks on the travel survey data, as shown in Table C.13, indicated that the simulated traffic volumes from the travel survey data accurately represented actual traffic counts in 2011, accounting for 87.2 percent of the traffic volumes crossing the screenlines in Kenosha, 100.2 percent in Milwaukee, and 98.6 percent in Racine. It should be noted that freeway reconstruction activities in 2011 likely impacted the accuracy of the Kenosha screenline traffic counts collected in 2011, overstating the difference between the travel survey data and estimated actual traffic flows.

The final major travel accuracy check compared simulated VMT by county and for the Region as derived from the travel surveys and estimated actual VMT based upon traffic counts. As shown in Table C.14, VMT as derived from the 2011 travel inventory varied by 4.4 to 13.4 percent from estimated actual VMT at the county level. At the regional level, simulated VMT represented 98.1 percent of total VMT estimated from traffic counts, indicating that the simulated travel from travel survey data accurately replicates travel in the Region.

The results of socioeconomic and travel accuracy checks on the travel inventory data indicate that the 2011 travel surveys are able to replicate regional socioeconomic characteristics and travel with a high degree of accuracy and completeness.

Table C.14
Comparison of Estimated Average Weekday Arterial Vehicle-Miles of Travel in the Region: 2011

County	Estimated Average Weekday Vehicle-Miles of Travel (Thousands)		Difference	
	Traffic Counts	Travel Survey Data	Number	Percent
Kenosha	3,497	3,235	-262	-7.5
Milwaukee	16,210	14,035	-2,175	-13.4
Ozaukee	2,378	2,482	104	4.4
Racine	3,468	3,917	449	12.9
Walworth	2,452	2,726	274	11.2
Washington	3,442	3,771	329	9.6
Waukesha	9,415	9,938	523	5.6
Region	40,862	40,104	-758	-1.9

Source: Wisconsin Department of Transportation and SEWRPC

SOUTHEASTERN WISCONSIN REGIONAL PLANNING COMMISSION STAFF*

Kenneth R. Yunker, PE ..... Executive Director
Michael G. Hahn, PE, PH ..... Deputy Director
Stephen P. Adams ..... Public Involvement and Outreach Manager
Nancy M. Anderson, AICP ..... Chief Community Assistance Planner
Christopher T. Hiebert, PE ..... Chief Transportation Engineer
Laura L. Kletti, PE, CFM ..... Chief Environmental Engineer
Elizabeth A. Larsen, SPHR ..... Assistant Director-Administration
Rob W. Merry, PLS, PS ..... Chief Surveyor
David A. Schilling ..... Chief Land Use Planner
Dr. Thomas M. Slawski ..... Chief Biologist

Special acknowledgment is due Mr. Ryan W. Hoel, Mr. Eric D. Lynde, and Mr. Kevin J. Muhs, Principal Engineers; Mr. Benjamin R. McKay, Principal Planner; Mr. Gom B. Ale, Principal Planner-Modeler; Ms. Kathryn E. Sobottke, Principal Specialist; and Mr. William J. Stauber, former Chief Land Use Planner, for their contributions to this report, with appreciation extended to all Commission staff who supported and contributed to the report.

SPECIAL ACKNOWLEDGMENT TO COMMITTEE ALTERNATES AND PREVIOUS MEMBERS

Special acknowledgment is due the following individuals who served as alternates for Committee members or as previous members of the Committees during the course of preparing this volume of VISION 2050:

Bruce Barnes	Waukesha County
Anthony J. Barth	Wisconsin Department of Transportation
Timothy R. Bate	Milwaukee Metropolitan Sewerage District
Sandra Beaupré	Wisconsin Department of Transportation
John M. Bennett	City of Franklin
Christopher R. Bertch	Federal Transit Administration, U.S. Department of Transportation
Kevin M. Brunner	Walworth County
David Cialdini	Milwaukee County
Peter Daniels	City of West Allis
Robert Dreblow	Ozaukee County
Michael Friedlander	Wisconsin Department of Natural Resources
Michael Giugno	Milwaukee County Transit System
Don Gutkowski	Wisconsin Department of Transportation
Susan Hedman	U.S. Environmental Protection Agency
T.J. Justice	City of West Bend
Douglas Koehler	City of Waukesha
Alexis Kuklenski	Federal Highway Administration, U.S. Department of Transportation
Michael M. Lemens	City of Kenosha
Andrew Levy	Wisconsin Department of Transportation
Michael Loughran	City of Milwaukee
Shawn Lundie	Waukesha County
James Martin	Milwaukee County
Susan Morrison	Wisconsin Department of Transportation
Paul Mueller	Washington County
John Nordbo	Wisconsin Department of Transportation
Brian F. O'Connell	City of Racine
Jeff Osterman	City of Milwaukee
Maria Pandazi	City of Waukesha
Jennifer Sarnecki	Wisconsin Department of Transportation
Jay Saunders	Milwaukee County
Sandy Scherer	Waukesha County
Karen Schmeichen	Wisconsin Department of Transportation
Matthew Schreiber	Wisconsin Department of Transportation
Marisol Simón	Federal Transit Administration, U.S. Department of Transportation
Jeff Sponcia	Milwaukee County Transit System
Bart A. Sponseller	Wisconsin Department of Natural Resources
Albert Stanek	City of Racine
John Stibal	City of West Allis
Aaron Szopinski	City of Milwaukee
Michael Thompson	Wisconsin Department of Natural Resources
Andrew Tillman	Milwaukee County Transit System
Bill Wehrley	City of Wauwatosa
Amanda Williams	City of Milwaukee
David Windsor	City of Milwaukee
Thomas Winter	Milwaukee County Transit System
Thomas Wondra	Washington County

**As of July 28, 2016 when plan was adopted.*