PLANNING REPORT NO. 55

VISION 2050 VOLUME II: DEVELOPING THE VISION AND PLAN
PART III – PRELIMINARY RECOMMENDED PLAN

A REGIONAL LAND USE AND TRANSPORTATION PLAN FOR SOUTHEASTERN WISCONSIN

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VISION 2050
One Region, Focusing on Our Future

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

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

PLANNING REPORT
NUMBER 55

A REGIONAL LAND USE AND TRANSPORTATION PLAN FOR SOUTHEASTERN WISCONSIN

VOLUME II: DEVELOPING THE VISION AND PLAN
PART III – PRELIMINARY RECOMMENDED PLAN

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July 2017

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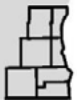

STATEMENT OF THE CHAIRMEN

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

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PRELIMINARY RECOMMENDED YEAR 2050 REGIONAL LAND USE AND TRANSPORTATION PLAN

4

Credit: SEWRPC Staff

4.1 INTRODUCTION

This chapter presents a preliminary recommended year 2050 regional land use and transportation plan for Southeastern Wisconsin. The Preliminary Recommended Plan was developed following a thorough evaluation of three detailed regional land use and transportation alternatives, and includes the most effective elements of the alternatives.[1] Public input on the alternatives, as well as input from the Commission's Advisory Committees on Regional Land Use Planning and Regional Transportation Planning, Environmental Justice Task Force, and VISION 2050 Task Forces on key areas of interest, were also considered in determining the recommendations included in the Preliminary Plan.

The Preliminary Plan was developed following a thorough evaluation of three detailed regional land use and transportation system alternatives and public input.

The Preliminary Recommended Plan includes a proposed land use development pattern and transportation system, together representing a desired future vision for the Region. Like the alternatives, the Preliminary Plan was thoroughly evaluated based on the objectives and criteria documented in Chapter III of this volume, comparing the Preliminary Plan to existing conditions and the Trend from the alternatives stage. Highlights of this evaluation are incorporated into the descriptions and recommendations of the Preliminary Plan to follow, with the full evaluation detailed in Appendix H to this volume. Appendix H includes condensed versions of the detailed discussions that were part of the alternatives evaluation. The longer versions can be found in the full evaluation of the alternatives presented in Appendix F to this volume.

The Preliminary Plan represents a desired future vision for the Region.

Section 4.2 of this chapter describes the preliminary recommendations for land use, including a preliminary recommended land use development pattern.

[1] *An overview of the three detailed alternatives and their evaluation is set forth in Chapter III of this volume.*

Section 4.3 describes the preliminary recommendations for transportation, including a preliminary recommended transportation system. Section 4.4 documents public feedback received on the Preliminary Recommended Plan, which was the focus of the fifth series of VISION 2050 workshops. Section 4.5 summarizes notable changes made to the Preliminary Plan as staff developed the final plan.

4.2 PRELIMINARY RECOMMENDED LAND USE COMPONENT

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

An additional 229,000 jobs are forecast for the Region by 2050, which will require an in-migration of workers.

The Region of 2050 will be different than the Region of today due to its potential for continued growth and development. It is expected there will be about 369,000 additional residents and about 229,000 additional jobs, which will require an in-migration of population and workers. This anticipated growth will create demand for land and improved transportation facilities, and increase pressure on the Region's natural resources.

A major focus of the Preliminary Plan is on achieving more compact development.

The land use component of the Preliminary Recommended Plan focuses on compact development and presents a development pattern and recommendations that accommodate projected growth in regional population, households, and employment in a sustainable manner consistent with VISION 2050 plan objectives. The compact development proposed under the Preliminary Plan ranges from high-density development such as TOD, to neighborhoods in smaller communities with single-family housing within easy walking distance of neighborhood amenities such as parks, schools and businesses. This range of development is proposed because it has a number of benefits, including:

- Walkable neighborhoods that encourage active lifestyles and a sense of community
- Minimizing impacts on natural and agricultural resources
- Minimizing impacts to water resources and air quality
- Reducing the distance needed to travel between destinations
- Supporting public transit connections between housing and employment
- A variety of housing options near employment

- Positioning the Region to attract potential workers and employers
- Meeting the needs of the Region's aging population
- Minimizing the cost of public services
- Maximizing redevelopment in areas with existing infrastructure

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

Description of Land Use Component

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

Map 4.1 presents the land use development pattern proposed under the Preliminary Plan. Tables 4.1 and 4.2 provide information regarding existing and proposed land use.[2] Actual and planned population, households, and employment by county and sub-area are presented in Table 4.3 (the sub-areas are shown on Map 4.2).

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

VISION 2050 is intended to be a guide, or overall framework, for future land use within the Region.

Population, Household, and Employment Projections

The Commission prepared population, household, and employment projections for the period 2010 to 2050 at the beginning of the VISION 2050 process.[3] As in previous projection efforts, a range of projections were prepared for VISION 2050. This range includes high, intermediate, and low population, household, and employment levels. The high and low projections are intended to provide a range of levels that could conceivably be achieved under significantly higher or lower, but plausible, growth scenarios for the Region. The intermediate projections are considered the most likely to be achieved for the Region. Population would increase from 2,020,000 in 2010 to 2,354,000 in 2050 under the intermediate projection, an increase of 16.5 percent. Households would increase from 800,100 in 2010 to 972,400 in 2050 (21.5 percent increase) and employment would increase from 1,176,600 in 2010 to 1,386,900 in 2050 (17.9 percent increase).

[2] The Mixed-Use City Center, Mixed-Use Traditional Neighborhood, Small Lot Traditional Neighborhood, Medium Lot Neighborhood, Large Lot Neighborhood, Large Lot Exurban, and Rural Estate land use categories are illustrated in Chapter 3 of Volume II.

[3] Projections are discussed in further detail in Chapter 6 of Volume I of the VISION 2050 report.

Map 4.1
Land Use Development Pattern: Preliminary Recommended Plan

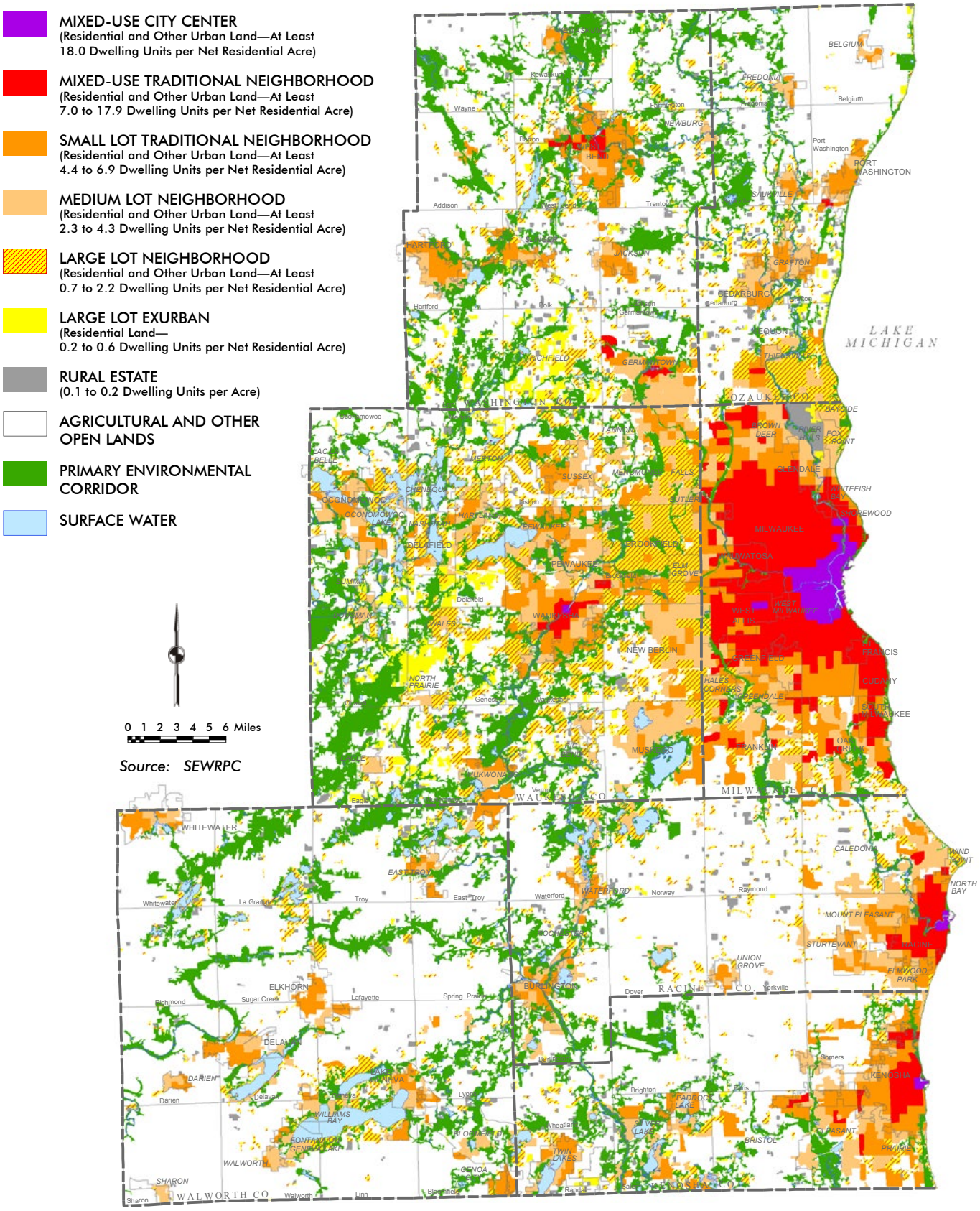


Table 4.1
Existing and Proposed Land Use in the Region: 2010 and 2050

Land Use	Existing 2010		Planned Increment		Planned 2050	
	Square Miles	Percent of Total	Square Miles	Percent of Total	Square Miles	Percent of Total
Developed Land						
Residential						
Mixed-Use City Center[a]	3.1	0.1	0.3	9.7	3.4	0.1
Mixed-Use Traditional Neighborhood[b]	45.8	1.7	3.1	6.8	48.9	1.8
Small Lot Traditional Neighborhood[c]	41.6	1.5	34.3	82.5	75.9	2.8
Medium Lot Neighborhood[d]	88.2	3.3	6.4	7.3	94.6	3.5
Large Lot Neighborhood[e]	160.5	6.0	4.7	2.9	165.2	6.1
Large Lot Exurban[f]	31.9	1.2	2.7	8.5	34.6	1.3
Rural Estate[g]	29.9	1.1	7.5	25.1	37.4	1.4
Residential Subtotal	400.9	14.9	59.0	14.7	459.9	17.1
Commercial	35.6	1.3	13.6	38.1	49.2	1.8
Industrial	35.2	1.3	8.0	22.7	43.2	1.6
Transportation, Communication, and Utilities	213.8	8.0	12.4	5.8	226.2	8.4
Governmental and Institutional	37.0	1.4	1.7	4.6	38.7	1.4
Recreational[h]	56.0	2.1	6.7	11.9	62.7	2.3
Unused Urban	46.0	1.7	-21.2	-46.7	24.8	0.9
Developed Land Subtotal	824.5	30.7	80.2	9.7	904.7	33.6
Undeveloped Land						
Agricultural[i]	1,155.5	43.0	-58.4	-5.1	1,097.1	40.9
Natural Resource Areas						
Surface Water	84.7	3.1	0.0	0.0	84.7	3.1
Wetlands	315.2	11.7	0.0	0.0	315.2	11.7
Woodlands	191.4	7.1	0.0	0.0	191.4	7.1
Natural Resource Areas Subtotal	591.3	21.9	0.0	0.0	591.3	21.9
Unused and Other Open Land[j]	118.5	4.4	-21.8	-18.4	96.7	3.6
Undeveloped Land Subtotal	1,865.2	69.3	-80.2	-4.3	1,785.0	66.4
Total	2,689.7	100.0	0.0	0.0	2,689.7	100.0

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

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

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

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

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

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

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

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

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

[i] *Includes farmed wetlands.*

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

Source: SEWRPC

Table 4.2
Existing and Proposed Land Use in the Region by County: 2010 and 2050

Land Use	Kenosha County (square miles)			Milwaukee County (square miles)			Ozaukee County (square miles)			Racine County (square miles)		
	2010	Increment	2050	2010	Increment	2050	2010	Increment	2050	2010	Increment	2050
Developed Land												
Residential												
Mixed-Use City Center[a]	0.1	0.0	0.1	2.8	0.2	3.0	0.0	0.0	0.0	0.2	0.0[b]	0.2
Mixed-Use Traditional Neighborhood[c]	2.8	0.9	3.8	37.7	1.2	38.9	0.0	0.1	0.1	3.8	0.2	4.0
Small Lot Traditional Neighborhood[d]	4.8	7.7	12.5	12.8	2.3	15.2	2.2	2.2	4.4	4.4	4.1	8.5
Medium Lot Neighborhood[e]	10.1	0.7	10.7	16.3	0.2	16.6	6.9	0.2	7.0	12.9	0.4	13.2
Large Lot Neighborhood[f]	10.4	0.4	10.8	9.0	0.1	9.1	16.2	0.9	17.1	15.7	0.4	16.1
Large Lot Exurban[g]	1.0	0.3	1.3	1.0	0.0	1.0	2.6	0.5	3.1	0.2	0.2	0.4
Rural Estate[h]	3.2	0.6	3.9	1.4	0.0	1.4	3.6	0.8	4.3	4.6	1.2	5.8
Residential Subtotal	32.4	10.7	43.1	81.0	4.1	85.1	31.5	4.6	36.0	41.8	6.4	48.2
Commercial	2.7	1.4	4.0	12.3	1.9	14.2	1.8	1.0	2.9	3.6	1.6	5.2
Industrial	2.9	1.5	4.5	11.2	0.6	11.9	2.0	1.2	3.1	4.3	1.4	5.7
Transportation, Communication, and Utilities	19.4	2.9	22.3	53.2	0.6	53.7	15.9	0.9	16.9	22.7	1.6	24.3
Governmental and Institutional	3.2	0.5	3.7	13.4	0.0	13.4	2.1	0.1	2.2	3.9	0.1	4.1
Recreational[i]	5.9	1.4	7.3	12.3	0.2	12.5	4.1	0.4	4.5	5.3	0.9	6.2
Unused Urban	4.5	-3.1	1.4	14.7	-4.5	10.2	3.0	-1.6	1.4	5.8	-2.7	3.1
Developed Land Subtotal	71.1	15.2	86.3	198.1	3.0	201.1	60.4	6.6	67.0	87.4	9.3	96.7
Undeveloped Land												
Agricultural[j]	136.6	-11.7	124.9	15.6	-1.6	14.0	118.2	-4.6	113.6	180.7	-6.7	174.0
Natural Resource Areas												
Surface Water	8.8	0.0	8.8	2.4	0.0	2.4	4.1	0.0	4.1	9.4	0.0	9.4
Wetlands	28.9	0.0	28.9	11.6	0.0	11.6	30.8	0.0	30.8	29.8	0.0	29.8
Woodlands	15.9	0.0	15.9	7.4	0.0	7.4	11.4	0.0	11.4	19.6	0.0	19.6
Natural Resource Areas Subtotal	53.7	0.0	53.7	21.4	0.0	21.4	46.3	0.0	46.3	58.7	0.0	58.7
Unused and Other Open Land[k]	17.1	-3.5	13.5	7.5	-1.3	6.2	10.6	-2.0	8.6	13.8	-2.6	11.2
Undeveloped Land Subtotal	207.4	-15.2	192.1	44.6	-3.0	41.6	175.1	-6.6	168.4	253.2	-9.3	243.9
Total	278.4	0.0	278.4	242.7	0.0	242.7	235.4	0.0	235.4	340.6	0.0	340.6

Table continued on next page.

Table 4.2 (Continued)

Land Use	Walworth County (square miles)			Washington County (square miles)			Waukesha County (square miles)			Region (square miles)		
	2010	Increment	2050	2010	Increment	2050	2010	Increment	2050	2010	Increment	2050
Developed Land												
Residential												
Mixed-Use City Center[a]	0.0	0.0	0.0	0.0	0.0	0.0	0.0[b]	0.0[b]	0.1	3.1	0.3	3.4
Mixed-Use Traditional Neighborhood[c]	0.0	0.0	0.0	0.6	0.5	1.1	0.9	0.1	1.0	45.8	3.1	48.9
Small Lot Traditional Neighborhood[d]	2.9	4.6	7.4	4.6	5.2	9.7	10.0	8.2	18.1	41.6	34.3	75.9
Medium Lot Neighborhood[e]	9.0	1.2	10.2	7.1	0.5	7.6	25.9	3.3	29.3	88.2	6.4	94.6
Large Lot Neighborhood[f]	16.3	0.6	16.9	19.9	0.2	20.2	72.9	2.1	75.0	160.5	4.7	165.2
Large Lot Exurban[g]	0.9	0.0	0.9	8.3	1.1	9.4	18.0	0.6	18.6	31.9	2.7	34.6
Rural Estate[h]	7.2	1.2	8.4	6.6	2.0	8.6	3.3	1.7	5.0	29.9	7.5	37.4
Residential Subtotal	36.3	7.6	43.9	47.0	9.5	56.5	131.0	16.0	147.0	400.9	59.0	459.9
Commercial	2.4	1.5	3.9	2.7	1.6	4.3	10.2	4.6	14.7	35.6	13.6	49.2
Industrial	2.5	0.5	3.0	2.9	1.1	4.1	9.3	1.6	11.0	35.2	8.0	43.2
Transportation, Communication, and Utilities	26.1	1.6	27.7	26.3	1.8	28.0	50.4	3.1	53.5	213.8	12.4	226.2
Governmental and Institutional	2.9	0.2	3.1	2.7	0.2	3.0	8.8	0.7	9.5	37.0	1.7	38.7
Recreational[i]	7.3	1.1	8.4	6.5	0.4	6.9	14.7	2.2	16.9	56.0	6.7	62.7
Unused Urban	3.4	-1.7	1.7	3.1	-1.8	1.3	11.1	-5.8	5.3	46.0	-21.2	24.8
Developed Land Subtotal	80.9	10.7	91.6	91.2	12.9	104.1	235.4	22.5	257.9	824.5	80.2	904.7
Undeveloped Land												
Agricultural[J]	352.6	-8.2	344.4	203.0	-8.8	194.2	148.8	-16.7	132.1	1,155.5	-58.4	1,097.1
Natural Resource Areas												
Surface Water	23.7	0.0	23.7	8.0	0.0	8.0	28.2	0.0	28.2	84.7	0.0	84.7
Wetlands	51.4	0.0	51.4	72.7	0.0	72.7	89.9	0.0	89.9	315.2	0.0	315.2
Woodlands	51.8	0.0	51.8	37.6	0.0	37.6	47.7	0.0	47.7	191.4	0.0	191.4
Natural Resource Areas Subtotal	127.0	0.0	127.0	118.3	0.0	118.3	165.8	0.0	165.8	591.3	0.0	591.3
Unused and Other Open Land[k]	16.0	-2.5	13.5	23.0	-4.0	19.0	30.5	-5.8	24.7	118.5	-21.8	96.7
Undeveloped Land Subtotal	495.5	-10.7	484.9	344.3	-12.9	331.4	345.1	-22.5	322.6	1,865.2	-80.2	1,785.0
Total	576.5	0.0	576.5	435.6	0.0	435.6	580.5	0.0	580.5	2,689.7	0.0	2,689.7

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

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

[b] *Less than 0.05 square miles.*

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

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

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

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

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

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

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

[J] *Includes farmed wetlands.*

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

Source: SEWRPC

Table 4.3
Existing and Planned 2050 Population, Households, and Employment

County	Planning Analysis Area (See Map 4.2)	Population		Households		Employment	
		Existing 2010	Planned 2050	Existing 2010	Planned 2050	Existing 2010	Planned 2050
Ozaukee	1	7,990	9,880	3,000	3,810	2,840	5,300
	2	18,680	23,040	7,650	9,680	11,350	17,140
	3	32,870	42,820	13,170	17,790	16,560	21,700
	4	26,860	33,360	10,400	13,220	21,750	25,160
	Subtotal	86,400	109,100	34,200	44,500	52,500	69,300
Washington	5	9,070	11,550	3,440	4,620	2,370	2,590
	6	44,380	63,550	17,750	26,710	21,670	28,760
	7	5,660	6,950	2,080	2,710	2,550	2,720
	8	10,830	14,880	4,320	6,220	3,640	5,050
	9	26,890	35,760	10,580	14,710	15,830	22,970
	10	20,000	31,700	7,860	13,050	14,230	21,320
	11	15,050	16,120	5,580	6,280	3,610	3,990
	Subtotal	131,900	180,500	51,600	74,300	63,900	87,400
Milwaukee	12	65,460	66,180	28,430	29,690	43,700	44,780
	13	58,540	60,630	22,350	24,120	38,460	40,080
	14	228,370	229,130	84,810	88,560	68,860	75,100
	15	76,170	85,920	34,660	39,620	44,550	49,140
	16	11,230	18,690	4,940	8,190	72,980	82,510
	17	91,110	93,940	31,200	33,830	54,310	59,700
	18	118,120	116,980	47,710	49,070	53,280	57,070
	19	48,360	58,050	21,340	26,130	56,910	60,980
	20	69,990	70,910	31,180	32,640	48,530	51,490
	21	59,930	62,870	26,850	28,990	28,850	30,520
	22	49,070	51,530	21,760	23,580	22,420	23,870
	23	34,820	49,450	14,200	20,950	23,310	29,110
	24	36,580	47,630	14,180	19,330	19,240	23,350
	Subtotal	947,700	1,011,900	383,600	424,700	575,400	627,700
Waukesha	25	38,580	49,430	15,940	20,850	41,250	46,350
	26	49,620	57,120	19,610	23,390	55,690	65,780
	27	39,590	44,080	16,290	18,890	27,150	34,040
	28	24,140	35,860	9,070	14,060	7,730	13,970
	29	23,020	34,500	8,520	13,630	9,420	14,930
	30	20,160	28,040	8,790	12,580	29,030	34,760
	31	80,000	93,380	31,750	38,290	48,480	57,070
	32	67,440	84,460	25,450	33,450	35,050	47,350
	33	35,800	41,800	13,120	16,050	12,160	20,830
	34	11,550	12,730	4,120	4,710	2,930	3,320
	Subtotal	389,900	481,400	152,700	195,900	268,900	338,400
Racine	35	74,170	74,900	28,620	30,720	37,510	39,520
	36	65,010	87,430	25,790	36,790	25,100	40,330
	37	39,260	45,210	14,490	17,740	15,120	19,270
	38	16,970	20,170	6,750	8,550	10,570	13,180
	Subtotal	195,400	227,700	75,700	93,800	88,300	112,300
Kenosha	39	97,410	108,590	36,710	43,380	45,160	51,340
	40	30,520	59,940	11,420	24,050	17,950	30,090
	41	38,500	69,470	14,520	27,970	11,790	19,870
	Subtotal	166,400	238,000	62,600	95,400	74,900	101,300
Walworth	42	15,040	21,960	5,840	9,130	4,600	6,890
	43	22,170	26,580	8,460	10,910	10,660	12,390
	44	65,020	92,060	25,400	38,860	37,450	50,020
	Subtotal	102,200	140,600	39,700	58,900	52,700	69,300
Region	Total	2,019,900	2,389,200	800,100	987,500	1,176,600	1,405,700

Note: The existing population, household, and employment data presented by planning analysis area in this table is approximated by quarter section, and may differ slightly from data presented in other chapters of this report.

Source: SEWRPC

Map 4.2
VISION 2050 Planning Analysis Areas

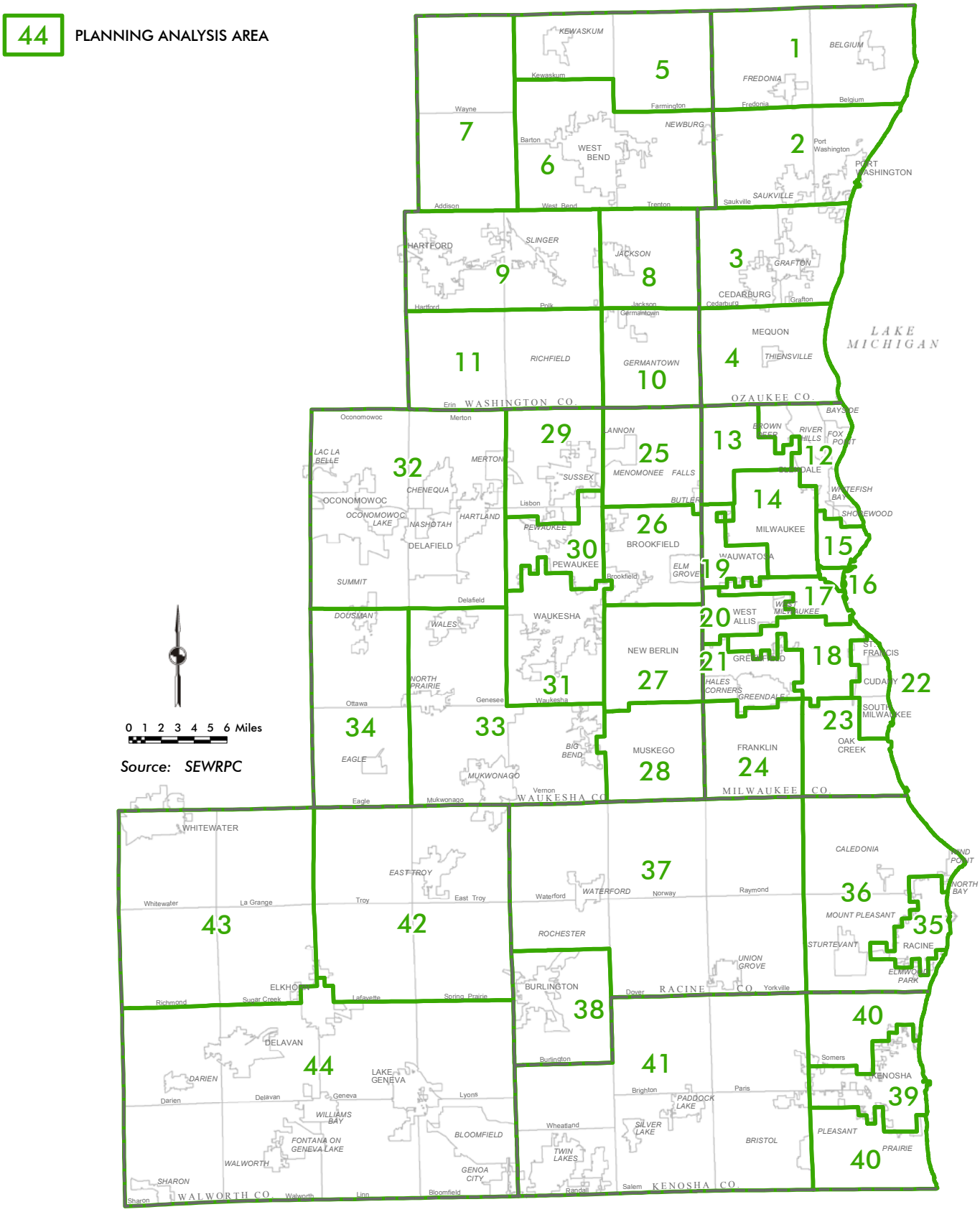


Table 4.4
Forecast Growth in the Region: 2050

	County	Existing (2010)	Intermediate Forecast (2050)	Preliminary Recommended Plan (2050)
Population	Kenosha	166,400	238,000	238,000
	Milwaukee	947,700	976,700	1,011,900
	Ozaukee	86,400	109,100	109,100
	Racine	195,400	227,700	227,700
	Walworth	102,200	140,600	140,600
	Washington	131,900	180,500	180,500
	Waukesha	389,900	481,400	481,400
	Region	2,019,900	2,354,000	2,389,200
Households	Kenosha	62,600	95,400	95,400
	Milwaukee	383,600	409,600	424,700
	Ozaukee	34,200	44,500	44,500
	Racine	75,700	93,800	93,800
	Walworth	39,700	58,900	58,900
	Washington	51,600	74,300	74,300
	Waukesha	152,700	195,900	195,900
	Region	800,100	972,400	987,500
Employment	Kenosha	74,900	101,300	101,300
	Milwaukee	575,400	608,900	627,700
	Ozaukee	52,500	69,300	69,300
	Racine	88,300	112,300	112,300
	Walworth	52,700	69,300	69,300
	Washington	63,900	87,400	87,400
	Waukesha	268,900	338,400	338,400
	Region	1,176,600	1,386,900	1,405,700

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

The Preliminary Recommended Plan includes several of the rapid transit and commuter rail lines that were evaluated under Alternative Plan II during the alternative plans stage of VISION 2050. Consistent with experience nationwide and as envisioned under Alternative Plan II, high-density, transit-oriented development (TOD) would be expected to occur within walking distance of the stations on the rapid transit and commuter rail lines. As a result, total forecast regional population growth from 2010 to 2050 was increased under the Preliminary Plan from 16.5 percent to 18.3 percent, household growth from 21.5 percent to 23.4 percent, and employment growth from 17.9 percent to 19.5 to account for additional anticipated growth in the station areas and to maintain the intermediate-growth forecast for portions of the Region outside those station areas. Table 4.4 presents existing, intermediate forecast, and revised forecast population, household, and employment levels by county.

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

The Preliminary Plan proposes infill and redevelopment in existing urban service areas.

Residential Development Within Urban Service Areas

The Preliminary Recommended Plan proposes focusing residential development within urban service areas that typically include public sanitary sewer and water supply service, parks, schools, and shopping areas. Residential development would occur largely as infill, redevelopment, and new development under the Small Lot Traditional Neighborhood, Mixed-Use Traditional Neighborhood, and Mixed-Use City Center land use categories as shown on Map 4.1. About 96 percent of new households would be located within urban service areas.

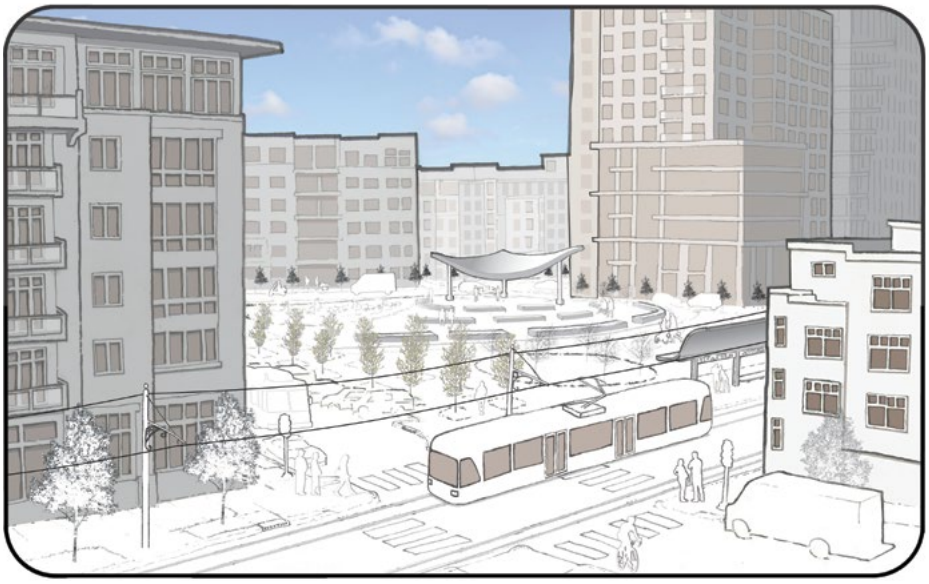
➤ **Recommendation 1.1: Develop urban service areas with a mix of housing types and land uses**

A mix of housing types and land uses would be possible under the Small Lot Traditional Neighborhood, Mixed-Use Traditional Neighborhood, and Mixed-Use City Center land use categories. The Preliminary Plan

proposes that local governments in urban service areas include these land use categories in their comprehensive plans as shown on Map 4.1. The community's zoning and land division ordinances should be consistent with its comprehensive plan. This would allow for the development of multifamily housing and single-family homes on smaller lots (one-quarter acre or less) that tend to be more affordable to a wider range of households than single-family homes on larger lots. This would also encourage the development and redevelopment of walkable neighborhoods by allowing housing in proximity to a mix of uses, such as parks, schools, and businesses.

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

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



A Transit-Oriented Development
Credit: SEWRPC

TOD is a focus of the Preliminary Plan because it supports healthy communities, mobility, and revitalization of urban areas. Despite these benefits, concern regarding the potential for gentrification and displacement of low-income households was expressed during VISION 2050 public outreach activities. Table 4.5 includes strategies for mixed-income housing in TODs. Local governments with proposed rapid transit or commuter rail stations should incorporate these strategies into their land use policies. TOD illustrations and design guidelines are included in Volume III of this report.

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

Table 4.5
Mixed-Income Housing Strategies for TOD

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

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

Source: SEWRPC

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

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

VISION 2050 is a systems-level plan that includes generalized boundaries for urban service areas, which are shown on Map 4.3.[4] Urban service areas include public sanitary sewer service. In addition, they typically include public water supply, parks, schools, and shopping areas. Urban services can be extended and provided to compact development in a more efficient and cost-effective manner than to lower-density development. Local government land use policies should allow development as proposed under Recommendation 1.1 to facilitate efficient and cost-effective provision of services to urban development. It is proposed that local governments consider limiting new development in the Medium Lot Neighborhood[5] and Large Lot Neighborhood[6] land use categories to existing vacant lots, as infill development in existing neighborhoods with similar residential densities, or where commitments have been made to such development through approved subdivision plats or certified survey maps.

Residential Development Outside Urban Service Areas

The Preliminary Plan proposes residential development outside urban service areas occur in the Rural Estate land use category using cluster subdivision design. About 4 percent of new households would be located outside urban service areas.

[4] *Table 4.6 presents area and population served with public sanitary sewer and water in 2010 and proposed to be served under VISION 2050.*

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

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

Map 4.3
Proposed Public Sanitary Sewer and Water Supply Service Areas: Preliminary Recommended Plan

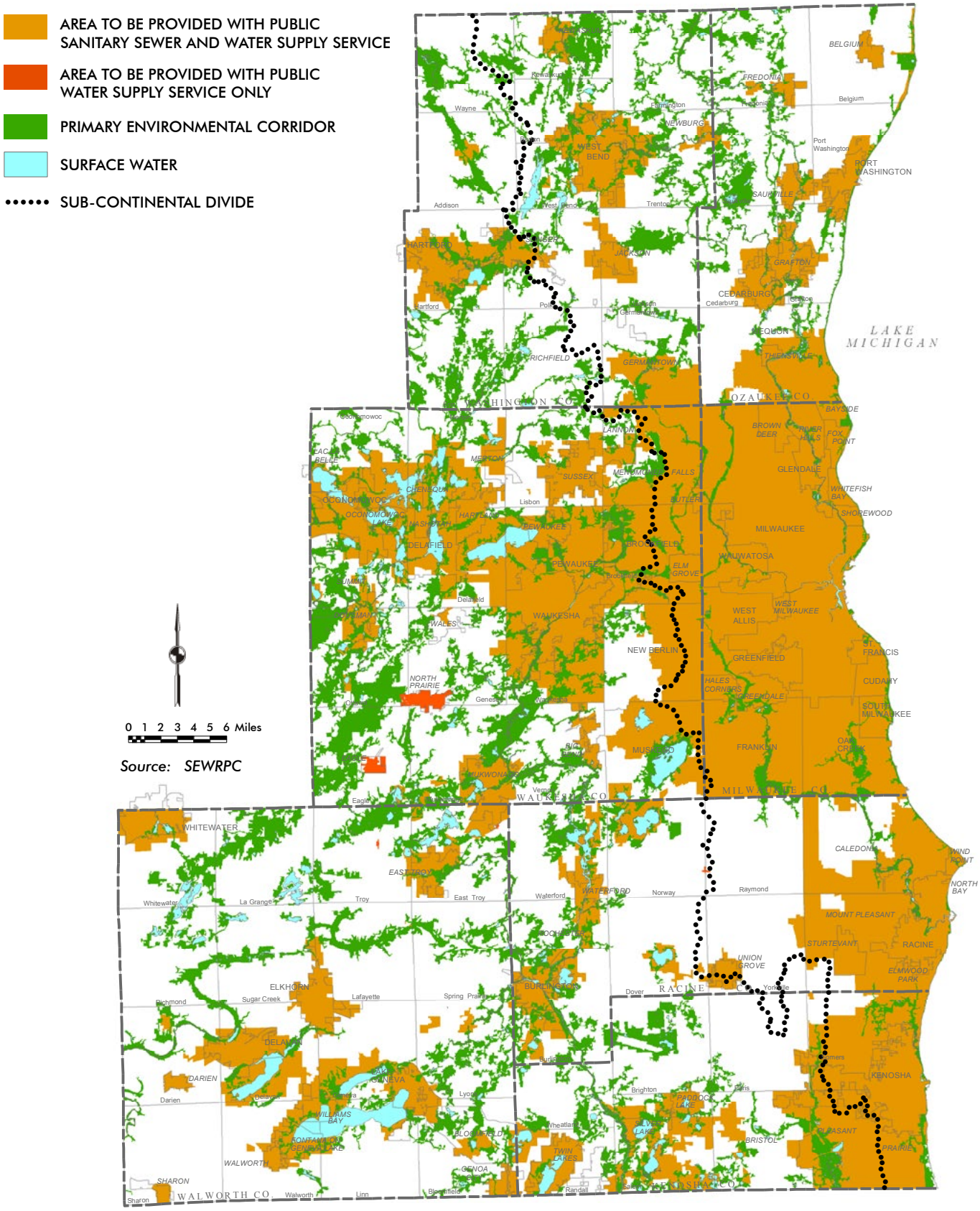


Table 4.6
Area and Population Served by Public Sanitary Sewer and Public Water: 2010 and 2050

		Area				Population			
		2010		2050		2010		2050	
	County	Square Miles	Percent	Square Miles	Percent	Population	Percent	Population	Percent
Public Sanitary Sewer	Kenosha	45.8	16.5	63.2	22.7	150,200	90.3	228,200	95.9
	Milwaukee	198.7	81.9	206.1	84.9	947,000	99.9	1,011,900	100.0
	Ozaukee	33.3	14.1	40.2	17.1	67,800	78.5	94,800	86.9
	Racine	57.0	16.7	67.5	19.8	176,100	90.1	210,400	92.4
	Walworth	30.3	5.3	40.8	7.1	70,500	69.0	113,100	80.4
	Washington	29.1	6.7	40.4	9.3	84,300	63.9	135,000	74.8
	Waukesha	130.3	22.4	154.1	26.5	301,100	77.2	425,600	88.4
	Region	524.5	19.5	612.3	22.8	1,797,000	89.0	2,219,000	92.9
Public Water	Kenosha	34.7	12.5	52.1	18.7	125,800	75.6	189,500	79.6
	Milwaukee	187.3	77.2	194.7	80.2	938,400	99.0	1,011,900	100.0
	Ozaukee	23.4	9.9	30.3	12.9	55,800	64.6	80,400	73.7
	Racine	44.3	13.0	54.8	16.1	154,900	79.3	183,000	80.4
	Walworth	24.4	4.2	34.9	6.1	63,400	62.0	103,000	73.3
	Washington	27.1	6.2	38.4	8.8	80,100	60.7	129,200	71.6
	Waukesha	102.6	17.7	126.4	21.8	261,500	67.1	376,800	78.3
	Region	443.8	16.5	531.6	19.8	1,679,900	83.2	2,073,800	86.8

Source: SEWRPC

Illustration of Cluster Subdivision Design
Credit: SEWRPC

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

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

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

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

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

limiting other development beyond urban service areas to highway-oriented business, utility, and recreational uses.

Commercial and Industrial Land

The Preliminary Plan proposes focusing new commercial and industrial development within urban service areas as infill, redevelopment, and new development.

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

Commercial land and business parks should be developed in mixed-use settings where compatible, or near a mix of housing types to avoid job-worker mismatches. Local government land use policies should allow a mix of housing types and land uses as proposed under Recommendations 1.1 and 1.2 to promote accessibility between housing and jobs.

Cities and villages should allow a mix of housing types to promote accessibility between housing and jobs.

➤ **Recommendation 1.7: Encourage and accommodate economic growth**

Major economic activity centers are defined as areas containing concentrations of commercial and/or industrial land with at least 3,500 employees or 2,000 retail employees. A total of 61 centers have been identified that have either reached major center status or are anticipated to by 2050 based on input from local governments (see Map 4.4). The Preliminary Plan proposes continued development of major economic activity centers to encourage economic growth, including a focus on developing and redeveloping long established major centers. In addition, local government land use policies should allow a mix of housing types as recommended under Recommendations 1.1 and 1.2 near major economic activity centers to promote accessibility between housing and jobs.

Governmental and Institutional Land

The Preliminary Plan proposes that new governmental and institutional developments, such as schools and libraries, be provided to meet the needs of the Region's planned population. The Preliminary Plan also envisions a system of major governmental and institutional centers throughout the Region, including: county courthouses and administrative offices, State and Federal office buildings, medical complexes,[8] universities,[9] technical colleges, and major cultural centers. These major centers are shown on Map 4.5.

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

The Preliminary Plan proposes that new governmental and institutional uses occur in mixed-use settings to the greatest extent possible to be accessible to the greatest number of residents possible.

Transportation, Communication, and Utility Land

The Preliminary Plan envisions that land devoted to transportation, communication, and utilities will increase due to land needed for streets and highways, airport expansions, and utility facilities such as sewage treatment plants. Major transportation and utility centers envisioned under the Preliminary Plan are shown on Map 4.6.

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

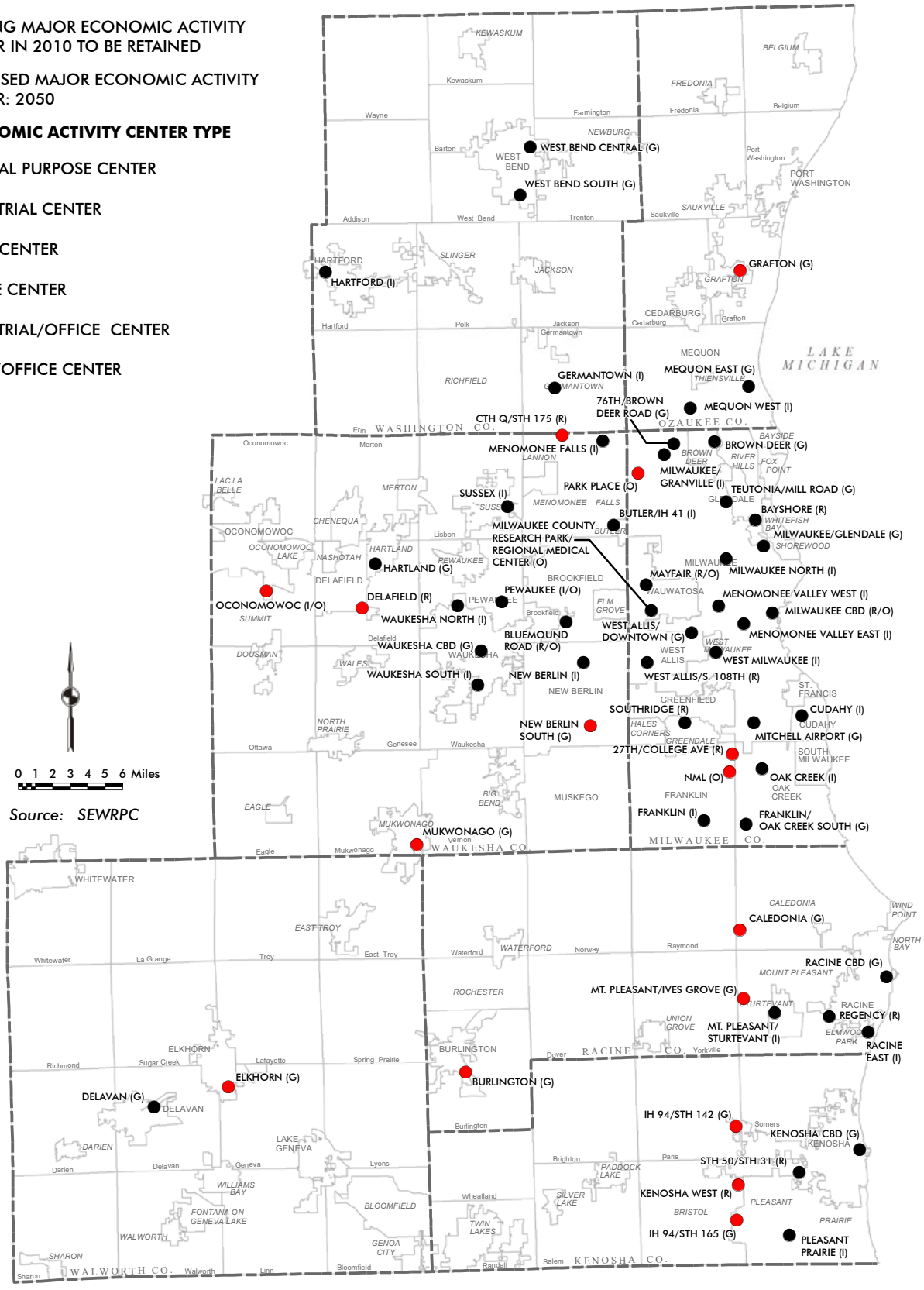
[9] *Includes institutions with accredited bachelor's degree programs that have a total enrollment of 4,500 or more students.*

Map 4.4
Major Economic Activity Centers: Preliminary Recommended Plan

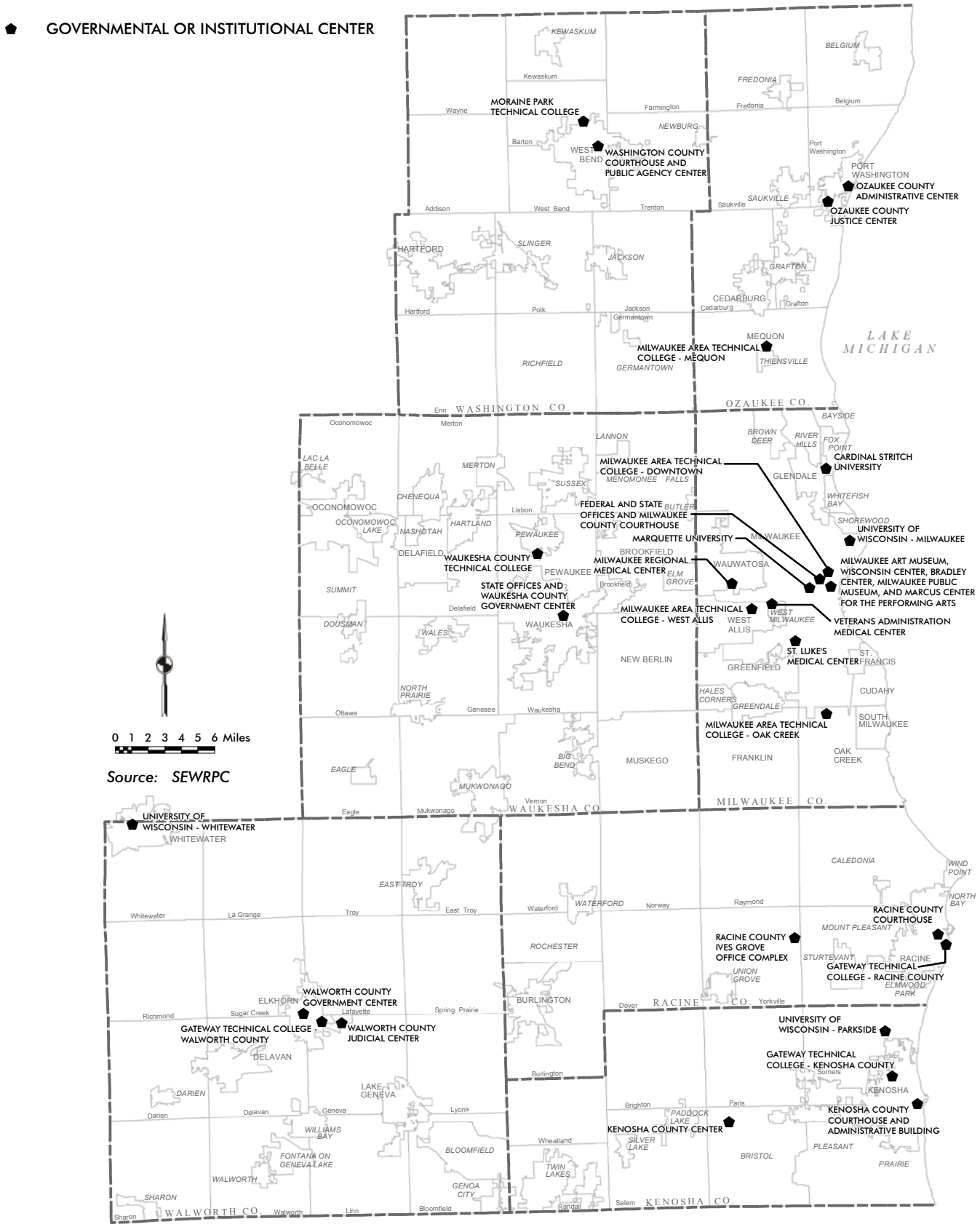
- EXISTING MAJOR ECONOMIC ACTIVITY CENTER IN 2010 TO BE RETAINED
- PROPOSED MAJOR ECONOMIC ACTIVITY CENTER: 2050

MAJOR ECONOMIC ACTIVITY CENTER TYPE

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

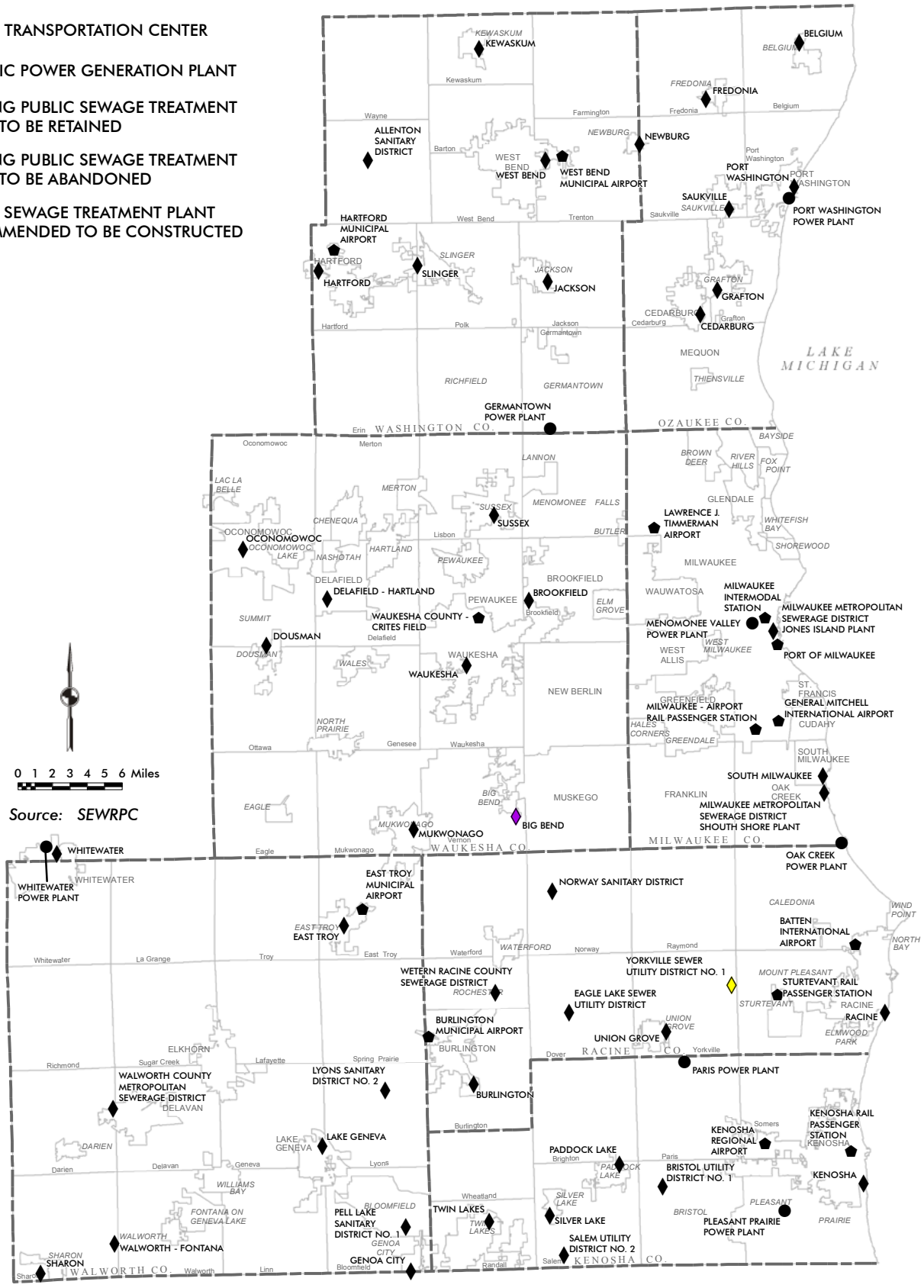


Map 4.5
Major Governmental and Institutional Centers: Preliminary Recommended Plan



Map 4.6
Major Transportation and Utility Centers: Preliminary Recommended Plan

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



Source: SEWRPC

Recreational Land

The Preliminary Plan proposes an expansion of recreational land based on park site acquisition and development proposals set forth in county and local park and open space plans and the neighborhood parks attributable to new urban development. The Preliminary Plan also envisions a system of 32 major parks of regional size and significance as shown on Map 4.7.[10] Major parks have an area of at least 250 acres and provide opportunities for a variety of resource-oriented outdoor recreational activities. Map 4.7 also shows major special-use outdoor recreation and nature study sites.[11]

➤ **Recommendation 1.9: Provide neighborhood parks in developing residential areas**

The Preliminary Plan proposes reserving land for parks as new residential neighborhoods are developed within urban service areas (design guidelines are presented in Volume III).

Environmentally Significant Land

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

New development should avoid environmentally significant lands.

➤ **Recommendation 1.10: Preserve primary environmental corridors**

The most important elements of the natural resource base of the Region, including the best remaining woodlands, wetlands, prairies, wildlife habitat, surface water and associated floodplains and riparian buffers, park and open space sites, scenic views, and natural areas and critical species habitat sites, occur in linear patterns in the landscape termed environmental corridors. The most important of these have been identified as primary environmental corridors, which are at least two miles long, 200 feet wide, and 400 acres in size. They are typically located along major stream valleys, along the Lake Michigan shoreline, or around major lakes. The Preliminary Plan proposes limiting development within primary environmental corridors to essential transportation and utility facilities and compatible outdoor recreation facilities. Rural Estate residential development in upland corridors could also occur. Cluster subdivision design should be used if such development does occur (design guidelines are presented in Volume III). Local and county government land use polices, including comprehensive plans and land use ordinances, should incorporate this recommendation and related design guidelines. Planned primary environmental corridors are shown on Map 4.1 and existing primary environmental corridors are shown on Map 2.22 in Chapter 2 of Volume I. Table 4.7 shows that planned primary environmental corridors

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

[10] The sites in Milwaukee County identified as "Lake Michigan North" and "Lake Michigan South" on Map 4.7 refer to clusters of parks along the Lake Michigan shoreline. Lake Michigan North includes Back Bay, Juneau, Lake, McKinley, O'Donnell, and Veterans County Parks; Bradford Beach; and Lakeshore State Park. Lake Michigan South includes Bay View, Grant, Sheridan, South Shore, and Warnimont County Parks.

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

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

Map 4.7
Major Outdoor Recreation Centers: Preliminary Recommended Plan

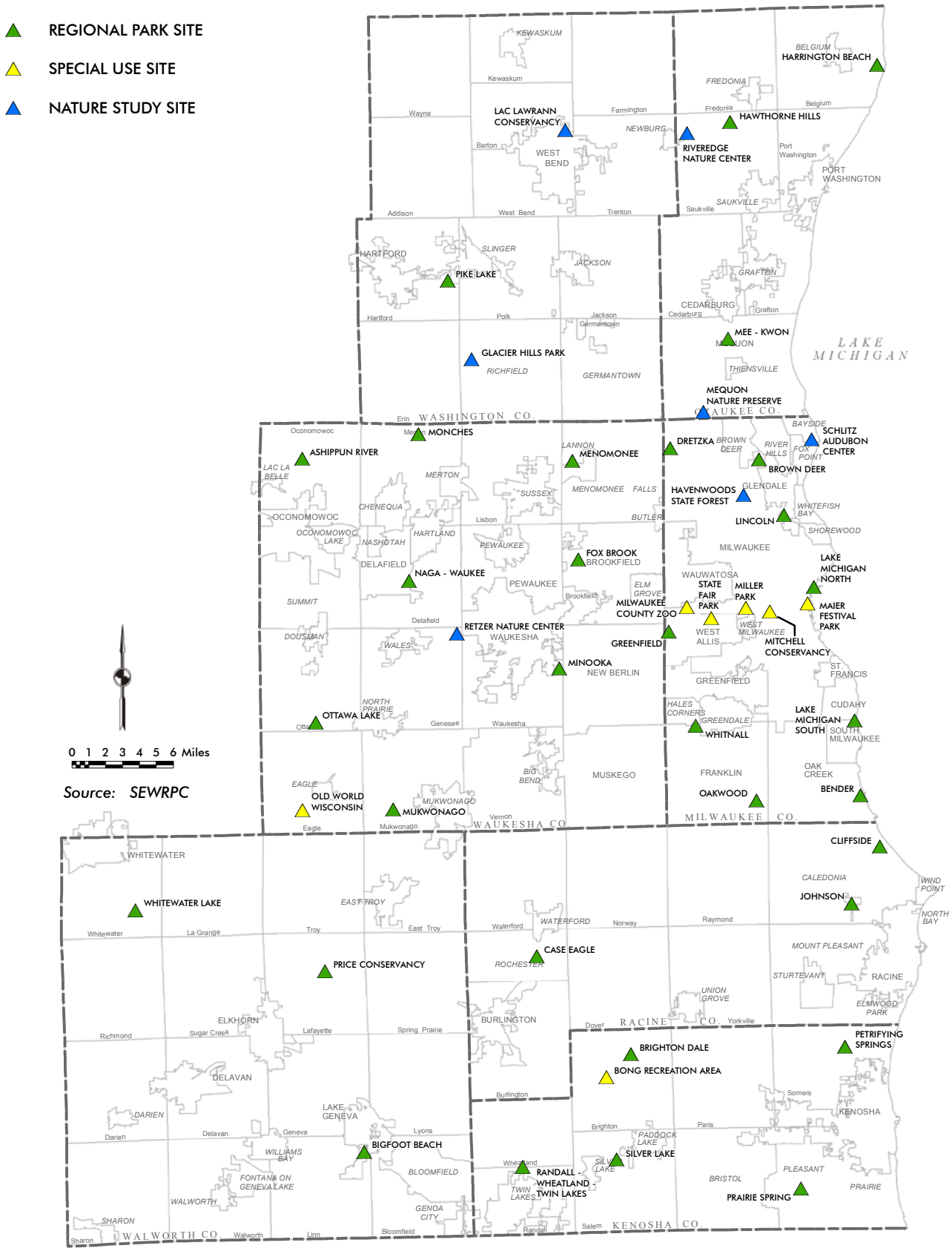


Table 4.7
Existing and Proposed Environmental Corridors and Isolated Natural Resource Areas in the Region: 2010 and 2050

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

Source: SEWRPC

would encompass 493 square miles in 2050, which is an increase of about 2 percent over the existing area.[13]

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

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

[13] *Primary environmental corridor delineations include certain farmed floodplains and other lands that are expected to revert to more natural conditions over time, eventually becoming part of the adjacent environmental corridors as envisioned in local sewer service area plans and local and county comprehensive plans. The delineation of primary environmental corridors was modified on Map 4.1 to reflect re-establishment of natural resource features resulting from such restorations. The Preliminary Plan also supports planned efforts to restore other farmland and open space to more natural conditions that result in the re-establishment of wetlands, woodlands, prairies, grasslands, and forest interiors.*

as parks, protected open space, or for use as stormwater detention or retention areas where appropriate, as determined in local plans.

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

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

Agricultural Land

The Preliminary Plan proposes minimizing the impacts of new development on productive agricultural land, including highly productive Class I and II soils (prime agricultural land) as classified by the U.S. Natural Resources Conservation Service. Some Class I and II farmland located in the vicinity of existing urban service areas may be converted to urban use as a result of planned expansion of those urban service areas to accommodate efficient regional growth. Also, as previously discussed, a small amount of residential development is anticipated outside planned urban service areas. A total of 1,097 square miles would remain in agricultural use in 2050 under the Preliminary Plan, which is 95 percent of the existing area.

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

➤ Recommendation 1.13: Preserve productive agricultural land

The Preliminary Plan proposes a compact urban development pattern that would minimize the conversion of agricultural land to urban uses, including prime agricultural lands and other productive agricultural lands. Local and county government land use policies should incorporate the Preliminary Plan proposals, which include:

- A compact development pattern for urban service areas
- Cluster subdivision design to minimize the impact of Rural Estate development on agricultural land
- Limiting Large Lot Neighborhood and Large Lot Exurban development beyond urban service areas to commitments to such development made during or before the VISION 2050 planning process

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

The Wisconsin Farmland Preservation law (Chapter 91 of the *Wisconsin Statues*) requires counties to update their farmland preservation plans as one of the conditions for continued landowner participation in the Farmland Preservation tax credit program. Kenosha, Ozaukee, Racine, Walworth, Washington, and Waukesha Counties have prepared and adopted farmland preservation plans that have been certified by the Wisconsin Department of Agriculture, Trade, and Consumer Protection. Each plan identifies land to preserve for agricultural and agricultural-related uses, which is shown on Map 3.7 in Chapter 3 of Volume I. Farmland preservation areas may not include any areas that are planned

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

for nonagricultural development within 15 years after the date the plan is adopted. The Preliminary Plan proposes continued agricultural use in these areas. Therefore, no incremental development was allocated to farmland preservation areas identified in county farmland preservation plans outside planned urban service areas under the Preliminary Plan.

➤ Recommendation 1.15: Develop a regional food system

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

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

Water Supply

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

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

The year 2035 regional land use plan served as the basis for the regional water supply plan. It was indicated at the beginning of the water supply planning effort that the land use plan would be amended if water resource constraints were identified due to the development pattern recommended under the land use plan. The water supply planning effort found that water supply would not be a limiting factor within the Region with respect to the recommended development pattern either east or west of the subcontinental divide. The water supply plan also found that implementing the recommended development pattern would have benefits, such as preserving areas with high groundwater recharge potential. This is due to the focus of the year 2035 land use plan on infill, redevelopment, and compact development within planned urban service areas. It should be noted that the forecast population under the year 2035 plan of 2,276,000 residents is about 95 percent of the forecast population under VISION 2050 (2,389,200 residents) and the forecast employment under the year 2035 plan of 1,368,300

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

jobs is about 97 percent of the forecast employment under VISION 2050 (1,405,700 jobs). Therefore, the regional water supply plan conclusion that water supply would not be a limiting factor within the Region with respect to the development pattern recommended under the year 2035 regional land use plan also applies to VISION 2050.

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

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

The Preliminary Plan land use proposals carry forward the focus on infill, redevelopment, and compact development within planned urban service areas embodied in the year 2035 regional land use plan. The Preliminary Plan development pattern results in about 96 percent of areas with high or very high groundwater recharge potential remaining in open space or agricultural use. Areas with high or very high groundwater recharge potential are shown on Map 2.19 in Chapter 2 of Volume I.

Preliminary Plan proposals embody sustainable land use concepts.

Sustainable Land Use

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

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

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

➤ **Recommendation 1.18: Target brownfield sites for redevelopment**

The Preliminary Plan proposes that local governments target brownfield sites for cleanup and redevelopment as a key element in planning for the revitalization of urban areas. Tools such as Tax Increment Financing (TIF) and State and Federal brownfield remediation grants and loans may assist in these efforts.

4.3 PRELIMINARY RECOMMENDED TRANSPORTATION COMPONENT

The preliminary recommended transportation component includes the following six elements: public transit, bicycle and pedestrian, transportation systems management, travel demand management, arterial streets and highways, and freight transportation. Each element is described below, including specific plan recommendations. A financial analysis of the preliminary recommended transportation component is also described below, including identification of anticipated funding gaps related to implementing plan recommendations and potential revenue sources to achieve the Preliminary Recommended Plan.

The preliminary recommended transportation component includes six elements:

- **Public transit**
- **Bicycle and pedestrian**
- **Transportation systems management**
- **Travel demand management**
- **Arterial streets and highways**
- **Freight transportation**

Description of Public Transit Element

The public transit element of the Preliminary Recommended Plan proposes a significant improvement and expansion of public transit in Southeastern Wisconsin, including two commuter rail lines, eight rapid transit lines, and significantly expanded local bus, express bus, commuter bus, and shared-ride taxi services. Map 4.8 displays the routes and areas served by the various components of the proposed transit element. Altogether, service on the regional transit system would be increased from service levels existing in 2014 by about 110 percent measured in terms of revenue transit vehicle-hours of service provided, from about 4,750 vehicle-hours of service on an average weekday in the year 2014 to 9,980 vehicle-hours of service in the year 2050 (see Table 4.8). The proposed service improvements and expansion include expanding service area and hours and significant improvements in the frequency of service. Table 4.9 shows the span of service hours and frequencies under the Preliminary Plan.

The Preliminary Plan proposes a significant improvement and expansion of public transit—more than doubling existing service levels.

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

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

- Fixed-guideway transit investment can guide development by focusing jobs and housing around its stations. If well-coordinated with a transit investment, this leads to more compact, walkable neighborhoods, encouraging active transportation and improving public health.

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

Map 4.8
Transit Services: Preliminary Recommended Plan

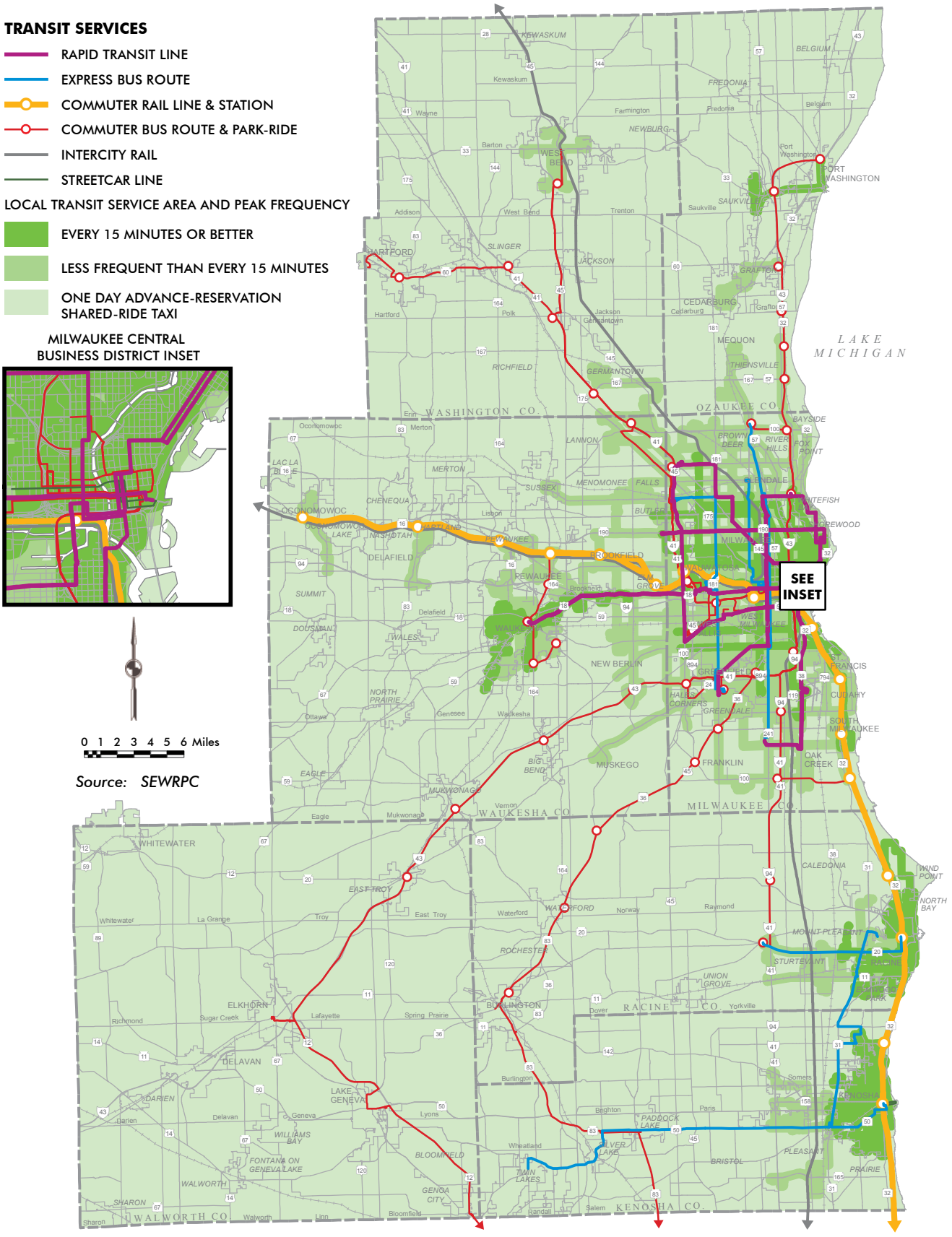


Table 4.8
Fixed-Route Public Transit Service Levels: Preliminary Recommended Plan

Average Weekday Transit Service Characteristics	Existing (2014)	Preliminary Plan (2050)
Revenue Vehicle-Hours		
Rapid Transit	--	1,180
Commuter Rail	<10	140
Commuter Bus	270	1,000
Express Bus	500	740
Local Transit	3,980	6,920
Total	4,750	9,980
Revenue Vehicle-Miles		
Rapid Transit	--	23,700
Commuter Rail	100	7,100
Commuter Bus	5,800	24,700
Express Bus	6,300	10,800
Local Transit	48,200	83,200
Total	60,400	149,500

Source: SEWRPC

Table 4.9
Transit Service Hours and Frequency: Preliminary Recommended Plan

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

Source: SEWRPC

- For the 1 in 10 households in the Region without access to a car, transit is vital to providing access to jobs, healthcare, education, and other daily needs. Although many of the Region's jobs are currently accessible via transit, the lack of fast, frequent transit service in much of the Region limits access to a large number of the Region's jobs due to excessive travel time. Approximately 279,000 (or 12 percent of the Region's year 2050 population) of the Region's residents would be able to use transit to reach 100,000 jobs or more in less than 30 minutes under the Preliminary Plan, compared to 36,000 residents (or 2 percent) under the Trend.

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

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

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

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

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

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

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

Achieving these benefits for the Region will require additional revenue, likely from an increase in local taxes, such as a sales tax. Implementing the transit recommendations would also benefit from a regional transit agency to construct, manage, and operate the proposed transit system. This is discussed further in the Financial Analysis section of this chapter.

➤ Recommendation 2.1: Develop a rapid transit network

The Preliminary Plan proposes eight rapid transit corridors (either bus rapid transit or streetcar extensions operating as light rail), with dedicated transit lanes and transit signal priority or preemption. Stations would be spaced every one-half to one mile and would include off-board fare payment, real-time information screens, and raised platforms. Service would be provided every 15 minutes or better for nearly the entire day, with service being provided 24 hours a day in some corridors. Fares would be identical to that of local fixed-route and express bus services. The intent of the proposed rapid transit services is to provide travel times that are similar to the travel time of an automobile using parallel arterial street and highway facilities during congested peak periods. The eight bus rapid transit or light rail corridors proposed are shown in purple on Map 4.8 and would travel:

The Preliminary Plan proposes eight rapid transit corridors intended to provide travel times competitive with those of an automobile.

- From downtown Waukesha to downtown Milwaukee via the Milwaukee Regional Medical Center, predominately on E. Main Street, W. Blue Mound Road, and Wisconsin Avenue.
- From Bayshore Town Center in Glendale to downtown Milwaukee via the University of Wisconsin-Milwaukee, predominately on N. Oakland Avenue, N. Prospect Avenue, and N. Farwell Avenue.
- From the Park Place complex on the northwest edge of Milwaukee to downtown Milwaukee, predominately on W. Fond du Lac Avenue.
- From the retail centers located around the intersection of S. 108th Street and Cleveland Avenue in West Allis to downtown Milwaukee, predominately on W. National Avenue.
- From Northwestern Mutual's Franklin Campus on S. 27th Street to downtown Milwaukee via General Mitchell International Airport, predominately along S. Howell Avenue and S. 1st Street.
- From Bayshore Town Center in Glendale to Southridge Mall in Greendale, predominately on 27th Street and W. Forest Home Avenue.
- From the Park Place Complex on the northwest edge of Milwaukee to the retail centers located around the intersection of S. 108th Street and Cleveland Avenue in West Allis via Mayfair Mall, predominately on N. Mayfair Road and S. 108th Street (STH 100).
- From Shoppers World of Brookfield at N. 124th Street and W. Capitol Drive to the University of Wisconsin-Milwaukee, predominately on Capitol Drive.

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

A Light Rail Transit Vehicle
Credit: MetroTransit

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

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

The Preliminary Plan proposes two commuter rail corridors and a significant improvement and expansion of existing commuter bus services. Both types of commuter services would provide frequent service, with service every 15 minutes in the peak in both directions and every 30 to 60 minutes in both directions at other times. Commuter bus services would be extended to serve new areas, and existing services would run in both directions throughout the day. Fares would start at the same level as local, express, and rapid services, and would increase with travel distance. Map 4.8 shows the proposed commuter bus services in red (with park-ride lots served by commuter bus identified by circles) and commuter rail services in orange (with station locations identified by circles). The proposed commuter services would generally have stops or stations at least two miles apart, and are intended to provide travel times that are competitive or better than cars over longer travel distances.

A Commuter Rail Vehicle
Credit: SEWRPC Staff

- **Commuter Rail Service** – The two commuter rail corridors proposed by the Preliminary Plan would connect Kenosha, Racine, Milwaukee, Wauwatosa, Brookfield, Oconomowoc, and communities in between by making upgrades to existing freight rail corridors to allow passenger rail at speeds of up to 79 miles per hour, providing a fast service connecting many of the larger population centers in the Region with vehicles similar to those shown here. In addition to the two corridors included in the Preliminary Plan, there are a number of other freight rail corridors in the Region that could be utilized for commuter rail, should an entity be interested in pursuing their development. These additional corridors are not included in the Preliminary Plan because they are forecast to have markedly lower ridership than the two corridors included in the Preliminary Plan, but are shown on Map 4.9 as an acknowledgment that they could be pursued in the future.

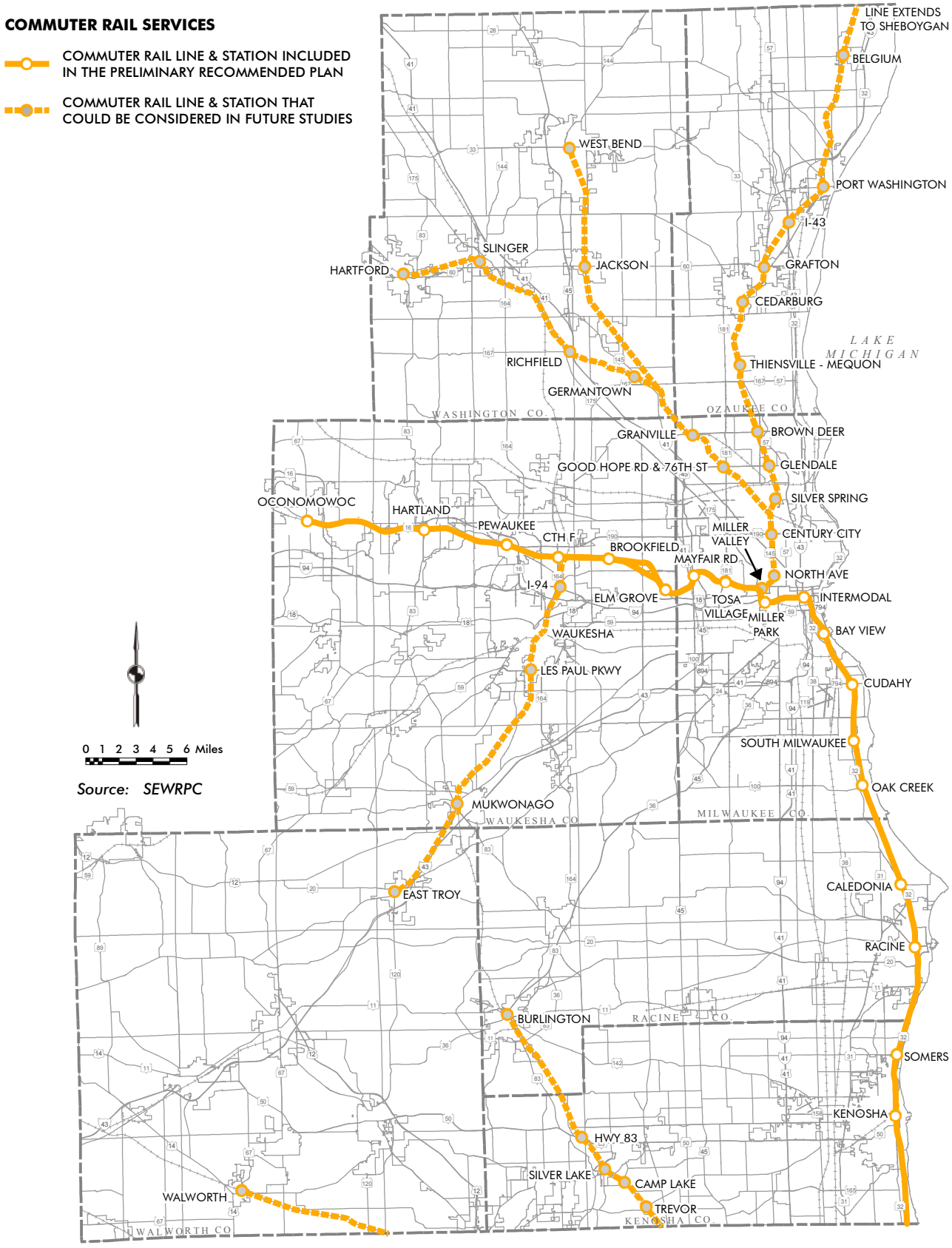
- **Commuter Bus Service** – The commuter bus services proposed by the Preliminary Plan mostly provide radial service connecting communities of the Region with downtown Milwaukee. A few services also provide connections between communities or existing park-ride lots and the proposed commuter rail services,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

The improved and expanded express bus routes would have travel times better than local bus routes due to stops being spaced further apart.

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

The Preliminary Plan proposes additional express bus services in the Region, and improvements to the existing express bus services that would not be replaced by rapid transit lines. In the Milwaukee area, the express route serving 27th Street would be extended north to Brown Deer Road and south to Northwestern Mutual's Franklin Campus, and both that route and the express route serving Sherman Boulevard would see

Map 4.9
Potential Extensions of the Commuter Rail Network: Preliminary Recommended Plan



increased frequency. Additional express routes would be added on 76th Street in Milwaukee County, traveling from the Ives Groves Park-Ride Lot to the Corinne Reid-Owens Transit Center in Racine County, traveling from Twin Lakes to the Metra Station in Kenosha County, and connecting the western part of the City of Racine to the western part of the City of Kenosha. Stops would be spaced at least one-half mile apart, and therefore the services would provide better travel times than local bus routes. Express services in Milwaukee County would come at least every 15 minutes nearly the entire day, and services in Kenosha and Racine Counties would come every 15 minutes during the peak and every 30 minutes at other times. Fares would be identical to those charged for rapid and local fixed-route services.

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

The Preliminary Plan proposes an expansion of local transit service, including improving the frequency and expanding the service area of local bus services, expanding streetcar service, extending shared-ride taxi service to any areas of the Region without local bus service, and continuing to provide paratransit service in areas served by local bus service. Map 4.8 shows the area served by local transit services of different types, with the shared-ride taxi service area shaded the lightest green, followed by areas served by less frequent local fixed-route bus service the next shade darker, and then areas served by frequent local fixed-route bus service the darkest shade of green. Streetcar service that would not be part of the larger rapid transit network is shown as a dark green line. The paratransit service area is not shown, but paratransit service would be provided wherever the accessible shared-ride taxi service would not be available.

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

- **Local Bus Service** – The proposed expansion of local bus service focuses on developing new transit services to suburban employment centers, new services connecting businesses and residents to nearby commuter and rapid services, and improving the frequency of local transit service in corridors and areas not served by rapid and express service. When compared to the existing transit services provided in the Region, Map 4.8 demonstrates both the expansion of local service and the improved frequency of existing local services. Fares for local bus services are proposed to be identical to those charged for rapid and express services.

- **Streetcar Service** – The proposed expansion of streetcar service within Milwaukee is not fully represented by the lines shown on Map 4.8. When the Preliminary Plan was prepared, the City of Milwaukee was preparing to construct an initial line connecting the Milwaukee Intermodal Station to the Historic Third Ward, East Town, and the Lower East Side, and designing an extension to connect the system to the Lakefront. The transit system proposed in the Preliminary Plan assumes that initial streetcar lines will be modified by the year 2050 to be given their own right-of-way, and that some stops will be eliminated, to allow some of the initial and proposed streetcar services to operate as light rail, becoming the downtown core of the larger rapid transit network. The City of Milwaukee intends to pursue several extensions of the initial streetcar lines and VISION 2050 would be amended to reflect any additional streetcar expansions planned by the City.

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

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

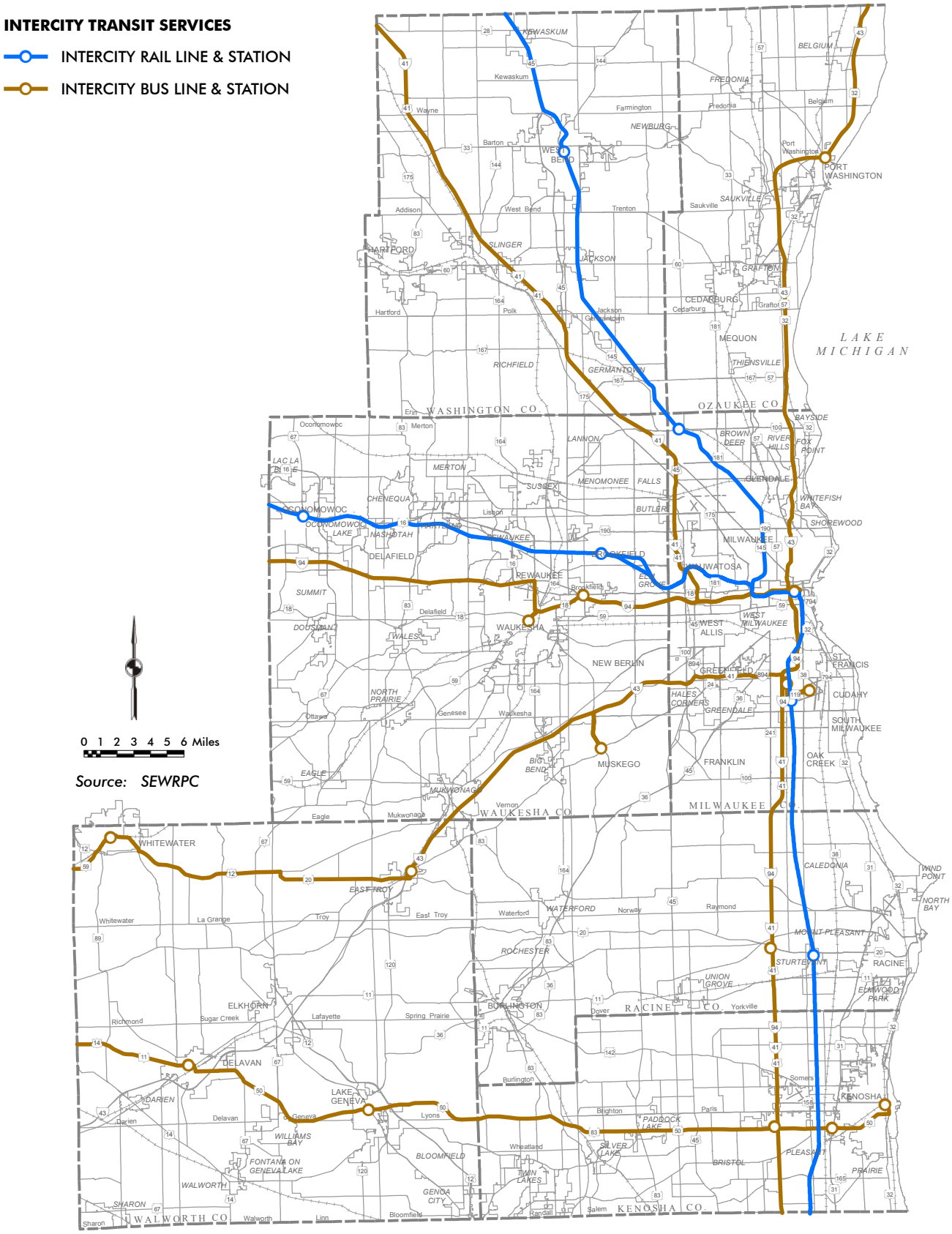
- **Paratransit Service** – The Preliminary Plan proposes that paratransit service be provided consistent with the Federal Americans with Disabilities Act (ADA) of 1990. Under ADA provisions, all transit vehicles that provide conventional fixed-route transit service must be accessible to people with disabilities, including those using wheelchairs. All public entities operating fixed-route transit systems must provide paratransit service to people with disabilities who are unable to use fixed-route transit services consistent with Federally specified eligibility and service requirements. The complementary paratransit service must serve any person with a permanent or temporary disability who is unable 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 proposed paratransit service would be available during the same hours as the local, express, and rapid fixed-route transit services, and be provided to eligible individuals on a 24-hour advance reservation basis. Fares on paratransit are Federally required to be no more than twice the amount charged for local fixed-route services.

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

Intercity rail and bus services provide transit connections between the Region and destinations outside of Southeastern Wisconsin. Because the primary focus of intercity transit services is to connect communities within the Region to communities in other parts of the State and the remainder of the Midwest, the Commission uses long-range plans completed by WisDOT as the basis of the Commission's recommendations for intercity transit services. The Recommended Plan proposes that the number of intercity bus services be expanded and that existing services be enhanced with increased service frequencies. Two new intercity rail lines are proposed, one connecting Milwaukee to Minneapolis and St. Paul via Madison, and another connecting Milwaukee to Green Bay via the Fox Valley. Both services would be operated as extensions of the existing Amtrak Hiawatha service from Chicago, and all three lines would operate at speeds up to 110 miles per hour. Map 4.10 shows the segments of the proposed intercity services that are within the Region, and the stations served within the Region.

An Intercity Passenger Rail Trainset
Credit: Michael Kolanowski

Map 4.10
Intercity Transit Services: Preliminary Recommended Plan



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

The Preliminary Plan proposes that transit operators work with local governments during the reconstruction of a roadway to include transit-first features on the roadway when it carries rapid, express, or major local transit routes, including transit signal priority systems, dedicated lanes for transit, and "bus bulbs" at significant transit stops. Transit signal priority systems could also be added when existing signals along a roadway are being modified. More detail on these recommended improvements will be included as part of design guidelines prepared for the final plan.

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

- **Transit Signal Priority Systems** – Transit signal priority systems allow transit vehicles to modify the normal traffic signal operation as it approaches the intersection to reduce the travel time delay associated with traffic signals. There are several transit signal priority measures, including red truncation, green extension, pre-timed modifications, and real-time strategies that consider overall person delay and overall system performance. The effectiveness of transit priority systems can be enhanced when provided complementary to reserved bus lanes. The Preliminary Plan proposes implementing transit signal priority systems along all rapid, express, and major local transit routes.

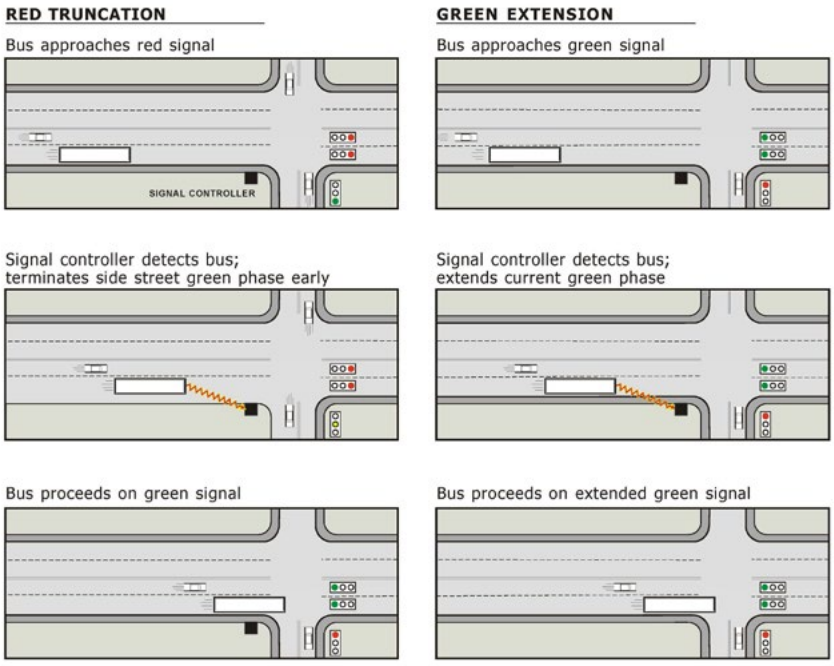


Illustration of a Transit Signal Priority System
Credit: Transit Capacity and Quality of Service Manual, Third Edition

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

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

- **Bus Bulbs** – Bus bulbs provide additional space for waiting passengers, provide room to implement many of the enhancements listed in Recommendation 2.7, allow for additional on-street parking by removing the approach or departure space needed for a standard bus stop, and increase transit travel speeds by eliminating the need for a bus to weave in and out of traffic to serve a stop. In addition to bus bulbs, the reconstruction of a roadway should consider other transit-friendly elements, including providing enhanced pedestrian accommodations (discussed further under Recommendation 3.5).

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

The Preliminary Plan proposes that transit operators, business improvement districts, neighborhood associations, and local governments coordinate to significantly enhance local bus stops and park-ride facilities, particularly those with significant boardings. These enhancements include improved information on bus stop signs and polls, shelters at more stop locations, accessible paths to and from all stops, real-time information screens, radiant heating, and raised platforms for boarding. For park-ride facilities, these stop enhancements should also include bike lockers. More detail on these recommended improvements will be included as part of design guidelines prepared for the final plan.

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

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

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

Recommendations 2.1 through 2.5 propose a robust and expansive transit system, one that will take time to develop and construct. In addition, even once the full proposed transit system is completed, there will be some smaller suburban employment centers that will not be served by fixed-route transit, and others that will be served but may not currently be designed to accommodate pedestrians, making the "last-mile" journey from the bus stop to a place of employment difficult. For these reasons, the Preliminary Plan proposes a series of programs be considered to improve access to suburban employment centers.

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

- **Network Transportation Companies** – Network transportation companies, such as Uber or Lyft, provide on-demand taxi service accessed by users via a smartphone app. These companies could connect individuals to employment opportunities not served by transit

that are relatively close to—but beyond walking distance of—a rapid, commuter, or express transit line. Network transportation companies could be used in these instances to fill a gap in the transit network by providing on-demand rides to complete the last segment of a transit rider's journey to work. If multiple transit riders have the same destination, most network transportation companies offer services that allow individuals to split a fare, reducing costs for each rider.

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

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

➤ Recommendation 2.10: Provide information to promote transit use

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

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

- **Real-Time and Trip Planning Transit Information** – Real-time transit information—such as transit vehicle arrival and departure times and maps that display where vehicles are located in real time—make transit services more attractive by addressing rider uncertainties and reducing perceived wait times. MCTS implemented real-time information on all of its routes in 2015, allowing transit riders to track bus locations and bus stop arrival times using the MCTS website and mobile devices. The Preliminary Plan proposes widespread provision of real-time information for all transit operators at transit centers, transit stops, on websites, and on mobile devices. Additionally, transit operators should continue to provide real-time information and up-to-date routing data to companies that include such information in their mapping applications.

- **Joint Marketing and Research Among Transit Operators** – The Region's transit operators would collectively benefit through joint marketing and research efforts. The Preliminary Plan proposes that transit agencies collaborate to advertise their respective services and conduct joint research involving emerging technologies that would enhance transit service, including innovative fare payment systems

that facilitate intersystem transfers (discussed under Recommendation 2.11).

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

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

As transit operators invest in new fare systems across the Region, the Preliminary Plan proposes that operators coordinate to use the same fare system. This would require significant cross-agency coordination on accounting and procurement, but could offer large benefits to the public by allowing riders to more easily use multiple transit services to complete a journey. Many other metropolitan areas across North America with multiple transit operators achieved a universal fare system as part of a regionwide adoption of a smart card fare system similar to the MCTS M-Card. Either as part of adopting a universal fare system or as a separate initiative, operators are encouraged to make transfers between services free, with no rider paying more than the cost of one trip on the most expensive transit service used during a journey.

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

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

➤ Recommendation 2.13: Promote and expand transit pricing programs

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

- **College and University Transit Pass Programs** – College and university transit pass programs provide unlimited transit use to students through a reduced fee included in student tuition and fees. MCTS has implemented a transit pass program at six area colleges and universities. This program encourages students to use transit instead of driving a personal vehicle to class, reducing the amount of traffic and congestion particularly around the campus area. Reducing the amount of vehicular traffic also improves pedestrian and bicycle safety

around college and university campuses. The Preliminary Plan proposes expanding the MCTS college and university transit pass programs to include additional colleges and universities and establishing similar programs for other transit systems in the Region.

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

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

Description of Bicycle and Pedestrian Element

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

The Preliminary Plan proposes a well-connected bicycle and pedestrian network that improves access to activity centers, neighborhoods, and other destinations in the Region.

Bicycle recommendations for the Preliminary Plan include providing on-street bicycle accommodations on the arterial street and highway system, expanding the off-street bicycle path system, implementing enhanced bicycle facilities in key regional corridors, and expanding bike share program implementation. As shown in Table 4.10, the Preliminary Plan proposes approximately 3,031 miles of standard on-street bicycle accommodations, 359 miles of enhanced bicycle facilities, and 713 miles of off-street bicycle paths. Map 4.11 shows the preliminary recommended bicycle network, which identifies on-street bicycle facilities, potential corridors for enhanced bicycle facilities, off-street bicycle paths, and nonarterial street connections to the off-street bicycle network.

Table 4.10
Miles of Bicycle Facilities: Preliminary Recommended Plan

Bicycle Facility	Estimated Mileages	
	Existing	Preliminary Recommended Plan
On-street Accommodations		
Standard	814.7	3,031.2
Enhanced	69.5	358.8
Off-Street Paths	295.0	712.9

Source: SEWRPC

The Preliminary Plan also includes recommendations for the location, design, and construction of pedestrian facilities. The Preliminary Plan further proposes that local communities develop bicycle and pedestrian plans to supplement the regional plan.

Design guidelines related to the bicycle and pedestrian element, prepared for the final plan, are intended to provide guidance to State, county, and local officials for the location, design, and maintenance of bicycle and pedestrian facilities. Guidance is also provided relating to the design of streets, residential areas, and activity centers that may be expected to enhance opportunities for bicycle travel.

The Preliminary Plan proposes a 3,300-mile on-street bicycle network, made up of bicycle lanes, paved shoulders, widened outside travel lanes, and enhanced bicycle facilities.

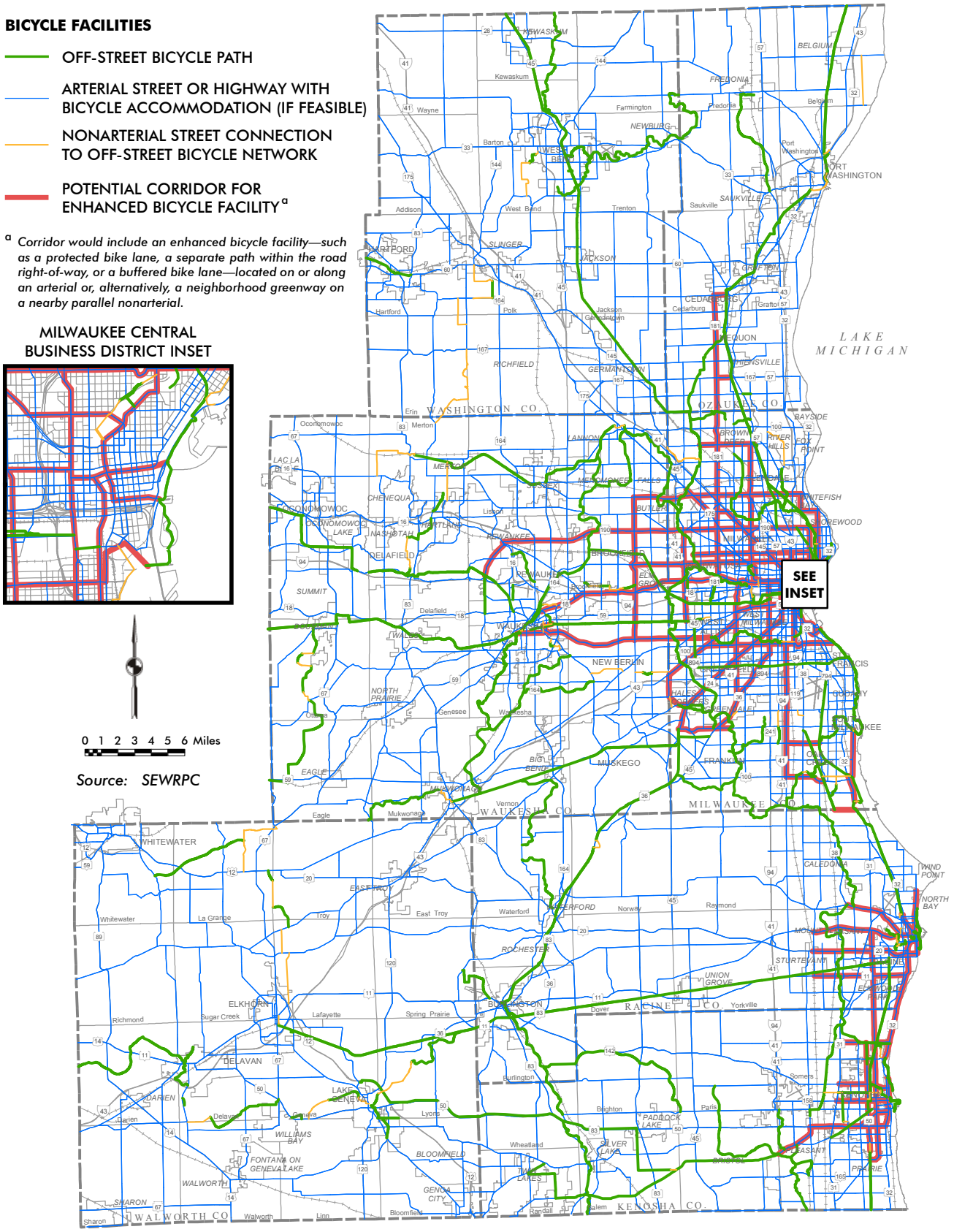
➤ Recommendation 3.1: Expand the on-street bicycle network as the surface arterial system is resurfaced and reconstructed

The Preliminary Plan proposes that as the existing surface arterial street system of about 3,300 miles is resurfaced and reconstructed segment-by-segment, bicycle accommodation be considered and implemented, if feasible, through bicycle lanes, paved shoulders, widened outside travel lanes, or enhanced bicycle facilities.[16] It also proposes that bicycle accommodation be considered and implemented on newly constructed arterials. Enhanced bicycle facilities are defined as bicycle facilities on or along an arterial that go beyond the standard bicycle lane, paved shoulder, or widened outside travel lane. Enhanced bicycle facility examples include the protected bicycle lane, separate path within the road right-of-way, buffered bicycle lane, and raised bicycle lane.

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

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

Map 4.11
Bicycle Network: Preliminary Recommended Plan



In addition to accommodating bicycles on arterials, the Preliminary Plan encourages bicycle travel through intersections be appropriately accommodated. Specific guidance on the location, design, and maintenance of on-street bicycle facilities, including treatment of bicycle facilities at intersections, are presented in the design guidelines prepared for the final plan.

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

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

The Preliminary Plan proposes that a system of off-street bicycle paths be provided between the Kenosha, Milwaukee, Racine, and West Bend urbanized areas and the cities and villages within the Region with a population of 5,000 or more located outside these four urbanized areas. These off-street bicycle paths would be located in natural resource and utility corridors and are intended to provide reasonably direct connections between the Region's urbanized and small urban areas on safe and aesthetically attractive routes with separation from motor vehicle traffic. 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—bicycle lanes, paved shoulders, widened outside travel lanes, or enhanced bicycle facilities. If provided over a nonarterial collector or land access street, they would require no special accommodation.

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

Map 4.12 shows the regional off-street bicycle path system, which includes existing and proposed paths as well as surface arterial and nonarterial connections to the path system. The Preliminary Plan envisions expanding the existing 295 miles of off-street paths to approximately 713 miles of off-street paths.

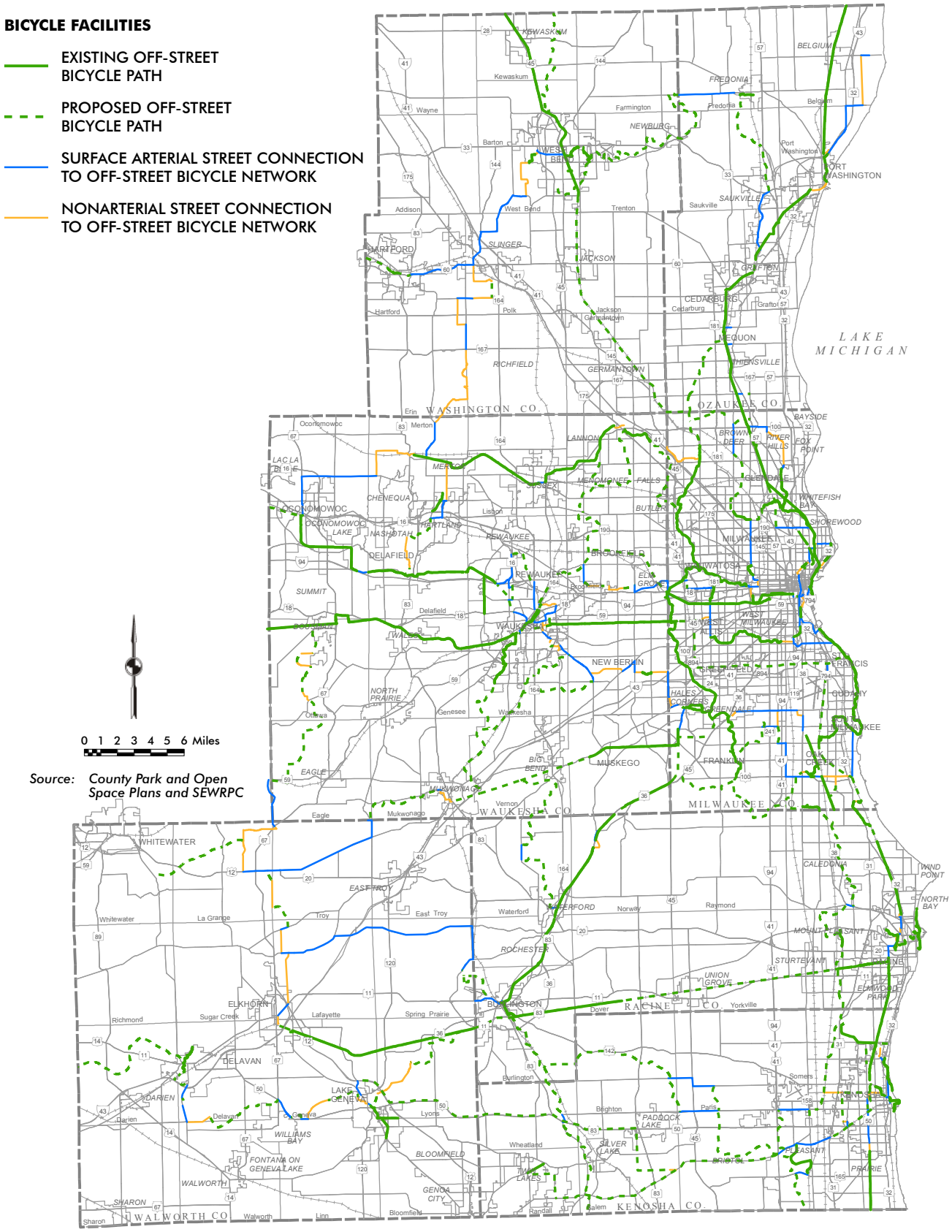
In addition to providing off-street paths and on-street connections to paths, the Preliminary Plan encourages off-street paths be appropriately marked through an intersecting street. Specific guidance on the location, design, and maintenance of off-street bicycle paths, including treatment of off-street paths when intersecting with streets, is presented in the design guidelines prepared for the final plan.

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

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

The Preliminary Plan proposes a network of enhanced bicycle facility corridors through the Kenosha, Milwaukee, and Racine urbanized areas that would connect multiple communities, serve important regional destinations, and link segments of the off-street bicycle path system. Enhanced bicycle facilities—such as protected, buffered, and raised

Map 4.12
Off-Street Bicycle Path System: Preliminary Recommended Plan



A Protected Bike Lane
Credit: People for Bikes

bicycle lanes and separate paths within a road right-of-way—are bicycle facilities on or along an arterial that go beyond the standard bicycle lane, paved shoulder, or widened outside travel lane. They are meant to improve safety, define bicycle space on roadways, and provide clear corridors for bicycle usage. These corridors would be about two blocks in either direction of an arterial street or highway and would either involve implementing an enhanced bicycle facility on or along the arterial street or implementing a neighborhood greenway ("bike boulevard") on a parallel nonarterial, which is a low-speed street optimized for bicycle traffic. The Preliminary Plan proposes a network of 359 miles of enhanced bicycle facilities that would link multiple communities throughout Kenosha, Milwaukee, Ozaukee, Racine, and Waukesha Counties. Specific guidance on the design and implementation of enhanced bicycle facilities is presented in the design guidelines prepared for the final plan.

Particular consideration should be given to enhancing the treatment of existing and proposed enhanced bicycle facilities at intersections. Dashed white lines for protected, buffered, and raised bicycle lanes should be used through intersections to clearly define space and the intended path for bicycles. Colored pavement between the dashed lines can further make these facilities visible in the intersection. In addition, a separate path within a road right-of-way should be brought into the functional area of the intersection to increase the visibility of bicyclists. Further guidance on intersection treatments for enhanced bicycle facilities is presented in the design guidelines prepared for the final plan.

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

A Bike Share Station
Credit: Bublr Bikes

➤ Recommendation 3.4: Expand bike share program implementation

Bike share programs provide residents and visitors with options to use bicycles for short trips within and between downtown areas and adjacent neighborhoods. They offer opportunities for people to use a bicycle from designated stations for the purpose of traveling to and from home, work, or school, running errands, or for social activities. Bike share users often register for this service and pay an annual or monthly membership fee, although many programs also offer single or multi-day ride options for the service. Bike share has been shown to be effective at providing a travel option for short trips and for reducing trips by automobile. It can also function as a feeder service to transit systems, which often encourages an increase in trips using both of these modes.

The Preliminary Plan proposes the expansion of bike share program implementation to encourage bicycling as a viable mode of travel for short distance trips. Bike share is operated in the City of Milwaukee, and is expanding to additional locations in the City and to other communities. Bike share programs can reduce the number of vehicle trips and are often most effective in serving high-density areas with a mix of residential and commercial uses. Bike share programs can attract people who would not typically consider riding a bicycle—short-distance commuters, people running errands, and tourists—as well as those who prefer to commute via bicycle without maintaining and securing their own bicycle.

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

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

The Preliminary Plan proposes that sidewalks be provided along streets and highways in areas of existing or planned urban development based on identified criteria (presented in the design guidelines prepared for the final plan); that sidewalks be designed and constructed using widths and clearances appropriate for the levels of pedestrian and vehicular traffic in any given area; and that terraces or buffered areas be provided between sidewalks and streets for enhancing the pedestrian environment. The Preliminary Plan further encourages making efforts to maximize pedestrian safety at street crossings (specific guidance is presented in the design guidelines prepared for the final plan), including the timing of walk signal phases; the construction of pedestrian median islands in wide, heavily traveled, or otherwise hazardous roadways; and the construction of curb extensions ("bulb-outs") that narrow the crossing distance for pedestrians at intersections. The Preliminary Plan also emphasizes that all pedestrian facilities be designed and constructed in accordance with the Federal Americans with Disabilities Act (ADA) and its implementing regulations. The ADA requires all pedestrian facilities that access public and commercial buildings and services to accommodate people with disabilities. Consistent with ADA requirements, the Preliminary Plan encourages communities with 50 or more employees to maintain updated ADA transition plans, which evaluate and plan for physical improvements to address accessibility for people with disabilities. Specific guidance on the location and design of pedestrian facilities, including relevant ADA requirements and appropriate regulations, are presented in the design guidelines prepared for the final plan.

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

➤ Recommendation 3.6: Prepare local community bicycle and pedestrian plans

The Preliminary Plan proposes that local units of government prepare community bicycle and pedestrian plans to supplement the regional plan. The local plans should provide for facilities to accommodate bicycle and

pedestrian travel within neighborhoods, providing for convenient travel between residential areas and shopping centers, schools, parks, and transit stops within or adjacent to the neighborhood. Local units of government should also encourage more compact and walkable development patterns through local land use policies in order to facilitate safe and efficient pedestrian and bicycle travel.

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

Description of Transportation Systems Management Element

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

Freeway Traffic Management

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

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

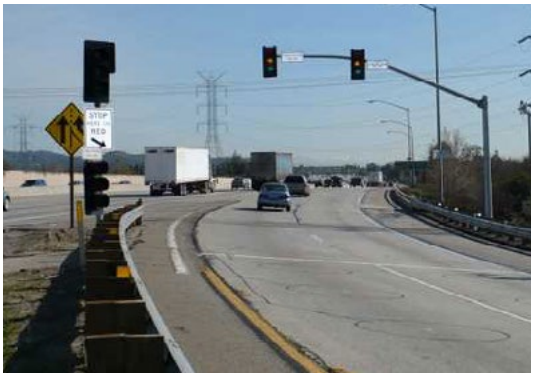
➤ **Recommendation 4.1: Implement freeway operational control measures**

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

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

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

- **Ramp Meters** – Ramp meters are traffic signals located on freeway entrance ramps used to control the rate of vehicles entering onto a freeway segment by breaking up platoons, or groups, of cars to achieve a more efficient operation of the adjacent freeway segment and the downstream freeway system. To encourage ridesharing and transit use, preferential access for high-occupancy vehicles (HOV) is provided at ramp meter locations to allow the HOVs to bypass traffic waiting at a ramp-metering signal. There are currently about 121 freeway on-ramps in the Milwaukee area equipped with ramp meters. Buses and HOVs receive preferential access at 51 of the 121 on-ramp-meter locations. The Preliminary Plan proposes that ramp meters be installed on all freeway on-ramps in the Region as the freeway system is reconstructed, with HOV preferential access provided at metered ramps (dependent on right-of-way and on-ramp geometric constraints), particularly those that would be used by existing and planned public transit. The only exception for ramp meter installation may be those freeway segments previously identified that would be expected to carry current and future traffic volumes well below their design capacity.

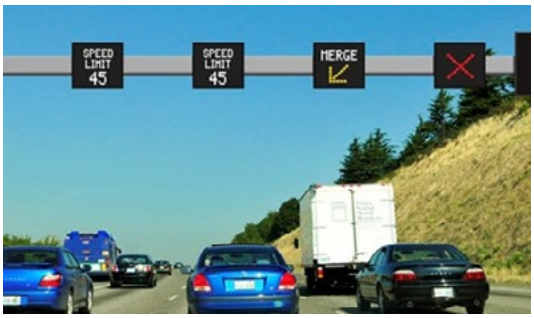


A Ramp Meter
Credit: Caltrans

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

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

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



Lane Use Control Signals
Credit: WSP/Parsons Brinckerhoff

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

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

Bus-on-shoulder
Credit: Minnesota Department of Transportation

- **Part-Time Shoulder Use** – Part-time shoulder use is a quick and inexpensive way to address capacity issues on the regional freeway system by allowing motorists to travel on shoulder lanes in times of congestion and reduced travel speeds during peak periods or in instances of traffic incidents or special events. Implementation may be limited to transit use as bus-on-shoulder (BOS)—increasing the reliability of transit service in congested corridors and encouraging increased transit use by the public—or as an HOV lane—encouraging motorists to carpool. It may be necessary to construct emergency refuge areas at frequent intervals along the portions of freeway shoulder where use as a through lane is permitted, as vehicles

would not be able to use the shoulder for refuge purposes during its use as a through lane.

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

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

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

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

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

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

The Preliminary Plan proposes expanding and enhancing advisory information measures that provide real-time advisory information on current travel conditions to motorists.

- **Variable Message Sign (VMS)** – A VMS is a permanent or portable device used by the STOC to display dynamic messages providing real-

A Variable Message Sign
Credit: WisDOT

time information to motorists about downstream freeway traffic conditions such as current travel times, lane and ramp closures, and where travel delays begin and end. It is also used to display AMBER Alerts in the event of a child abduction, as well as other similar alerts. VMS is currently deployed at 31 locations along the freeway system, and at 19 locations on surface arterials that connect with the freeway system. The Preliminary Plan proposes that VMS be provided on the entire freeway system as it is reconstructed, and on surface arterials leading to the most heavily used freeway system on-ramps. As I2V technology becomes more advanced and has more widespread use, perhaps the use of VMS technology, which has a higher cost to employ, will no longer be necessary.

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

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

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

- **Dynamic Route Planning** – Emerging technologies continue to make traffic data readily available to the public, allowing motorists to access real-time traffic information via computer, mobile device, and in-car navigation systems. There is also an increasing number of private crowd-sourced traffic information providers, such as Waze, which rely on users providing current traffic conditions. Based on

this information, the traffic information provider can dynamically make route suggestions to motorists. The Preliminary Plan proposes that WisDOT and local governments consider future partnerships, particularly the Connected Citizens Program with Waze, to enable the exchange of traffic information and data. WisDOT and local governments can benefit from such a partnership by receiving real-time traffic condition information, such as traffic incidents, congestion, road conditions, and hazards. In turn, traffic information providers can use information shared openly by WisDOT and local governments, such as scheduled road closures and current construction projects, to better inform motorists of current traffic conditions. Currently, the traffic data provided by WisDOT and third-party providers is typically accessed through smart phones and GPS units. It is expected that over the next few years automobile manufacturers will expand the capability of accessing traffic information through direct connections to the internet in the automobiles that they produce.

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

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

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

- **Closed-Circuit Television (CCTV) Cameras** – CCTV cameras provide live video images to WisDOT and the Milwaukee County Sheriff's Department, which allow for the rapid confirmation of congested areas and the presence of an incident, and the determination of the appropriate response to the incident. Currently, there are 159 CCTV cameras on most of the Region's heavily traveled freeways, along with 46 CCTV cameras on surface arterials parallel and connecting with the freeway system primarily located in Milwaukee County. The Preliminary Plan proposes that the CCTV camera network be provided on the entire regional freeway system as it is reconstructed, with the possible exception of the freeway segments identified previously that carry existing and future traffic volumes well below their design capacity.

- **Enhanced Reference Markers** – Enhanced reference markers assist motorists in identifying specific locations along a freeway segment when reporting incidents. These markers are typically small signs

provided at one-tenth or two-tenths of a mile intervals along the freeway system that typically display the highway shield and mile marker. Enhanced reference markers are currently provided along much of the freeway system in the Region at each one-tenth or two-tenths of a mile. The Preliminary Plan proposes that freeway location reference markers be provided on the entire regional freeway system, including the following segments that do not currently have markers: IH 894 in Milwaukee County, IH 43 in Milwaukee County between Silver Spring Drive and North Avenue, IH 43 in Ozaukee County north of STH 60, IH 43 and USH 12 in Walworth County, USH 45 in Washington County, and STH 16 in Waukesha County.

A Freeway Service Patrol Vehicle
Credit: WisDOT

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

A Ramp Closure Device
Credit: WisDOT

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

- **Crash Investigation Sites** – Crash investigation sites are designated safe zones for distressed motorists to relocate to if they are involved in an incident on the freeway. Currently, there are 32 crash investigation sites on the Region's freeway system with 24 of the 32 sites in Milwaukee County. The Preliminary Plan proposes that WisDOT evaluate the extent of use and associated benefits of existing crash investigation sites, and consider expansion as needed to serve the entire regional freeway system.

- **Alternative Routes** – Alternate route designations are clearly marked and signed surface arterial streets and highways that provide a secondary route to be used by motorists during major freeway incidents, ramp closures, or during times of extreme congestion. The Preliminary Plan proposes that WisDOT and the Regional Planning Commission, together with the concerned and affected local governments, continue to examine potential designation of alternate routes.

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

Surface Arterial Street and Highway Traffic Management

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

➤ Recommendation 4.4: Improve and expand coordinated traffic signal systems

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

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

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

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

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

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

In the Region, coordinated traffic signal systems currently range from systems comprising two traffic signals to systems comprising 100 traffic signals. Approximately 1,200 of the 1,700 traffic signals in the Region, or about 71 percent, are currently part of a coordinated signal system.

The Preliminary Plan proposes a future study to document existing and planned traffic signals and make recommendations for improving and expanding coordinated signal systems.

The Preliminary Plan proposes that Commission staff work with State and local governments to document existing and planned arterial street and highway system traffic signals and traffic signal systems, and develop recommendations (including prioritization) for improvement and expansion of coordinated signal systems. The intent is to identify signal coordination corridors that should receive a high priority for Federal and State funding, such as Federal Highway Administration (FHWA) Congestion Mitigation and Air Quality Improvement (CMAQ) Program funds. The Preliminary Plan also proposes preparing and implementing coordinated traffic signal plans along all surface arterial street and highway routes in the Region that have traffic signals located at one-half mile or less spacing. This proposed measure also recommends that agencies coordinate their efforts so that motorists do not experience unnecessary stops or delays due to changes in individual traffic signal jurisdiction authority.

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

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

➤ Recommendation 4.6: Expand curb-lane parking restrictions

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

use as a traffic lane along segments of roadway where BRT service is proposed to operate in a dedicated lane. Map 4.13 shows the potential curb-lane parking restrictions that could be considered as needed during peak traffic periods along segments of roadway expected by the year 2050 to operate under congested conditions and where there may be the ability to utilize the existing parking lane as a traffic lane.

➤ Recommendation 4.7: Develop and adopt access management standards

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

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

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

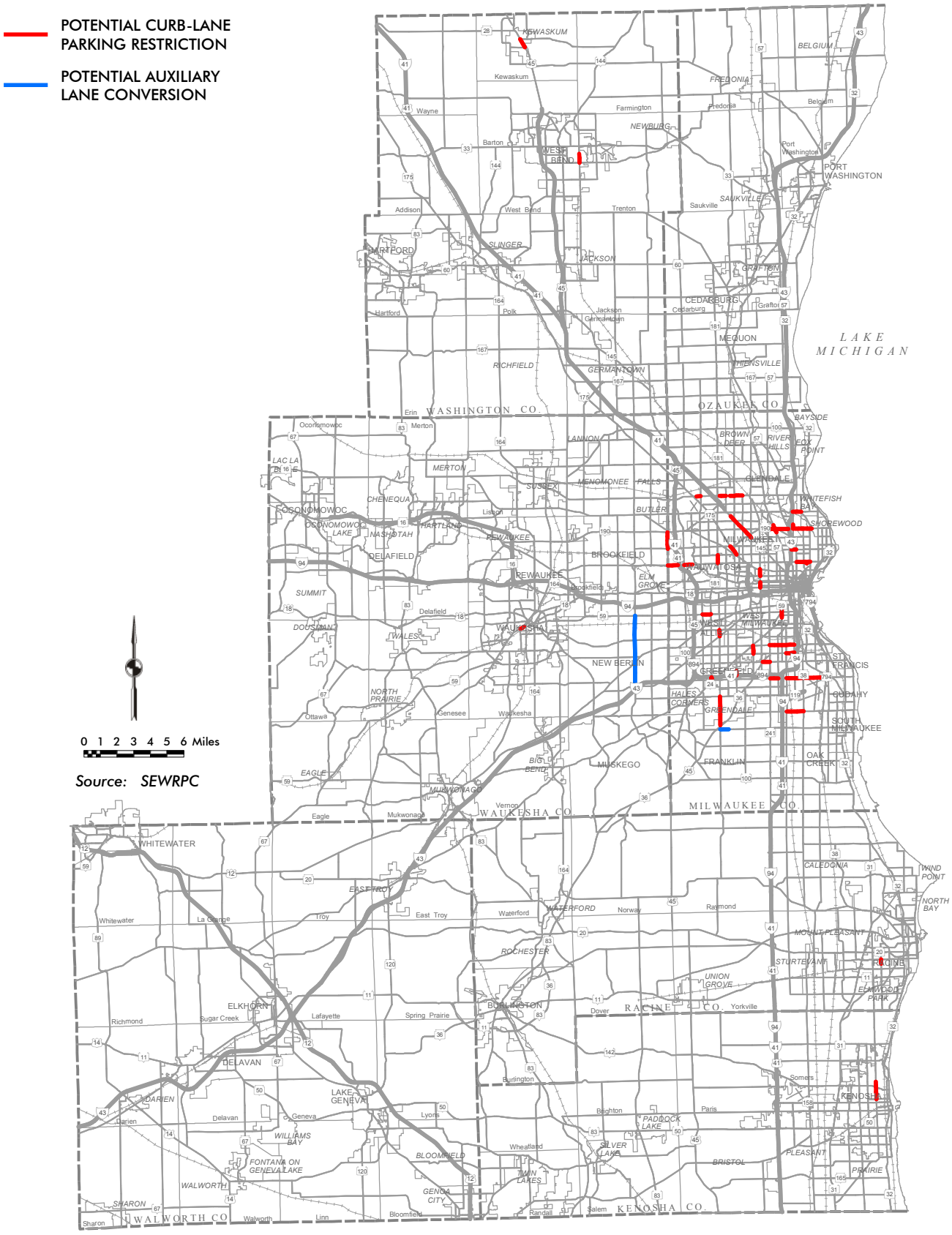
One way to enhance advisory information would be to include surface arterial data on the 511 Wisconsin website in addition to freeway data.

A Hybrid Variable/Static Travel Time Sign
Credit: SEWRPC

➤ Recommendation 4.9: Expand the use of emergency vehicle preemption

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

Map 4.13
Location of Potential Curb-Lane Parking Restrictions and Auxiliary Lane Conversions on Arterial Streets and Highways: Preliminary Recommended Plan



Major Activity Center Parking

The Preliminary Plan proposes strategies to improve parking around major activity centers that allow motorists to find available parking quickly, reducing traffic volume and congestion, and attendant air pollutant emissions and fuel consumption. Measures to improve parking around major activity centers include a parking management and guidance system and demand-responsive pricing.

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

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

A Parking Guidance Sign
Credit: City of Milwaukee

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

Demand-responsive pricing for parking adjusts the price for on-street parking, parking lots, and parking garages in major activity centers. The price for parking can be adjusted throughout the day based on the parking demand in the area so that at least one parking space is available most of the time. Motorists find demand-responsive pricing information online and through smartphone apps that help drivers find parking easier and faster. This strategy can improve parking availability and reduce traffic congestion. The Preliminary Plan proposes that demand-responsive pricing for parking be considered for future implementation in major activity centers.

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

Regional Transportation Operations Plan

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

➤ Recommendation 4.12: Review and update regional transportation operations plan

The Preliminary Plan proposes that Commission staff work with State, county, and municipal governments to review and update the RTOP every four years, with the next update to occur following adoption of VISION 2050. The purpose of the update to the RTOP is to identify additional candidate corridor and intersection TSM projects, and to identify the projects that would have priority for Federal and State funding, such as Federal CMAQ Program funds. During the development of VISION 2050, counties and local governments identified roadway corridors and intersections potentially having traffic flow issues, as shown in Table 4.11. The Preliminary Plan proposes that these corridors and intersections be considered as part of the next review and update to the RTOP.

Table 4.11
Isolated Intersections and Roadway Corridors Identified as Having Potential Traffic Flow Issues by County and Local Governments: Preliminary Recommended Plan

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

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

Source: SEWRPC

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

Description of Travel Demand Management Element

Travel demand management (TDM) refers to a series of measures or strategies intended to reduce personal and vehicular travel or to shift such travel to alternative times and routes, allowing for more efficient use of the existing capacity of the transportation system. The general intent of such measures is to reduce traffic volume and congestion, and attendant air pollutant emissions and fuel consumption. To be effective, these measures should be technically and politically feasible; integrated with public transit, bicycle and pedestrian, and arterial street and highway improvements; and combined into coherent packages so that a variety of measures are implemented. The Preliminary Recommended Plan proposes TDM measures, including HOV preferential treatment, park-ride lots, personal vehicle pricing, TDM promotion, and detailed site-specific neighborhood and major activity center land use plans. It should be noted that there is an inherent overlap between the TDM and public transit elements of the Preliminary Plan, and the transit element proposes a number of additional measures that would reduce personal and vehicular travel beyond those included in the TDM element.

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

The Preliminary Plan proposes to continue and enhance the preferential treatment for transit vehicles, vanpools, and carpools on the existing arterial street and highway system. Providing preferential treatment for

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

- **HOV Queue Bypass Lanes** – HOV queue bypass lanes allow transit vehicles or vehicles with multiple passengers to bypass single-occupancy vehicle queues at metered freeway on-ramps, providing reduced travel time incentives to carpools, vanpools, and transit vehicles. The provision of HOV queue bypass lanes at metered freeway on-ramps exists at 51 of the 121 metered freeway on-ramp locations on the Region's freeway system. The Preliminary Plan proposes providing HOV bypass lanes at metered freeway on-ramps within the Region, particularly at on-ramps near park-ride facilities and at on-ramps that would be used by existing and planned public transit, dependent on right-of-way and on-ramp geometric design constraints.

- **Preferential Carpool and Vanpool Parking** – Preferential carpool and vanpool parking involves employers providing free/subsidized parking or preferential parking for employees who carpool or vanpool to their employment site. This measure can reduce vehicle trips by encouraging ridesharing among employees. The Preliminary Plan encourages employers to provide free/subsidized parking or preferential parking for employees who carpool or vanpool to the employment site.

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

To promote carpooling and the resultant more efficient use of the Region's transportation system, the Preliminary Plan proposes expanding the network of park-ride lots. Park-ride lots should be located along all major routes at their major intersections and interchanges where sufficient demand may warrant provision of an off-street parking facility. Map 4.14 shows the proposed system of park-ride lots, including existing park-ride lots and those proposed to be served by transit.

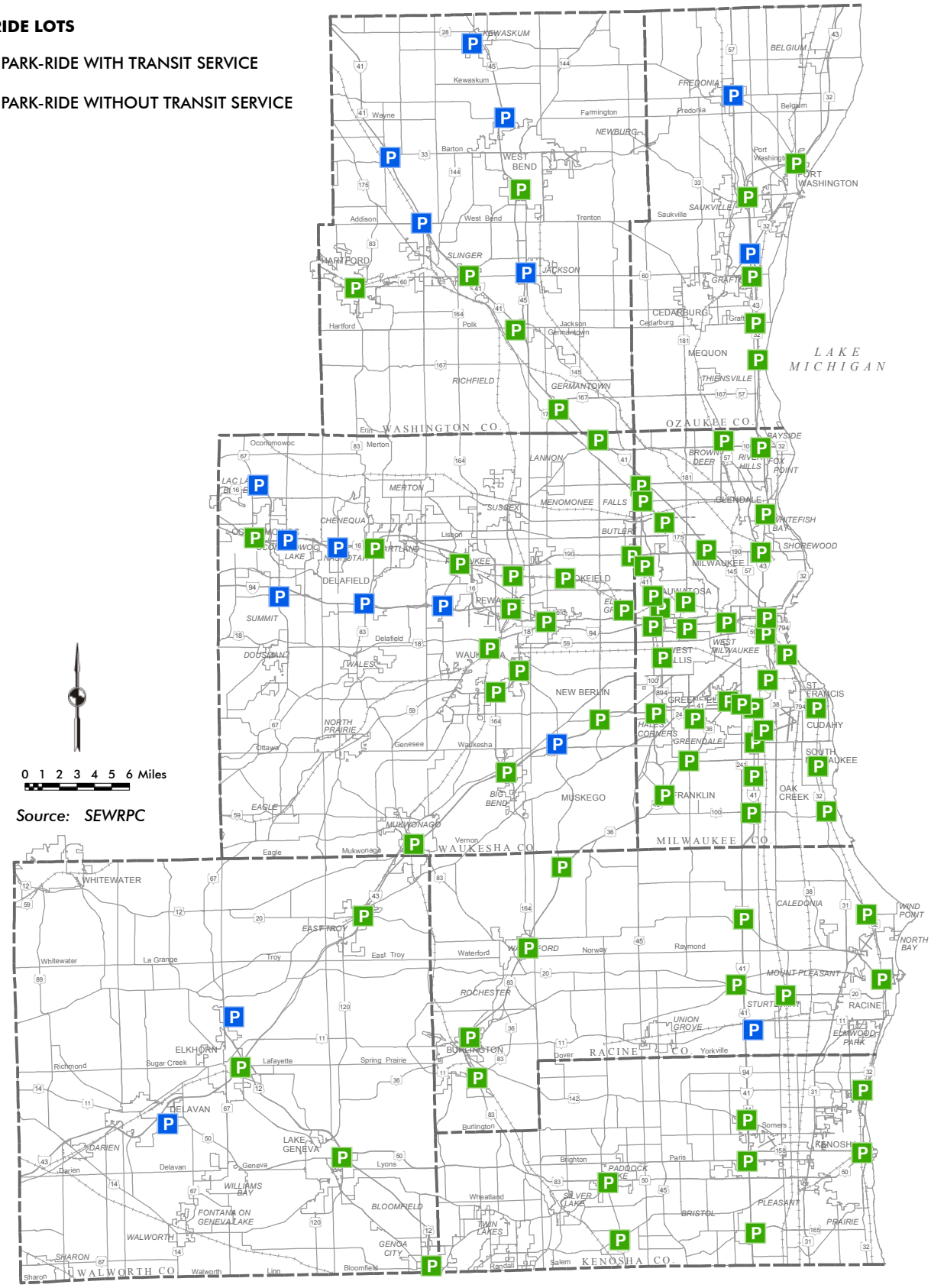
➤ Recommendation 5.3: Implement personal vehicle pricing

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

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

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

Map 4.14
Park-Ride Lots: Preliminary Recommended Plan



ride-sharing. The Preliminary Plan supports employers implementing cash-out of employee-paid parking and subsidizing all, or a portion of, the parking costs for employees who carpool or vanpool to the employment site.

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

    - **Vehicle-Miles of Travel (VMT) Fee** – A VMT fee is a road pricing measure that imposes a fee on a motorist based on the total distance they drive over a specified period of time. A distance-based fee would encourage residents to drive less, potentially reducing total VMT, traffic volumes, and congestion. This strategy also provides a more equitable means of paying for the costs of the construction, maintenance, and operation of the transportation system as motorists would pay for their actual use of the transportation system, as opposed to paying based on the amount of fuel purchased, which is affected by the fuel efficiency of their vehicle, as a proxy for the amount their vehicle uses the transportation system. Studies and pilot projects across the country suggest that VMT fees could potentially replace or supplement Federal and State motor fuel taxes. Implementing a VMT fee utilizing technologies such as a GPS unit or an in-vehicle device that would collect mileage data have faced obstacles due to technology uncertainty, privacy concerns, and cost implementation issues. However, low technological options, such as incorporating odometer readings during the annual vehicle registration process, are also possible. In 2013, the Wisconsin Transportation Finance and Policy Commission, a State task force appointed by the Governor, recommended incorporating a VMT fee with the annual registration fee, but the proposal was not considered by the State Legislature.

- **Tolling** – Tolling requires a motorist to pay a fee to use a particular highway facility. Requiring motorists to pay for the facilities they use would provide additional funds to cover the costs of construction, maintenance, and operation of those facilities, and may result in residents choosing alternative modes of transportation. Federal law currently prohibits the implementation of tolls on Federal-aid highways.

Congestion Pricing Example
Credit: Minnesota Department of Transportation

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

- **Parking Pricing Strategies** – Parking pricing strategies involve charging user fees for commercial and residential parking facilities. The availability of free parking encourages driving while the cost associated with maintaining parking facilities is paid by everyone, including those who do not drive, through higher prices on merchandise, food, and rent. Imposing a user fee on parking encourages individuals to use alternatives to the automobile to travel to entertainment and retail establishments and also encourages residents to reduce the number of vehicles they own. A user fee for parking also places more of the costs associated with maintaining parking facilities onto those who use them. The Preliminary Plan supports the implementation and expansion of parking pricing strategies.

➤ Recommendation 5.4: Promote travel demand management

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

- **Car Sharing Services** – Car sharing services provide an option for travelers who primarily rely on public transit and non-motorized transportation, but at times need a vehicle for special trips such as grocery shopping or trips to rural areas. Typically, a privately owned vehicle entails fixed costs—such as insurance or a car loan—that an owner must pay regardless of the amount they drive, while car sharing services allow drivers to pay per trip. Car sharing services reduce the need for households to own a personal vehicle and

reduce a household's VMT because users would only drive when necessary, rather than out of convenience. Local governments can enhance car sharing services by providing dedicated on-street parking spots exclusively for car sharing vehicles at strategic locations. Zipcar, an existing car sharing service in the City of Milwaukee, has several stations located across downtown, the Lower East Side, and the campuses of the University of Wisconsin-Milwaukee and Marquette University. The Preliminary Plan proposes expanding the car sharing services where appropriate in Southeastern Wisconsin.

A Car Sharing Service
Credit: City of Milwaukee

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

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

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

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

- **Limit Parking Availability** – A strategy that can encourage using alternative modes of transportation in urban areas is to limit the

availability of parking in mixed-use and high-density developments. Limiting parking availability while providing the necessary amenities and services that promote transit use, bicycling, and walking would decrease the likelihood that people will drive and increase the likelihood that people will use public transportation, bike, or walk to and from an area. Many local governments have zoning ordinances that require the provision of a minimum number of parking spaces for residential developments (e.g., based on the number of apartment units) and for commercial developments (e.g., based on store square footage), which tends to encourage personal vehicle use. The Preliminary Plan proposes local governments in urban areas consider removing minimum parking requirements from their zoning ordinances.

Description of Arterial Streets and Highways Element

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

The arterial street and highway system under the Preliminary Recommended Plan totals 3,666.5 route-miles. Approximately 90 percent, or 3,309.0 of these route-miles, are proposed to be resurfaced and reconstructed to their existing traffic carrying capacity. Approximately 283.9 route-miles, or about 8 percent of the year 2050 arterial street and highway system are recommended for capacity expansion through widening to provide additional through traffic lanes. The remaining 73.6 route-miles, or about 2 percent of the total arterial street mileage, propose arterial system capacity expansion through the construction of new arterial facilities. Of the total of about 357.5 route-miles of planned arterial capacity expansion, about 79.9 route-miles, or 22 percent, is part of a committed project (i.e., one that is currently underway or recommended as part of a completed or nearly completed preliminary engineering study). Table 4.12 and Maps 4.15 through 4.21 display the arterial street and highway element of the Preliminary Plan.

The preliminary year 2050 arterial street and highway system is designed to serve an expected increase in vehicle-miles of travel of 23% by the year 2050, with an 8% increase in arterial system lane-miles.

The arterial system capacity expansion proposed in the Preliminary Plan represents about an 8 percent expansion in arterial system lane-miles over the next 35 years. The year 2050 arterial street and highway system is designed to serve the expected increase in VMT in the Region of 23 percent by the year 2050 (even with a near doubling of transit and a more compact development pattern proposed under the Preliminary Plan). The year 2050 arterial street and highway system is designed to address the forecast year 2050 congestion that may be expected, even if all the other elements of the Preliminary Plan are fully implemented, including land use, public transit, transportation systems management, travel demand management, and bicycle and pedestrian facilities. Implementation of the year 2050 arterial system would be expected to result in overall traffic congestion, travel time delay, and average trip times to be essentially maintained at, or modestly improved from, current levels. In addition, access by automobile to major

Table 4.12
Arterial Street and Highway System Preservation, Improvement, and Expansion by Arterial Facility Type by County: Preliminary Recommended Plan

County	Arterial Facility Type	System Preservation (miles)	System Improvement (miles)	System Expansion (miles)	Total Miles
Kenosha	Freeway	8.6	3.4	0.0	12.0
	Surface Arterial	318.4	31.2	4.4	354.0
	Subtotal	327.0	34.6	4.4	366.0
Milwaukee	Freeway	19.2	48.4	0.0	67.6
	Surface Arterial	719.3	11.3	7.0	737.6
	Subtotal	738.5	59.7	7.0	805.2
Ozaukee	Freeway	13.3	14.1	0.0	27.4
	Surface Arterial	262.4	18.5	2.9	283.8
	Subtotal	275.7	32.6	2.9	311.2
Racine	Freeway	0.0	12.0	0.0	12.0
	Surface Arterial	410.1	11.1	13.9	435.1
	Subtotal	410.1	23.1	13.9	447.1
Walworth	Freeway	49.8	4.8[a]	12.5	67.1[a]
	Surface Arterial	408.5	4.3	10.3	423.1
	Subtotal	458.3	9.1	22.8	490.2
Washington	Freeway	35.8	6.6	0.0	42.4
	Surface Arterial	388.8	8.8	16.9	414.5
	Subtotal	424.6	15.4	16.9	456.9
Waukesha	Freeway	32.5	26.4	0.0	58.9
	Surface Arterial	642.3	83.1	5.7	731.1
	Subtotal	674.8	109.5	5.7	790.0
Region	Freeway	159.2	115.7[b]	12.5	287.4[b]
	Surface Arterial	3,149.8	168.2	61.1	3,379.1
	Total	3,309.0	283.9	73.6	3,666.5

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

[b] *Includes the widening of approximately 110.9 miles of the existing 2015 regional freeway system, and the conversion of about 4.8 miles of the USH 12 Whitewater bypass, currently a two-traffic-lane surface arterial to a four-traffic-lane freeway.*

Source: SEWRPC

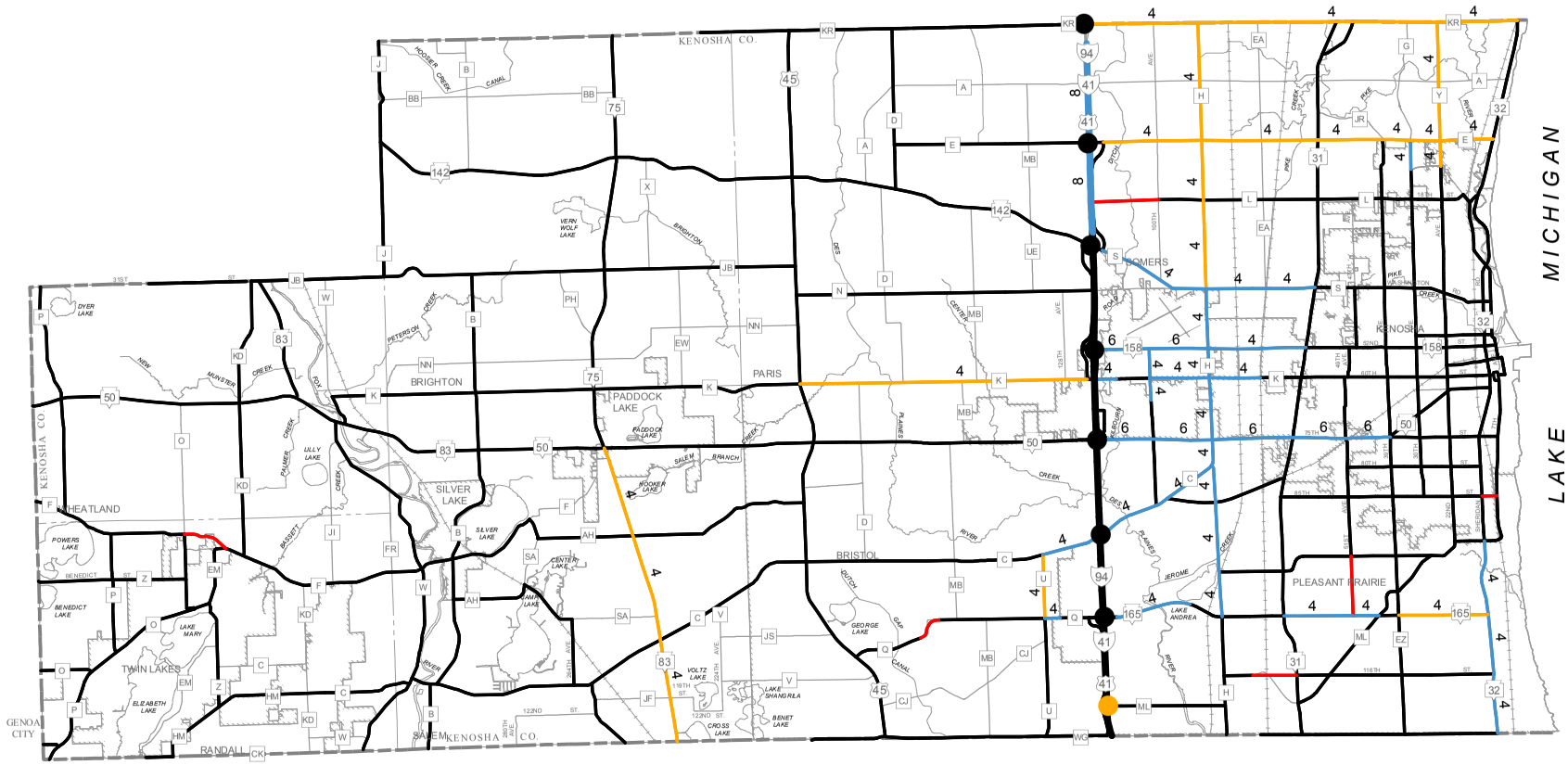
activity centers (such as retail centers, major parks, universities, and health care providers) and regional destinations (such as General Mitchell International Airport and the Milwaukee Regional Medical Center) would be expected to remain about the same by the year 2050 for the Region's population.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

➤ Recommendation 6.1: Preserve the Region's arterial street and highway system

The Preliminary Plan proposes that the condition of all 3,600 miles of the roadways that are part of the Region's existing arterial street and highway system be preserved to maintain their ability to effectively carry higher levels of people and goods. Preserving the condition of the Region's arterial streets and highways—including pavement, bridges, and all other infrastructure in the roadway right-of-way[17]—is critical to provide for safe and efficient travel throughout the Region. As they carry a higher level of people and goods each day, preserving the condition

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

Map 4.15
Functional Improvements to the Arterial Street and Highway System in Kenosha County: Preliminary Recommended Plan



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)

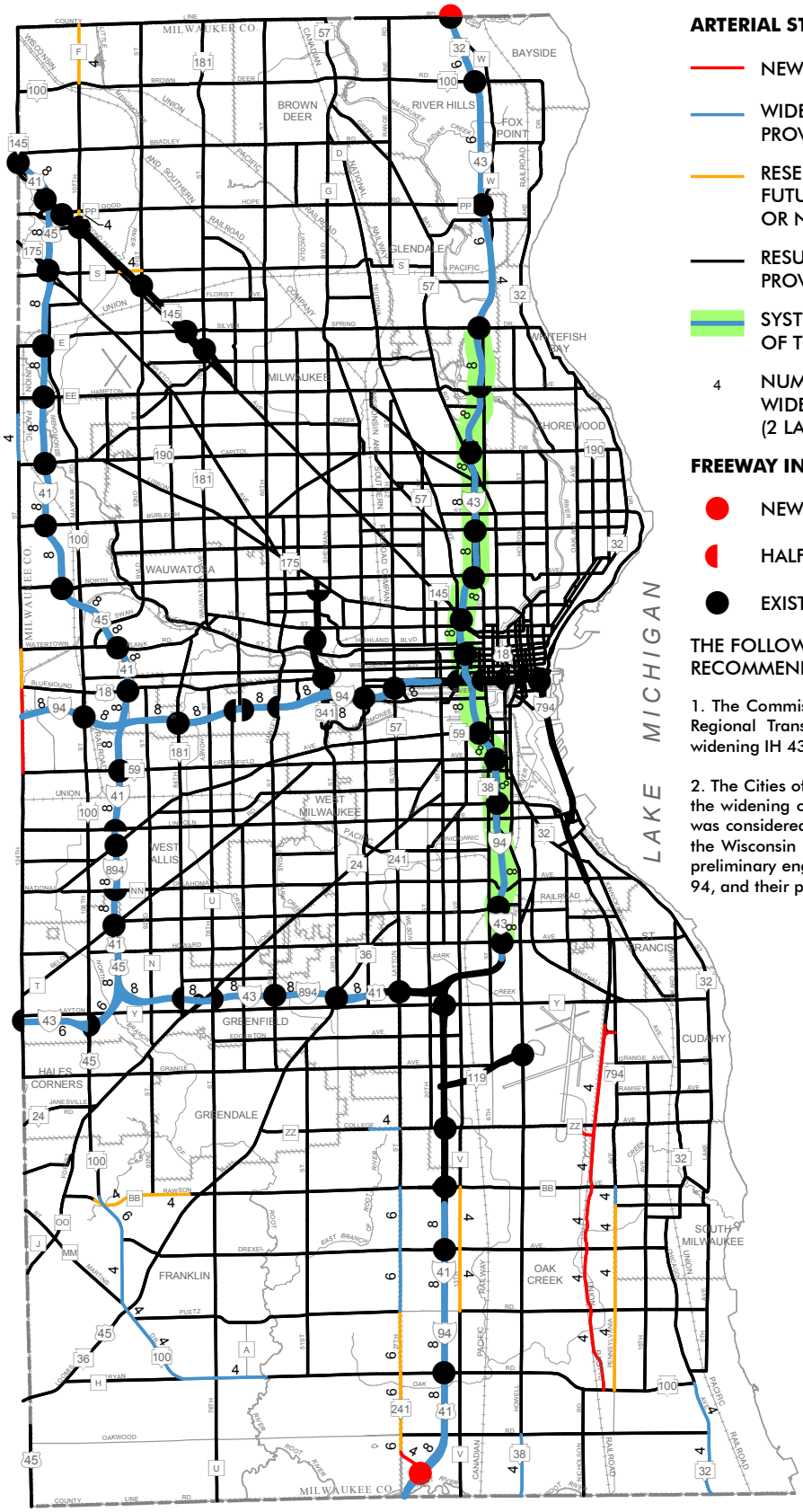
FREEWAY INTERCHANGE

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

0 1 2 3 Miles

Source: Wisconsin Department of Transportation and SEWRPC

Map 4.16
Functional Improvements to the Arterial Street and Highway System in Milwaukee County: Preliminary Recommended Plan



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
- SYSTEM WAS EVALUATED WITHOUT WIDENING OF THIS SEGMENT OF IH 43 (SEE NOTE 1 BELOW)
- 4 NUMBER OF TRAFFIC LANES FOR NEW OR WIDENED AND/OR IMPROVED FACILITY (2 LANES WHERE UNNUMBERED)

FREEWAY INTERCHANGE

- NEW
- HALF NEW
- EXISTING

THE FOLLOWING NOTES SUPPLEMENT THE RECOMMENDATIONS PORTRAYED ON THIS MAP:

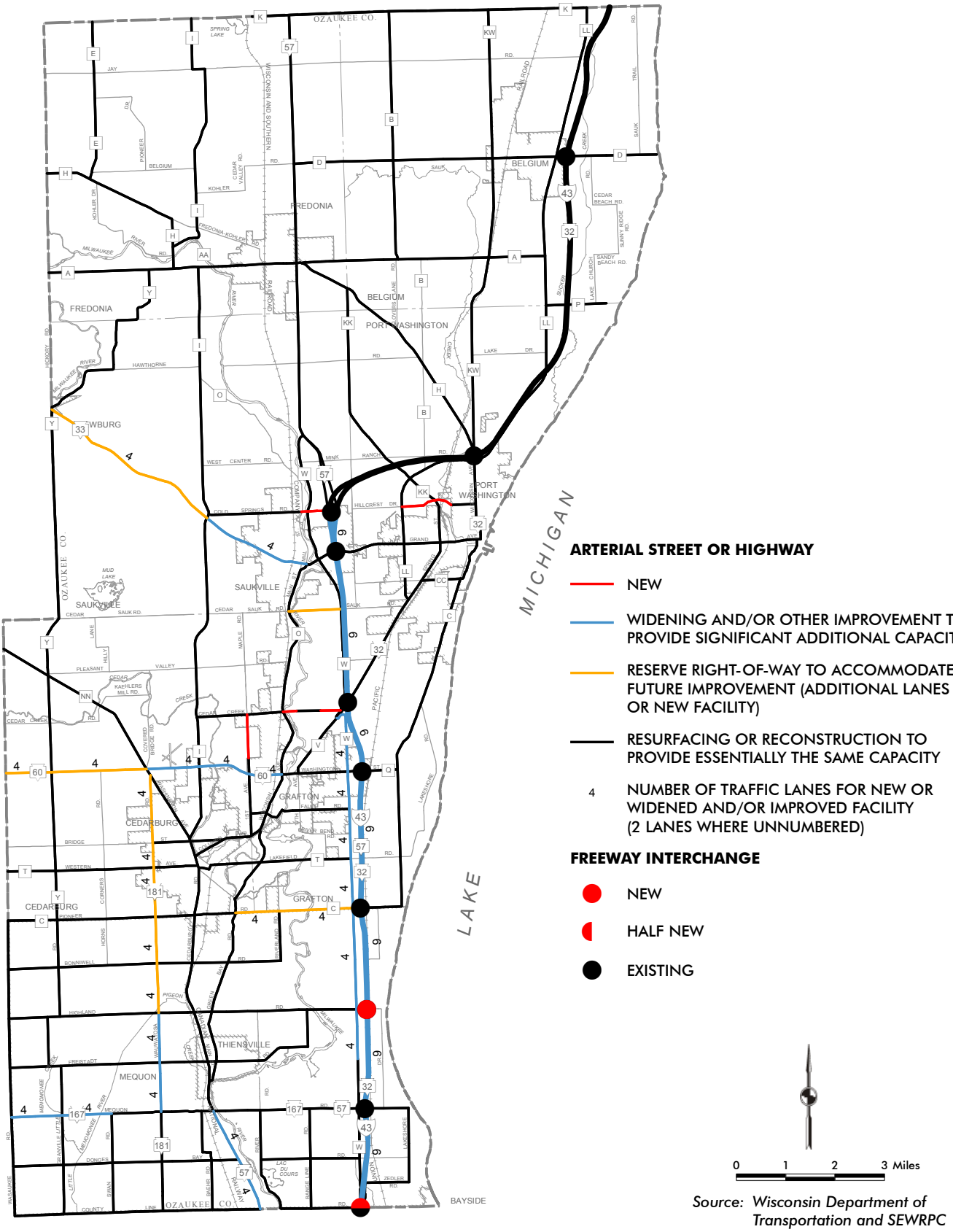
1. The Commission staff was asked by the Advisory Committee on Regional Transportation Planning to evaluate the effect of not widening IH 43 between Howard Avenue and Silver Spring Drive.

2. The Cities of Milwaukee and Wauwatosa expressed opposition to the widening of IH 94 between 70th Street and 16th Street, which was considered a committed project under the Preliminary Plan, as the Wisconsin Department of Transportation had nearly completed preliminary engineering for the reconstruction of this segment of IH 94, and their preferred alternative includes its widening.

0 1 2 3 Miles

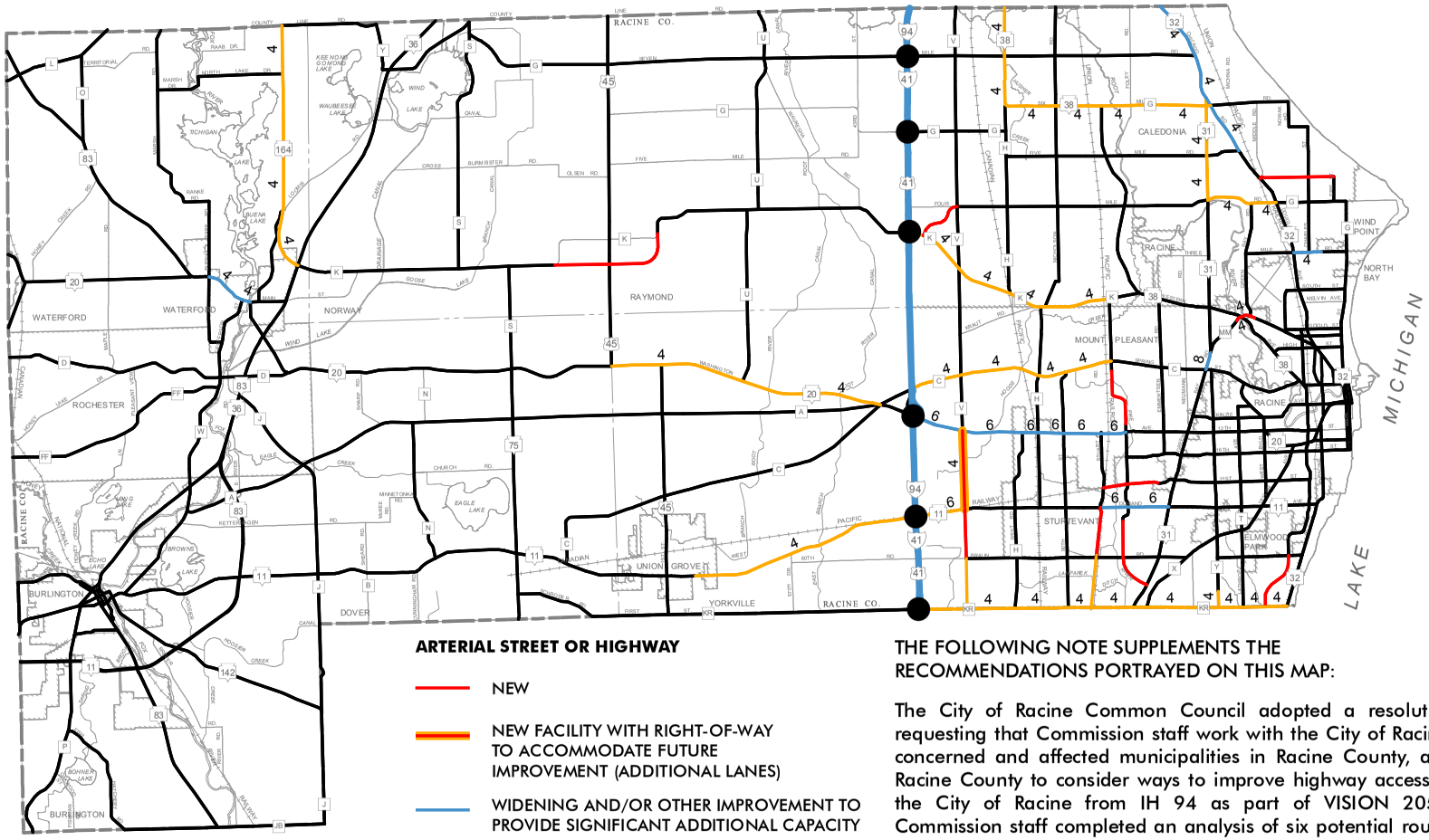
Source: Wisconsin Department of Transportation and SEWRPC

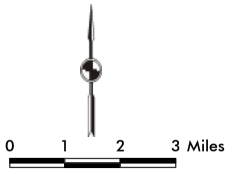
Map 4.17
Functional Improvements to the Arterial Street and Highway System in Ozaukee County: Preliminary Recommended Plan



Source: Wisconsin Department of Transportation and SEWRPC

Map 4.18
Functional Improvements to the Arterial Street and Highway System in Racine County: Preliminary Recommended Plan





Source: Wisconsin Department of Transportation and SEWRPC

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 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)

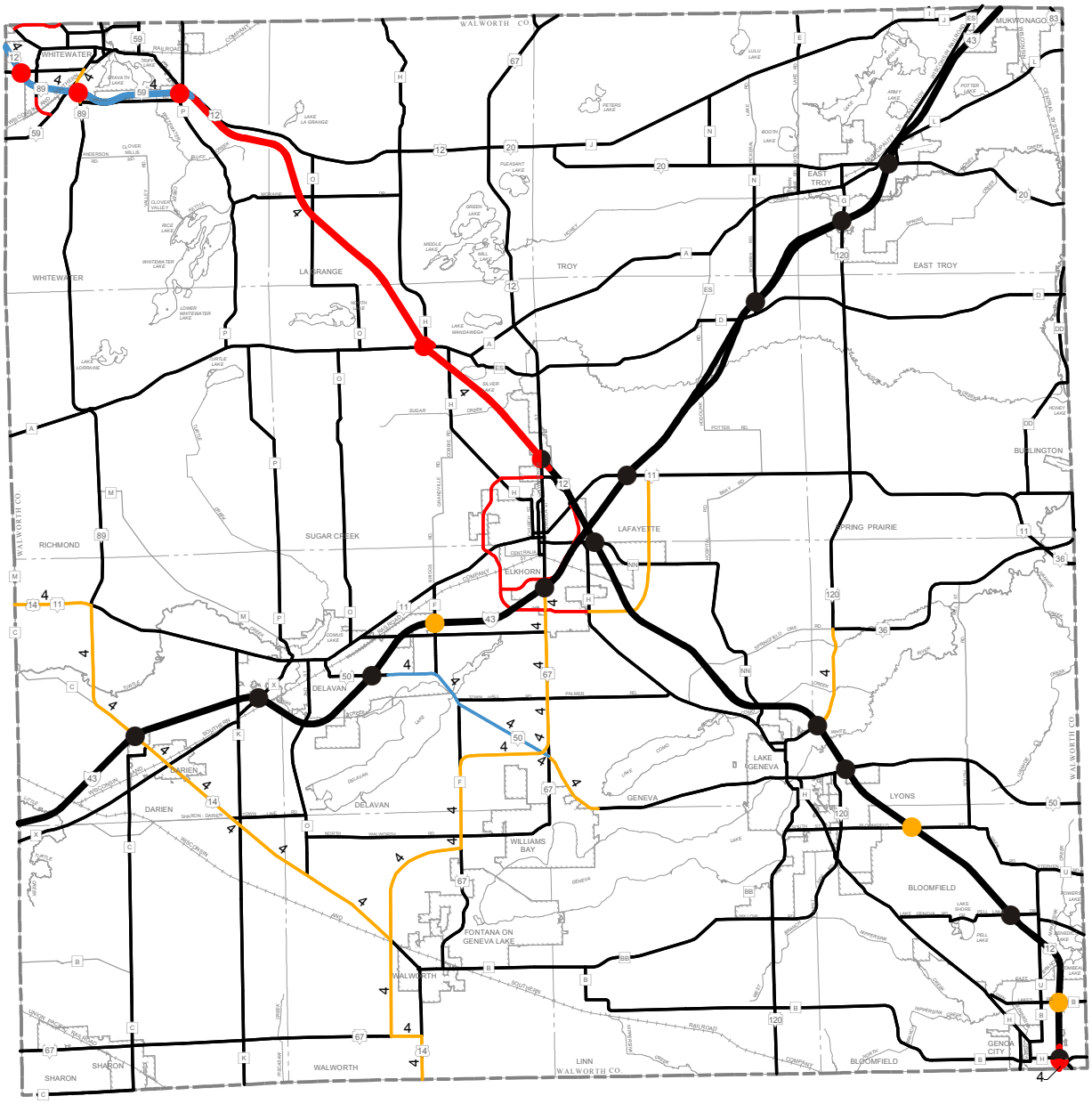
FREEWAY INTERCHANGE

- EXISTING

THE FOLLOWING NOTE SUPPLEMENTS THE RECOMMENDATIONS PORTRAYED ON THIS MAP:

The City of Racine Common Council adopted a resolution requesting that Commission staff work with the City of Racine, concerned and affected municipalities in Racine County, and Racine County to consider ways to improve highway access to the City of Racine from IH 94 as part of VISION 2050. Commission staff completed an analysis of six potential routes between IH 94 and the City of Racine downtown area (defined as Main Street between State Street and 7th Street): STH 11/STH 32, STH 20/STH 32, CTH K/STH 38, Four Mile Road/STH 32, CTH C/STH 38, and CTH KR/STH 32. Based on the results of the analysis, Commission staff has identified three routes for further study: STH 20/STH 32, CTH K/STH 38, and CTH KR/STH 32. Commission staff will work with affected local units of government and the Wisconsin Department of Transportation to identify potential recommended improvements along these three routes. Any additional functional improvements identified would be included in the final recommended plan or amended into the plan.

Map 4.19
Functional Improvements to the Arterial Street and Highway System in Walworth County: Preliminary Recommended Plan



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)

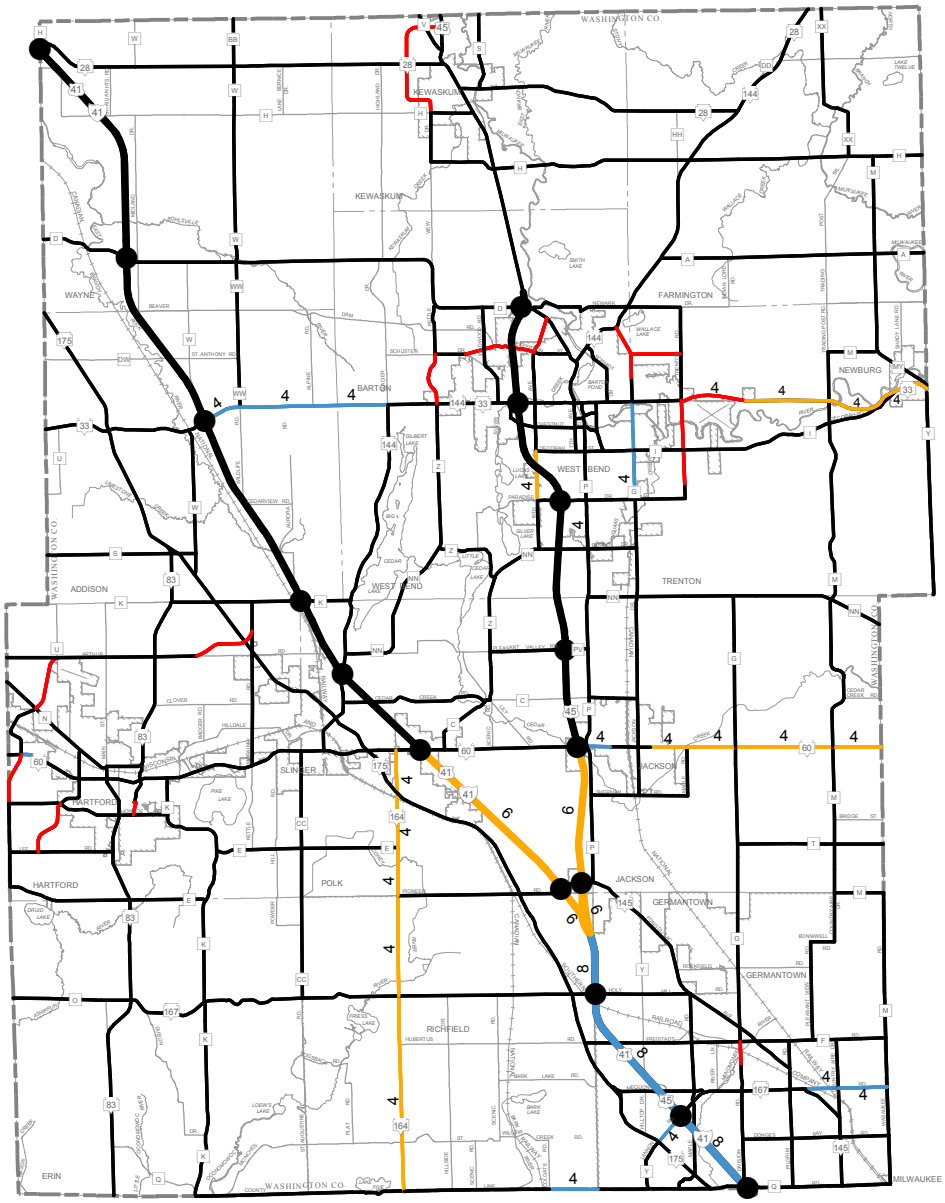
FREEWAY INTERCHANGE

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

0 1 2 3 Miles

Source: Wisconsin Department of Transportation and SEWRPC

Map 4.20
Functional Improvements to the Arterial Street and Highway System in Washington County: Preliminary Recommended Plan



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

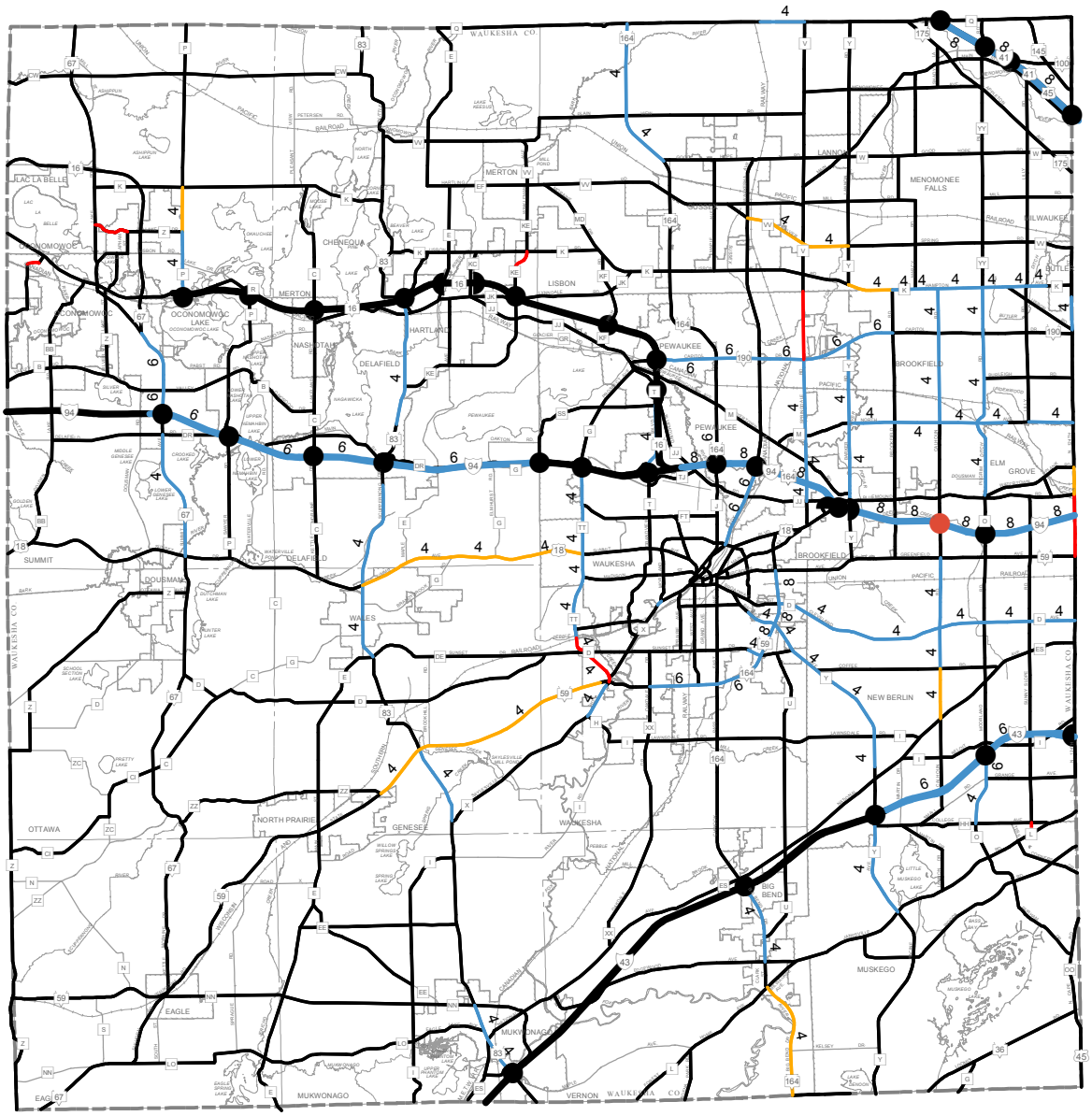
THE FOLLOWING NOTE SUPPLEMENTS THE RECOMMENDATIONS PORTRAYED ON THIS MAP:

Commission staff was asked by Washington County to evaluate alternative east-west arterial bypass routes north of the City of Hartford and Village of Slinger, and potential improvements to STH 60 between the west county line and IH 41. The study is expected to be completed beyond the completion of VISION 2050. Should the results of this study differ from the final plan, it will be amended to reflect the results of the study.

0 1 2 3 Miles

Source: *Wisconsin Department of Transportation and SEWRPC*

Map 4.21
Functional Improvements to the Arterial Street and Highway System in Waukesha County: Preliminary Recommended Plan



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

- NEW
- HALF NEW
- EXISTING

0 1 2 3 Miles

Source: Wisconsin Department of Transportation and SEWRPC

of the arterial streets and highways is important for achieving a high standard of living for the Region's residents and giving the Region a competitive edge in terms of retaining and attracting businesses.

Roadways and bridges have a long life before they need to be replaced or reconstructed (typically 50 to 60 years for highways and 50 to 75 years for bridges). However, because of vehicular use (particularly by trucks) and changing weather conditions (freeze/thaw cycle in winters and hot summers), roadways and bridges deteriorate over time. As the comfort and safety of drivers can be affected when these facilities reach a critical point of deterioration, it is necessary to improve the condition of roadways and bridges, along with other highway infrastructure, through routine maintenance, periodic rehabilitation, and reconstruction.[18] The Preliminary Plan proposes that the condition of roadway pavements and bridges be maintained at least to its current level through the year 2050. Specifically, it proposes maintaining or increasing the current proportion of pavement that is in "good" condition (about 55 percent), and maintaining or reducing the current proportion of pavement in "bad" condition (about 11 percent), during the life of the plan. Similarly, it proposes maintaining or increasing the current proportion of bridges that have a sufficiency rating of 80 or more (about 71 percent), and maintaining or reducing the current proportion of bridges with a sufficiency rating less than 50 (about 5 percent), during the life of the plan.

- **Asset Management Plans** – As available Federal, State, and local funding is limited, it is important that the timing and choice of rehabilitation and timing of reconstruction/replacement of various roadway features (pavement, bridges, and other roadway infrastructure) be done consistent with their life cycle in order to utilize the available funding effectively. Thus, sound asset management practices are necessary to effectively utilize the limited funding resources. With respect to pavement, this means focusing more on less costly maintenance work and rehabilitations as needed to maximize pavement life, and thus avoiding substantial pavement deterioration and costly premature pavement reconstruction. To assist in managing the condition of their roadways, many States and local governments have developed asset management plans that include strategies for monitoring the condition of the roadway features and for implementing cost effective maintenance and rehabilitation activities. Since the Moving Ahead for Progress in the 21st Century Act (MAP-21) was enacted in 2012, WisDOT has been required to develop and implement an asset management plan for the pavement and bridges of the roadways on the National Highway System (NHS) within the State. At the time the Preliminary Plan was prepared, FHWA had not yet finalized the requirements for States in developing these asset management plans. WisDOT has one year following completion of the Federal requirements to complete their asset management plan. The Preliminary Plan proposes that WisDOT's Federally required asset management plan also include the state trunk highways that are not on the NHS. The Preliminary Plan also proposes that local governments within the Region develop and implement asset management plans for the arterial and nonarterial roadways under their jurisdiction. This

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

would be particularly important for local governments that maintain a large system of arterial and nonarterial roadways.

- **Performance Monitoring of Pavement and Bridge Condition** – As part of the performance management reporting and targeting setting requirements initiated under MAP-21, the Commission will be responsible to report the condition of the pavement and bridges for the roadways on the NHS. At the time the Preliminary Plan was prepared, FHWA was finalizing the methodology that will be used to determine the level of condition for pavement and bridges for the NHS roadways. The collection of these data will be primarily the responsibility of WisDOT, which is responsible for reporting the condition of the pavement and bridges for the NHS roadways statewide. In addition, WisDOT is responsible for setting performance targets for the condition of pavement and bridges on the NHS, and has one year from the time the methodology is finalized to establish the performance targets for pavement and bridges statewide. The Commission will be responsible to establish and report regionwide targets for the condition of pavement and bridges. When established, these performance targets will be reported in VISION 2050 updates.

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

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

Complete streets is a roadway design concept focused on providing for the safe and convenient travel of all roadway users (of all ages and abilities) traveling by various modes (walking, bicycling, transit, or automobile) within the roadway right-of-way. Complete street features can be implemented to encourage walking and bicycling and the use of transit as alternatives to travel by automobile. The Preliminary Plan proposes that complete street concepts be considered as part of the reconstruction of existing surface arterial roadways and the construction of new surface arterial roadways. In the interim, the Preliminary Plan proposes that suitable existing arterial roadways with sufficient roadway surface width be considered at the time of their resurfacing for providing a partial implementation of complete streets, such as adding bicycle lanes or widened travel shoulders. Details on complete street improvements are included as part of design guidelines developed for the final plan.

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

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

➤ Recommendation 6.3: Expand arterial capacity to address residual congestion

The Preliminary Plan proposes approximately 283.9 route-miles be widened to provide additional through traffic lanes, representing about 8 percent of the total preliminary year 2050 arterial street and highway system mileage, including 110.9 miles of existing freeways. These proposed widenings are shown as blue lines on Maps 4.15 through 4.21. In addition, the Preliminary Plan proposes 73.6 route-miles of new arterial facilities, representing about 2 percent of the total year 2050 arterial street mileage. These proposed new facilities are shown in red on Maps 4.15 through 4.21. Of the total of about 357.5 route-miles of planned arterial capacity expansion, about 79.9 route-miles, or 22 percent, is part of a committed project (i.e., one that is currently underway or recommended as part of a completed or nearly completed preliminary engineering study). These highway improvements are proposed to address the residual congestion that may not be expected to be alleviated by proposed land use, systems management, demand management, bicycle and pedestrian facilities, and public transit measures proposed in the Preliminary Plan. In addition, many of the proposed new arterial facilities would provide a grid of arterial streets and highways at the appropriate spacing as the planned urban areas of the Region develop to the year 2050.

Highway improvements are proposed to address the residual congestion that may not be alleviated by other measures proposed under the Preliminary Plan.

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

- **Freeways** – The Preliminary Plan proposes the widening of 110.9 miles of existing freeways with an additional lane in each direction at the time of their reconstruction and the conversion of the 4.8-mile USH 12 bypass of Whitewater to a four-lane freeway. Currently, 29.5 miles of freeway widening are being constructed as part of the project to reconstruct the Zoo Interchange and IH 94 between the Mitchell Interchange and STH 142. In addition, the preliminary engineering and environmental impact studies have been completed or nearly completed for 17.2 miles of freeway reconstruction including widening as part of the reconstruction of IH 94 between 70th Street and 16th Street in Milwaukee County and IH 43 between Silver Spring Drive and STH 60. Thus, of the Plan's proposed 115.7 miles of freeway capacity expansion that include an additional lane in each direction, 46.7 miles (or 42 percent) may be considered as committed projects. The remaining 64.2 miles of proposed freeway widening, including the 10.2 miles of the proposed widening in the City of Milwaukee of IH 43 between Howard Avenue and Silver Spring Drive, will undergo preliminary engineering and environmental impact study by WisDOT. During preliminary engineering for the reconstruction of these

segments of freeway, alternatives will be considered, including 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.

Given opposition by the City of Milwaukee to the widening of freeways within the City, an analysis was done of the implications of not including the widening of IH 43 between Howard Avenue and Silver Spring Drive. This analysis is presented in Appendix I to this volume.

- **Freeway Interchanges** – On the existing freeway system, the Preliminary Plan proposes two new freeway interchanges (IH 94 with Calhoun Road and IH 43 with Highland Road). The Preliminary Plan also proposes the conversion of two half interchanges to full interchanges (IH 94 with S. 27th Street and IH 43 with County Line Road) and the conversion of a full interchange to a half interchange (IH 94 with Hawley Road). The conversions of these interchanges were part of WisDOT's preferred alternatives for the reconstruction of IH 94 between the Wisconsin-Illinois State line and the Mitchell Interchange, IH 94 between 70th Street and 16th Street, and IH 43 between Silver Spring Drive and STH 60. In addition, the Preliminary Plan identifies four potential new future interchanges for consideration (CTH ML with IH 94, CTH B with USH 12, Bloomfield Road with USH 12, and CTH F with IH 43) and proposes that action be taken by local governments to preserve the potential necessary right-of-way to assure that the future development of these interchanges is not precluded. Should the concerned local governments take the next step of participating with WisDOT in the conduct of a preliminary engineering study of the interchange, and the preliminary engineering conclude with a recommendation to construct the interchange, the Commission, upon the request of the concerned local governments and the WisDOT, would take action to amend the regional plan to recommend the construction of the interchange.

Transportation system improvements should first avoid or minimize any adverse impacts on environmentally sensitive resources, only mitigating where impacts will be unavoidable.

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

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

alignments that avoid, to the extent possible, impacts on environmentally sensitive resources.

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

- **Mitigation of Environmental Impacts** – Where environmentally sensitive resources will be unavoidably impacted, and for which mitigation is compensatory, efforts should focus on the preferred means of mitigation as identified by the regulatory agencies.[19] Types of mitigation typically considered include enhancement of the remaining adjacent environmentally sensitive resources that will not be impacted as part of the arterial street and highway project, re-creation of the impacted environmentally sensitive resources, creation of new environmentally sensitive resources, or the acquisition and utilization of mitigation bank credits. Potential mitigation sites could include areas within or adjacent to primary environmental corridors, secondary environmental corridors, and isolated natural resource areas; mitigation bank sites; and areas identified in SEWRPC Planning Report No. 42, *A Regional Natural Areas and Critical Species Habitat Protection and Management Plan for Southeastern Wisconsin*.

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

The occurrence of crashes can have negative effects on the Region as they contribute to overall transportation costs; increase public costs for police, emergency medical, and other social services; and cause nonrecurring congestion on the highway system. In addition, vehicular crashes take a heavy toll in life, property damage, and human suffering. Vehicular crashes occur due to one or a combination of the following factors:

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

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

human error, vehicle failure, and roadway/environmental conditions. The Preliminary Plan proposes that Federal, State, and local governments, and the Commission work to:

- **Minimize total traffic crashes on the arterial street and highway system** – Implementing each element of the Preliminary Plan should minimize the number of total traffic crashes on the arterial street and highway system. For example, the proposed improvement and expansion of public transit and bicycle and pedestrian facilities and implementation of the proposed TDM measures should reduce the growth in vehicle travel, conflicts, and crashes, and encourage increased travel on safer facilities and services. Also, the proposed reconstruction of the freeway system with additional traffic lanes should reduce traffic congestion and related traffic crashes. While VMT may be expected to increase by 23 percent by the year 2050, total vehicular crashes are estimated to increase by only 16 to 22 percent with full implementation of all elements of the Preliminary Plan.

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

- **Minimize total traffic crashes, along with crashes involving fatalities and serious injuries, on the arterial street and highway system** – There are many factors that can affect the severity of a crash, including human factors (age and vulnerability of drivers/passengers, seat belt/helmet use, speed of vehicle, sobriety of driver), vehicle factors (safety features), and roadway/environmental factors (weather conditions, pavement condition, grade, presence of roadside features). Implementing the recommendations of the State's Strategic Highway Safety Plan (SHSP) by the State and local governments would assist in the reduction of crashes involving fatalities and serious injuries.[20] While implementing the SHSP would be expected to reduce overall crashes, addressing the types of crashes emphasized in the SHSP would also be expected to reduce fatalities and serious injuries, which occur at a higher proportion for such crashes. The types of crashes prioritized in the SHSP include intersection crashes, speed-related crashes, head-on and roadway departure crashes, crashes involving

[20] *At the time VISION 2050 was completed, the most recent SHSP was completed in September 2014 for the years 2014-2016 and can be found at http://wisconsindot.gov/Pages/safety/education/frms-pubs.*

pedestrians and bicyclists, alcohol/drug-related crashes, and crashes involving a driver or passengers not wearing their seatbelt.

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

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

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

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

Preliminary Plan proposes that the freeway system be reconstructed to modern design standards, addressing the design deficiencies of the existing freeway system and improving travel safety.

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

- **Alternative Intersections** – The Preliminary Plan proposes that alternative intersection types that reduce the number of vehicle-to-vehicle conflicts be considered, particularly for high-volume intersections. While the Preliminary Plan does not identify the specific treatment that should be implemented at each intersection, it proposes that alternative intersection types be considered during the preliminary engineering conducted for the reconstruction of the intersection. Roundabouts are one example of an alternative intersection type increasingly being implemented throughout the Region. While a roundabout is not ideal for every intersection location, when properly designed and located, roundabouts have been found to be effective in reducing the number of crashes, and particularly the severity of crashes. Other intersection types utilized around the country that could be considered on the Region's arterial system include displaced left-turns, median U-turns, restricted crossing U-turns, and quadrant roadways (currently proposed by WisDOT for the intersection STH 50 and STH 31 in Kenosha County).

- **Access Management** – Developing and implementing access management standards, as proposed in Recommendation 4.7, along arterial streets and highways would be expected to reduce the number of conflicts that can result in vehicular crashes. A set of recommended access management standards is presented in design guidelines for the final plan.

- **Regional Safety Implementation** – The Preliminary Plan proposes that the Commission, working with WisDOT and local governments, develop a Regional Safety Implementation Plan (RSIP) that will identify a list of intersections and corridors along the Region's arterial streets and highways with the most severe crash rates in each county. These intersections and corridors would be prioritized based on the nature

of the crashes and frequency of the crashes resulting in fatalities and serious injuries. This prioritization could be used by the State and local governments to identify intersections and corridors for further, more detailed safety studies and identifying and prioritizing projects for Federal and State Highway Safety Improvement (HSIP) funds. The study would also identify a list of corrective measures to reduce the number and severity of crashes.

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

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

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

The Commission will also monitor and assist WisDOT in implementing the security recommendations in its long-range transportation plan entitled Connections 2030.[21] The action items in that plan that involve Commission efforts include coordinating border county evacuation plans with Illinois, supporting the development of the transportation element of the National Response Framework, coordinating evacuation plans for Wisconsin's 12 largest communities, studying the needs of essential freight movement, developing the Wisconsin Airport Security Plan, offering security planning assistance to local transit agencies, and developing local plans that can be integrated into statewide emergency relief and disaster preparedness plans, strategies, and policies.

The Preliminary Plan proposes that the State and local governments in the Region continue to work with the Federal government and the Commission to address the security needs related to the arterial street and highway system:

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

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

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

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

- **Increasing Transportation System Resiliency to Flooding** – Identifying streets, highways and other transportation facilities (e.g., bus stops and park-ride lots) that are susceptible to flooding, and identifying adjacent roadway facilities that could serve as alternative routes when flooding occurs, would help the Region's transportation system become more resilient with respect to the projected increase in frequency of large storm events. The Preliminary Plan proposes that the Commission staff initiate a study to identify transportation facilities in low-lying areas (e.g., within 100-year flood plains) and identify potential improvements that would help the regional transportation system become more resilient to flooding.

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

The Preliminary Plan proposes improvements to achieve a safe, efficient, and multimodal freight transportation system.

Description of Freight Transportation Element

The movement of freight is essential for maintaining and growing Southeastern Wisconsin's economy. Truck, rail, water, and air modes of transportation bring raw materials to the Region's manufacturers, and they carry finished goods to domestic and international markets. The Region's freight transportation system is used by the U.S. Postal Service and express parcel service providers, and it supports commerce in the Region by providing for the movement of goods that stock the Region's retail stores. The Region's freight transportation system also supports the movement of building materials needed to construct and maintain the Region's homes and businesses as well as the transportation system itself. In 2015, approximately

138 million tons of domestic and international cargo valued at about $206 billion were shipped to, from, and within the Milwaukee-Racine-Waukesha Combined Statistical Area (CSA).[22] This cargo was transported using a variety of modes, including: truck (82 percent of all shipments by weight and 78 percent by value); rail (11 percent by weight and 2 percent by value); water (4 percent by weight and 2 percent by value); air (0.1 percent by weight and 3 percent by value); multiple modes and mail (2 percent by weight and 14 percent by value); pipeline (1 percent by weight and 0.3 percent by value); and other/unknown (less than 0.1 percent by weight and less than 0.1 percent by value).[23]

The Preliminary Plan proposes a multimodal freight transportation system designed to provide for the efficient and safe movement of raw materials and finished products to, from, and within Southeastern Wisconsin. To achieve this goal, the Preliminary Plan proposes improvements to the Region's transportation infrastructure as well as intergovernmental cooperation and other actions to preserve key transportation corridors, address regulatory inefficiencies, meet trucking industry workforce needs, and increase transportation safety and security.

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

Freight shipments in Southeastern Wisconsin—including shipments involving ships, airplanes, and trains—rely heavily on trucks using the Region's arterial street and highway system. In particular, the movement of freight depends in large part on trucks using the regional highway freight network—arterial streets and highways in the Region intended to carry a higher percentage of truck traffic. The regional highway freight network is based on the National Highway System as well as the State's designated routes for long trucks (see Map 4.22). Higher levels of congestion and the presence of bottlenecks on the regional highway freight network can result in increased shipping delays and higher shipping costs, negatively impacting businesses and manufacturers in the Region. The Preliminary Plan proposes implementing the capacity expansion improvements proposed in the arterial streets and highways element of the preliminary recommended plan, which would address existing and forecast future traffic congestion on the regional highway freight network.

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

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

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

[22] *Office of Freight Management and Operations, Federal Highway Administration, Freight Analysis Framework (FAF) Version 4.1. The Milwaukee-Racine-Waukesha Combined Statistical Area consists of Dodge, Jefferson, Milwaukee, Ozaukee, Racine, Walworth, and Waukesha Counties.*

[23] *Ibid.*

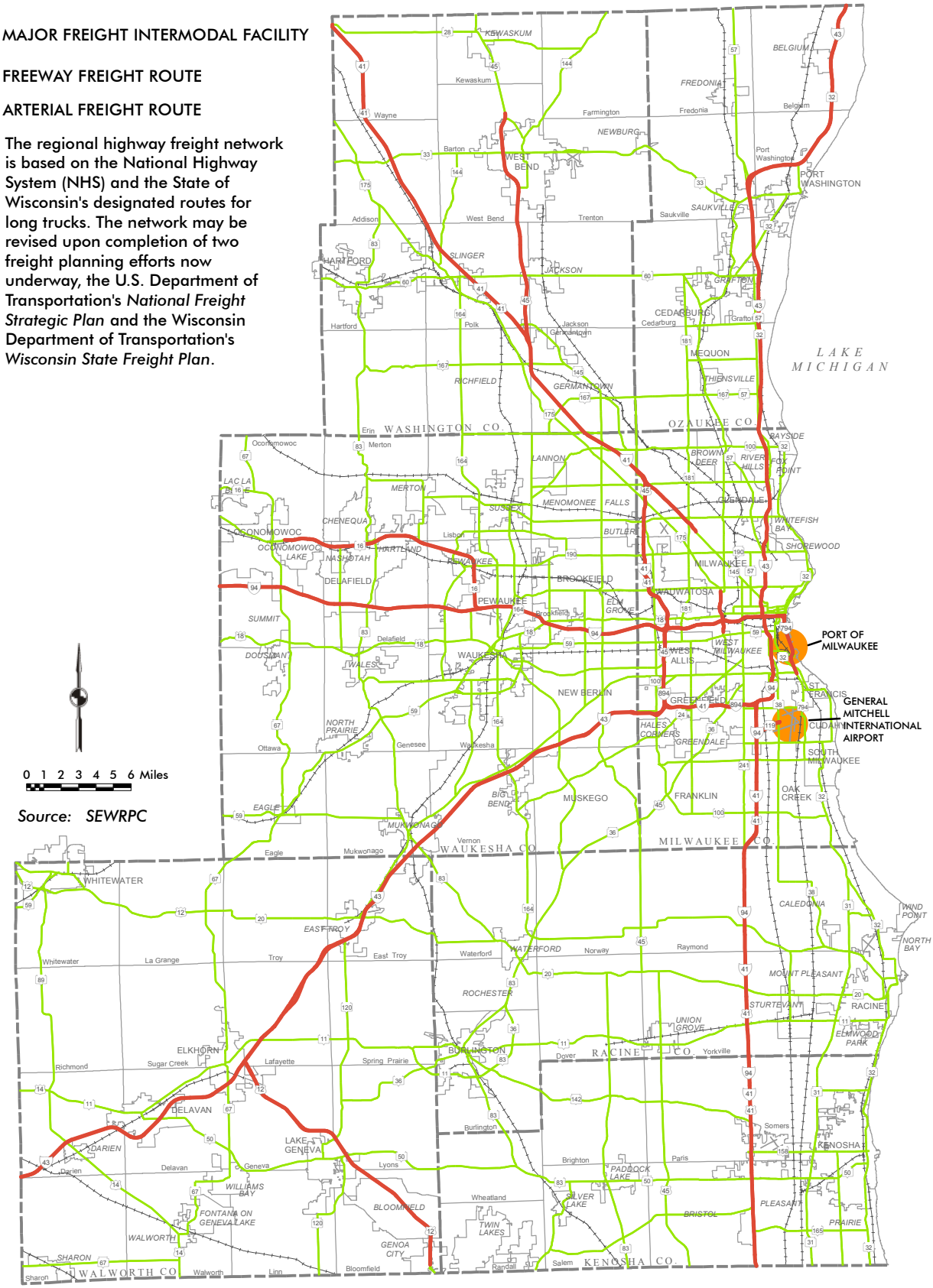
Map 4.22
Regional Highway Freight Network: 2015

MAJOR FREIGHT INTERMODAL FACILITY

FREEWAY FREIGHT ROUTE

ARTERIAL FREIGHT ROUTE

Note: The regional highway freight network is based on the National Highway System (NHS) and the State of Wisconsin's designated routes for long trucks. The network may be revised upon completion of two freight planning efforts now underway, the U.S. Department of Transportation's *National Freight Strategic Plan* and the Wisconsin Department of Transportation's *Wisconsin State Freight Plan*.



Source: SEWRPC

State and local governments work with the Commission and local manufacturers, shippers, and utilities to improve the accommodation of OSOW shipments on the Region's arterial street and highway network. The following are specific actions recommended to improve the accommodation of OSOW shipments:

An Oversize/Overweight Shipment
Credit: Port of Milwaukee

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

- **Delineate a regional OSOW truck route network** – Identify OSOW truck routes—including routes serving the Port of Milwaukee and routes serving origins and destinations outside the Region—and their associated geometric envelopes and weight restrictions that would meet the needs of manufacturers and shippers in the Region.

- **Identify OSOW truck route infrastructure needs** – Document existing physical impediments to OSOW shipments on the delineated regional OSOW truck route network (e.g., low bridge clearances, low-hanging utility wires, or median barriers) and identify the infrastructure improvements to address the impediments. As an example, a potential need that has been identified involves meeting a minimum height standard of 23 feet for utility wires on all established OSOW routes accommodating high and wide shipments.

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

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

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

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

A Truck-Rail Intermodal Facility
Credit: Canadian Pacific Railway

- **Assess the feasibility of developing a new truck-rail intermodal facility** – Conduct a study on the feasibility of developing a new truck-rail intermodal facility in or near Southeastern Wisconsin. Such a study could include

identifying potential locations for developing a new facility, surveying local manufacturers and shippers regarding their interest in using a new facility, and working with the freight railroads to determine their interest and needs related to developing an intermodal facility.

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

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

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

➤ Recommendation 7.5: Construct the Muskego Yard bypass

Canadian Pacific Railway (CP) freight trains traveling through downtown Milwaukee currently pass through the Milwaukee Intermodal Station (MIS). The station is a stop for Amtrak's Hiawatha Service and Empire Builder intercity passenger trains. It would also be a stop for commuter rail service under the Preliminary Plan and for expanded intercity passenger rail service under the State's long-range state rail plan.[24] Upgrading track and signaling through CP's Muskego Yard, which passes through the Menomonee Valley south of MIS, would allow freight trains traveling through downtown Milwaukee to bypass the station. This would benefit the station's ability to accommodate additional commuter rail and intercity passenger rail service, and it would improve safety and reduce delays to both freight and passenger trains traveling through Milwaukee. As such, the Preliminary Plan proposes the State work with CP to construct the Muskego Yard bypass.

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

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

➤ Recommendation 7.7: Address safety needs related to freight transportation

Crashes involving freight transportation negatively impact the well-being of Southeastern Wisconsin's residents as well as its economy. The

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

Preliminary Plan proposes that Federal, State and local governments, the Commission, and private freight carriers continue to work to:

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

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

- **Reduce conflicts involving trucks** – Implementing the recommendations in the public transit element of the Preliminary Plan has the potential to reduce conflicts between trucks and automobiles by reducing the number of trips made by automobiles and by providing exclusive right-of-way for certain rapid transit routes. Implementing the recommendations in the bicycle and pedestrian element of the Preliminary Plan has the potential to reduce conflicts between trucks and bicycles and pedestrians by providing additional off-street bicycle and pedestrian facilities (including bicycle/pedestrian paths and sidewalks) and expanded and enhanced on-street bicycle facilities.

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

➤ Recommendation 7.8: Address security needs related to freight transportation

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

- **Conduct periodic vulnerability assessments and monitor and strengthen vulnerable infrastructure** – The State has completed a vulnerability assessment of critical transportation infrastructure in Wisconsin, with guidance from the Federal government. The assessment identified transportation facilities in Wisconsin that have the potential to significantly disrupt the State's transportation system,

should they lose functionality.[25] Regularly updating this assessment, strengthening identified vulnerable transportation facilities, and regularly monitoring identified facilities would reduce the risk of disruptions to the Region's freight transportation system.

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

- **Maintain a resilient regional highway freight network** – Implementing the capacity expansion improvements proposed in the arterial streets and highways element of the Preliminary Plan would result in a more resilient regional highway freight network that would more effectively accommodate truck movements on alternative routes should a portion of the network be disrupted.

- **Study the needs of essential freight movement** – Studying and recommending strategies for ensuring that shipments of essential freight—such as food and fuel—can travel to, from, and within the Region during prolonged security incidents, as recommended by the State's long-range transportation plan,[26] would help the Region recover from incidents as well as support efforts to respond to incidents in other parts of the country.

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

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

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

Financial Analysis of Expected Plan Costs and Revenues

The implementation of the transportation component of the Preliminary Recommended Plan will require adequate funding for the proposed improvements to the public transit system, bicycle and pedestrian network, and arterial street and highway system. The financial analysis in this section

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

[26] *Ibid*.

examines the expected costs of the Preliminary Plan and compares those costs to reasonably expected revenues that would be available to fund the transportation component of the Preliminary Plan. Comparing cost and revenue forecasts illustrates potential funding gaps that would need to be addressed in order to fully implement the Preliminary Plan. To address the funding gaps, the Preliminary Plan identifies additional revenue sources that should be explored. The transportation component of VISION 2050 is required by the Federal government to be funded with reasonably expected revenues. If funding gaps exist for the desired improvements of a particular element, those improvements would not meet Federal requirements for fiscal constraint.

Expected Costs and Revenues

Tables 4.13 and 4.14 compare estimated transportation system costs of the Preliminary Plan to reasonably expected future revenues. Table 4.13 provides this comparison based on year 2015 constant dollars, and Table 4.14 based on year of expenditure (YOE) dollars. Federal, State, and local capital and operating revenues for highways are based on estimated Federal, State, and local expenditures over the last several years. Federal capital and operating revenues for transit are based on historical expenditures over the last several years, and an assessment of available Federal formula and program funds. Tables 4.15 and 4.16 present the estimates of revenue and the basis for those estimates.

With respect to reasonably expected revenues, estimates need to take into account existing and reasonably expected limitations on funding. For example, existing limitations may dictate that funding can be used only for capital projects as opposed to covering operating costs. As another example, funds may be restricted to a specific travel mode, program, or geographic area. It should also be noted that there are inherent difficulties in predicting future costs and revenues, including uncertainties related to the economy, local and State budgets, and Federal transportation bills.

Funding Gap Identification

A comparison of estimated costs to expected revenues for the Preliminary Plan, shown in Tables 4.13 and 4.14, indicates there may be enough revenue to fund the proposed arterial system improvements during the plan period. A principal element of the arterial street and highway system cost is the construction, or capital, cost associated with major projects (shown on Maps 4.15 through 4.21). Major projects are defined as projects of higher cost and include those segments of the freeway system shown in Table 4.17 and new surface arterial construction and existing surface arterial reconstruction of four or more miles in length, as shown in Table 4.18.

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

The conclusion that the arterial street and highway system can be funded within reasonably expected revenues is based on an expectation that the State will continue to provide the necessary level of funding for arterial improvements. In recent State budgets, the State has chosen to provide this level of funding through bonding and the long-term sustainability of this approach has been questioned. Other issues have also been raised regarding the ability to sustainably fund the arterial street and highway system at the regional, State, and Federal levels in the future. The Federal motor fuel tax has not changed since 1993, and the State motor fuel tax—the principal source of State transportation funding—is no longer indexed to inflation (the ability to index was repealed in 2006). Combined with improvements in

Table 4.13
Average Annual Costs and Revenues Associated with the Preliminary Recommended Transportation System in 2015 Constant Dollars: 2016-2050

Cost or Revenue Item		2015 Constant Dollars
Transportation System Cost (average annual 2016-2050 expressed as millions of dollars)[a]		
Arterial Street and Highway System		
Capital		
Freeway Reconstruction		$281
Surface Arterial Reconstruction/Resurfacing and Freeway Resurfacing[b]		381
	Subtotal	$662
Operating		84
	Subtotal	$746
Transit System		
Capital		$125
Operating[c]		$198
	Subtotal	$323
	Total	$1,069
Transportation System Revenues (average annual 2016-2050 expressed as millions of dollars)[a]		
Highway Capital		
Freeway Reconstruction (Federal/State)		$275
Surface Arterial Reconstruction/Resurfacing and Freeway Resurfacing		
Federal/State		338
Local		67
	Subtotal	$680
Highway Operating		
State		$41
Local		38
	Subtotal	$759
Transit Capital		
Federal		$98
Local		3
	Subtotal	$101
Transit Operating		
Federal		$5
State		76
Local		21
	Subtotal	$102
	Subtotal	$203
	Total	$962

[a] *The estimated arterial street and highway system and transit system costs include all capital costs and operating and maintenance costs. The estimated costs include the necessary costs to preserve the existing transportation system, such as arterial street resurfacing and reconstruction and transit system bus replacement, and the estimated costs of the transportation system improvement and expansion proposed under the Preliminary Plan. The freeway system capital costs include the cost to resurface the existing freeway system, as needed, estimated at $1.1 billion or $32 million per year; the cost to rebuild those segments of the existing freeway system that have not yet been rebuilt to modern design standards, estimated at $8.4 billion or $240 million per year; the incremental cost to rebuild 116 miles of the freeway system with additional lanes, estimated at $961 million or $27 million per year; the cost of two new freeway interchanges, estimated at $73 million; and the cost of the extension of the USH 12 freeway from Elkhorn to Whitewater, estimated at $438 million. These freeway capital costs include the cost to reconstruct IH 43 between Howard Avenue and Silver Spring Drive to modern design standards. Should it be determined that this segment of IH 43 be widened, the project cost would incrementally increase by $168 million. With respect to freeway resurfacing, it was assumed that segments of freeway that were reconstructed before 2016 would be resurfaced on average two times by 2050 and segments of freeway that are recommended to be reconstructed in 2016 and beyond would be resurfaced on average one time by 2050. Surface arterial capital costs include the estimated costs of the necessary resurfacing and reconstruction of the 3,137 miles of surface arterials that will require preservation of capacity over the plan design period, the estimated costs of reconstruction and widening with additional traffic lanes of about 176 miles of surface arterials, and the estimated costs of new construction of 65 miles of surface arterials. The estimated costs of resurfacing and reconstruction are based on the estimated lifecycle of existing surface arterials, and include reconstruction of about 50 percent of surface arterials with approximately 40 percent resurfaced once, and two resurfacings on about 50 percent of surface arterials. Unit costs for surface arterial resurfacing, reconstruction, widening, and new construction vary by cross-section from $0.4 to $13.4 million per mile (rural or urban, divided or undivided, and number of traffic lanes) and are based upon actual project costs over the past several years. The estimated capital cost of surface arterials is $348 million per year, including $296 million for preservation (resurfacing and reconstruction) and $52 million for new arterials and arterials reconstructed with additional traffic lanes. Transit system capital costs include preservation of the existing transit system, including bus replacement on a 12-year schedule and replacement of fixed facilities, and costs of system improvement and expansion, including needed additional buses and facility expansion.*

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

Federal, State, and local highway capital and operating revenues are based on historical expenditures over the last several years and are documented in Table 4.15. Federal, State, and local transit capital and operating revenues are based on historical expenditures over the last several years and assessment of available Federal formula and program funds and are documented in Table 4.16.

[b] *Also includes the costs associated with the bicycle and pedestrian, TSM, and TDM elements of the Preliminary Plan.*

[c] *Net operating cost (total operating costs less fare-box revenue). Like all amounts in this table, transit system operating costs represent the average annual costs for the transit system during the plan design period (2015-2050). Because the transit system changes in size (and therefore cost) significantly over the life of the plan, the amounts in this table do not represent the operating costs of the full transit system in the year 2050.*

Source: SEWRPC

Table 4.14
Average Annual Costs and Revenues Associated with the Preliminary Recommended Transportation System Based on Year of Expenditure: 2016-2050

Cost or Revenue Item	YOE Dollars
Transportation System Cost (average annual 2016-2050 expressed as millions of dollars)[a]	
Arterial Street and Highway System	
Capital	
Freeway Reconstruction	$428
Surface Arterial Reconstruction/Resurfacing and Freeway Resurfacing[b]	590
Subtotal	$1,018
Operating	130
Subtotal	$1,148
Transit System	
Capital	$197
Operating[c]	$273
Subtotal	$470
Total	$1,618
Transportation System Revenues (average annual 2016-2050 expressed as millions of dollars)[a]	
Highway Capital	
Freeway Reconstruction (Federal/State)	$417
Surface Arterial Reconstruction/Resurfacing and Freeway Resurfacing	
Federal/State	520
Local	92
Subtotal	$1,029
Highway Operating	
State	$60
Local	55
Subtotal	$1,144
Transit Capital	
Federal	$137
Local	5
Subtotal	$142
Transit Operating	
Federal	$5
State	107
Local	28
Subtotal	$140
Subtotal	$282
Total	$1,462

[a] *The estimated arterial street and highway system and transit system costs include all capital costs and operating and maintenance costs. The estimated costs include the necessary costs to preserve the existing transportation system, such as arterial street resurfacing and reconstruction and transit system bus replacement, and the estimated costs of the transportation system improvement and expansion proposed under the Preliminary Plan. The freeway system capital costs include the estimated cost to rebuild those segments of the existing freeway system that have not yet been rebuilt to modern design standards, the estimated incremental cost to rebuild 116 miles of the freeway system with additional lanes, the estimated cost of two new freeway interchanges, and the estimated cost of the extension of the USH 12 freeway from Elkhorn to Whitewater. Surface arterial capital costs include the costs of the necessary resurfacing and reconstruction of the 3,137 miles of surface arterials that will require preservation of capacity over the plan design period, the estimated costs of reconstruction and widening with additional traffic lanes of about 176 miles of surface arterials, and the estimated costs of new construction of 65 miles of surface arterials.*

The conversion of year 2015 constant dollar cost to year of expenditure cost utilizes inflation rates based upon historical trends. The rate of inflation used for highway costs and transit construction costs of 2.3 percent was provided by WisDOT. The inflation rate of 2.5 percent used for transit vehicle costs is based on the historical increase in the purchase price of transit vehicles as experienced by the transit operators of the Region. With regard to transit operating costs, the inflation rate of 2.0 percent is based on the historical inflation from the Consumer Price Index for the Milwaukee area and discussions with Milwaukee County Transit System staff. The average annual capital and operating costs were calculated by evenly distributing the total year of expenditure costs over 35 years.

Federal, State, and local highway capital and operating revenues are based on historical expenditures over the last several years and are documented in Table 1.15. Federal, State, and local transit capital and operating revenues are based on historical expenditures over the last several years and assessment of available Federal formula and program funds and are documented in Table 1.16.

[b] *Also includes the costs associated with the bicycle and pedestrian, TSM, and TDM elements of the Preliminary Plan.*

[c] *Net operating cost (total operating costs less fare-box revenue). Like all amounts in this table, transit system operating costs represent the average annual costs for the transit system during the plan design period (2015-2050). Because the transit system changes in size (and therefore cost) significantly over the life of the plan, the amounts in this table do not represent the operating costs of the full transit system in the year 2050.*

Source: SEWRPC

Table 4.15
Estimate of Year 2050 Plan Arterial Street and Highway Revenues

Federal and State Capital Funding

Assessment of Historical Statewide Funding

Major Highway Development
- 2015 – $368 million
- 2011-2015 – 0.6 percent annual increase
- 2006-2015 – 4.7 percent annual increase

State Highway Rehabilitation
- 2015 – $806 million
- 2011-2015 – 3.0 percent annual increase
- 2006-2015 – 3.5 percent annual increase

Local Roads and Bridges
- 2015 – $181 million
- 2011-2015 – 0.6 percent annual increase
- 2006-2015 – 0.5 percent annual increase

Southeastern Wisconsin Freeway Megaproject
- 2015-2017 State budget provides an annual $208 million
- 2013-2015 State budget provided an annual $275 million
- 2011-2015 – $276 million annual average (2015 constant dollars)
- 2006-2015 – $291 million average annual funding (2015 constant dollars)

The 2011 Wisconsin Act 32 eliminated the Southeastern Wisconsin freeway rehabilitation program and initiated the Southeast Wisconsin Freeway Megaproject program.

Conclusion

	2015 Constant Dollar Funding (millions)	Year of Expenditure Average Annual Increase (Percent)
Major Highway Development	$365	2.5
State Highway Rehabilitation	805	2.5
Local Roads and Bridges	180	0.5
Southeastern Wisconsin Freeway Megaproject	275	2.0
Total	$1,625	

The average annual increase is based on Wisconsin Department of Transportation assumptions of future transportation revenues.

Southeastern Wisconsin Share of State Revenues

Southeastern Wisconsin represents approximately 35 percent of the State in population, employment, income, and assessed value, and about 30 percent of vehicle-miles of travel. In the years after freeway system construction, and before freeway system reconstruction, Southeastern Wisconsin received about 25 to 30 percent of all State highway system revenues. To estimate Southeastern Wisconsin's share of State revenues, Option 1 allocates all Southeast Freeway Rehabilitation funds to Southeast Wisconsin and 25 percent of all other funds to Southeastern Wisconsin. Option 2 allocates 30 percent of all funds to Southeastern Wisconsin.

Option 1
- $275 + 0.25($1,350) = $613 million

Option 2
- $1,625 x 0.30 = $488 million

Conclusion
- $613 million Federal and State annual highway revenue in 2015 constant dollars (2.0 percent annual increase year of expenditure)

Local Capital

Estimate of annual revenue based upon local arterial highway annual expenditure – $52 million (2.0 percent annual increase year of expenditure)

Local Transportation Aids (Capital)

Estimate of annual general transportation aids attendant to estimated local highway capital expenditure – $15 million (0.5 percent annual increase year of expenditure)

Operating and Maintenance Funding

State

Assessment of Historical Funding
- $41 million annually

Conclusion – 2050 Plan
- $41 million annually (2.0 percent annual increase year of expenditure)

Local

Assessment of Historical Funding
- $38 million annually

Conclusion – 2050 Plan
- $38 million annually (2.0 percent annual increase year of expenditure)

Source: Transportation Budget Trends – 2014-2015 (Wisconsin Department of Transportation) and SEWRPC

Table 4.16
Estimate of Year 2050 Plan Transit Revenues (Fixed-Route Systems)

Estimate of Year 2015 Constant Dollar Annual Funding

Federal

Assessment of Historical Funding
- Operating – $32 million (2004-2016)
- Capital – $7.1 million (2013-2016)

Assessment of Funding Sources
- Milwaukee Urbanized Area Section 5307 formula funds – $21.9 million (2004-2016)
- Racine, Kenosha, and West Bend Urbanized Ares 5307 operating funds – $5.8 million (2004-2016)
- Other:
  - FTA 5311 – $0.3 million (2013-2016)
  - FTA 5337 – $0.4 million (2013-2016)
  - FTA 5339 – $3.2 million (2013-2016)
  - FTA 5339b – $2.5 million (2016)
  - FHWA CMAQ – $5 million
  - FHWA STP-M – $1.7 million
- City of Milwaukee Streetcar
  - Capital
    - $55 million Federal Interstate Cost Estimate funding ($2.6 million average annual)
    - $14.1 million TIGER grant ($402,900 average annual)
    - FTA 5337 – $178,600 beginning in 2025 ($132,700 average annual)
  - Operating
    - CMAQ – $3.2 million ($152,000 average annual)
    - FTA 5307 – $370,500 beginning in 2020 ($328,200 average annual)
- Milwaukee County Bus Rapid Transit
  - Capital
    - FTA 5309 Small Starts – $30 million ($857,000 average annual)
    - FTA 5337 – $860,000 beginning in 2026 ($614,300 average annual)
  - Operating
    - FTA 5307 – $1 million beginning in 2021 ($828,600 average annual)

Conclusion
- $33.3 million operating
- $13.4 million capital
- Transit service levels envisioned in the Preliminary Recommended Plan would be expected to generate an additional $63.3 million in Federal capital and operating funding annually

State

Assessment of Historical Operating Funding
- 43.7 percent of operating cost – $76.3 million (2014)
- 41.4 percent of total operating cost (average 2004-2014) – $83.2 million

Conclusion
- $76 million operating annually

Local

Assessment of Operating Funding
- $20.7 million (2014)
- $26.8 million (average 2004-2014)
- $1.3 million average annual parking revenue – City of Milwaukee Streetcar

Conclusion
- $26 million operating

Assessment of Capital Funding
- $3.2 million (2014)
- $3.4 million (average 2004-2015)
- $12.1 million (2016) for Milwaukee County Transit System, which represents approximately 90 percent of the transit service in the Region
- $10 million tax incremental finance funds ($437,000 average annual) – City of Milwaukee Streetcar

Conclusion
- $12 million capital

Table continued on next page.

Table 4.16 (Continued)

Estimate of Annual Increase in Funding for Year of Expenditure Revenues
Federal
Assessment of Historical Funding and Conclusion
FTA Section 5307 Milwaukee Area
0.4 percent annual increase (2004-2014)
FTA Section 5307 Kenosha, Racine, and West Bend
3.3 percent annual increase (2004-2014)
FTA 5311
-3.1 percent annually (2013-2016)
FTA 5337
5.1 percent annually (2013-2016)
FTA 5339
-2.0 percent annually (2013-2016)
FTA 5339b
Approximately $2.5 million (2016)
FHWA CMAQ
Assume no growth
FHWA STP-M
Assume no growth
State
Assessment of Historical Operating Funding
1.7 percent annual increase (average 2004-2014)
Conclusion
1.7 percent annual increase
Local
Assessment of Historical Funding
1.2 percent annual decrease (2004-2014 operating) in recent years due primarily to reductions in operating costs attributable to contract restructuring.
10 percent annual increase (2015-2016) for the Milwaukee County Transit System, which represents approximately 90 percent of the transit service in the Region.
Conclusion
1.5 percent annual increase
Average Fares
2.4 percent annual increase (2004-2014)
Conclusion
2.4 percent increase

Source: SEWRPC

motor vehicle fuel economy and increasing alternative fuel use, State and Federal motor fuel tax revenues have been declining.[27]

For the 2015-2017 State budget, the Secretary of WisDOT proposed several potential solutions to address these State transportation funding issues. The Governor and State Legislature determined not to implement any of these solutions in the 2015-2017 State budget, opting to instead bond to fill the funding gap. However, it is reasonable to expect the State will address the long-term funding issues during the plan period. The solutions proposed by the WisDOT Secretary included:

- Modify the State's motor fuel tax to include a variable component based upon the wholesale price of fuel sold in Wisconsin.
- Establish a higher tax rate on diesel fuel so that heavy vehicles pay in relation to the damage they cause to roads and bridges.

[27] *Wisconsin Transportation Finance and Policy Commission,* Keep Wisconsin Moving—Smart Investments, Measurable Results, *January 2013.*

Table 4.17
Estimated Cost and Potential Schedule of Freeway Reconstruction: 2016-2050[a]

Period Completed and Open to Traffic	Facility	Limits of Project	Estimated Cost		Estimated Funding-Year of Expenditure Dollars (millions)
			Year 2015 Constant Dollars (millions)[b]	Year of Expenditure Dollars (millions)[b]	
2016 to 2020	IH 794[c]	Lake Interchange to Carferry Drive (including Lakefront Gateway)	45.3	46.4	
	Zoo IC[c]	Zoo Interchange	660.9	707.9	
		Subtotal	706.2	754.2	1,518.7
2021 to 2025	IH 94[c]	Illinois to Mitchell Interchange	560.4	635.5	
	IH 94	70th Street to 16th Street (including Stadium Interchange)	848.2	1,018.0	
	IH 43	Silver Spring Drive to STH 60	471.6	559.4	
		Subtotal	1,880.2	2,212.9	1,676.8
2026 to 2030	IH 43, IH 43/894, & IH 894	Lincoln Avenue to 27th Street (STH 241), Moorland Road to Hale Interchange (including Hale Interchange)	954.8	1,255.0	
		Subtotal	954.8	1,255.0	1,851.3
2031 to 2035	IH 94	Jefferson County to 124th Street	954.5	1,358.9	
	IH 43	Howard Avenue to Silver Spring Drive (including Marquette Interchange modifications)	985.4	1,484.6	
	IH 43	STH 83 to Moorland Road	305.4	471.2	
		Subtotal	2,245.3	3,314.7	2,044.0
2036 to 2040	IH 41	Burleigh Street to Richfield Interchange	817.3	1,274.3	
	STH 175	Stadium Interchange to Lisbon Avenue	140.5	235.1	
	USH 41	Richfield Interchange to Dodge County	394.3	672.8	
		Subtotal	1,352.0	2,182.2	2,256.7
2041 to 2045	IH 43	IH 43 and USH 12 Interchange	68.7	131.9	
	IH 43	STH 60 to Sheboygan County	391.3	758.0	
	USH 12	Illinois to Rock County	729.6	1,411.1	
		Subtotal	1,189.6	2,300.9	2,491.6
2046 to 2050	IH 43	Rock County to STH 83	585.5	1,130.5	
	STH 16	STH 67 to IH 94	418.5	887.9	
	STH 145	Hampton Avenue to Good Hope Road	185.7	381.3	
	USH 45	Richfield Interchange to CTH D	309.3	671.2	
		Subtotal	1,498.9	3,070.8	2,750.9
		Total	9,826.9	15,090.8	14,590.0

[a] *Project prioritization beyond the year 2021 are subject to change.*

[b] *Constant dollar and year of expenditure cost estimates for projects are reported in the period that the project is expected to be completed and open to traffic. Actual project expenditures will occur over multiple years and could extend over multiple periods dependent on the scope and complexity attendant to each project.*

[c] *Project is currently underway. Only those construction costs programmed for years 2016 through 2050 are included.*

Source: Wisconsin Department of Transportation and SEWRPC

- Create a highway use fee based on a percentage of the manufacturer's suggested price for new vehicles in Wisconsin.
- Increase the annual registration fee for hybrid and electric powered vehicles to ensure owners pay their fair share of the construction and operating costs of infrastructure.
- Increase the use of General Fund revenues to reflect the fact that not all users of our system pay transportation user fees.
- Decrease the WisDOT's use of debt by $186 million compared to the 2013-2015 biennium.

Table 4.18
Estimated Cost and Potential Schedule of Major Surface Arterial Construction and Reconstruction Projects[a, b]

Period Completed and Open to Traffic	County	Facility	Limits of Project	Cost (Millions 2015 Dollars)[c]	Cost (Millions Year of Expenditure Dollars)	Mileage
2015 to 2020	Kenosha	CTH S (part)	CTH H to STH 31	6.3		1.9
	Milwaukee	USH 45/STH 100	Rawson Avenue to 60th Street	22.0		4.8
	Waukesha	CTH M (part)	CTH YY to Highland Drive and Lilly Road to 124th Street	13.1		1.7
	Waukesha	STH 67 (part)	Summit Avenue to IH 94	23.2		1.9
	Waukesha	Waukesha West Bypass	IH 94 to STH 59	43.1		5.1
			Subtotal	107.7	115.4	15.4
2021 to 2025	Kenosha	CTH S (part)	E. Frontage Road to CTH H	7.5		1.9
	Kenosha	STH 50	IH 94 to 39th Avenue	61.0		4.8
	Waukesha	STH 83	Mariner Drive to STH 16	31.5		3.6
	Waukesha	STH 190	STH 16 to Brookfield Road	49.0		5.4
	Waukesha	CTH M (part)	CTH Y to CTH YY	22.3		2.9
			Subtotal	171.4	205.7	18.6
2026 to 2030	Kenosha	CTH H (Part)	CTH S to STH 50	17.5		2.6
	Ozaukee	CTH W (part)	Highland Road to W. Glen Oaks Lane	6.7		1.0
	Milwaukee and Racine	STH 32	STH 100 to Five Mile Road	29.5		5.1
	Walworth	STH 50	IH 43 to STH 67	23.3		4.3
	Waukesha	STH 83	USH 18 to Phylis Parkway	31.5		2.4
	Waukesha	CTH D (part)	Milwaukee County line to Calhoun Road	11.9		3.0
	Waukesha	CTH Y (part)	Hickory Trail to Downing Drive	15.8		4.0
			Subtotal	136.2	183.2	22.4
2031 to 2035	Kenosha	CTH H (Part)	STH 50 to STH 165	13.0		3.0
	Racine	STH 20	IH 94 to Oaks Road	41.0		4.5
	Waukesha	Pilgrim Road	USH 18 to Lisbon Road	32.4		4.8
	Waukesha	CTH SR/Town Line Road extension (part)	CTH JJ to STH 190	21.6		3.2
	Waukesha	CTH Y (part)	CTH L to College Avenue	11.4		2.1
			Subtotal	119.3	143.8	17.6
2036 to 2040	Ozaukee	CTH W (part)	CTH V to Lakeland Road	20.9		3.1
	Waukesha	STH 67 (part)	CTH DR to USH 18	13.2		2.9
	Waukesha	CTH D (part)	Calhoun Road to STH 59/164	15.2		3.8
			Subtotal	49.3	83.3	9.8
2041 to 2045	Ozaukee	CTH W (part)	Lakeland Road to Highland Road	20.8		3.1
	Waukesha	STH 59/164	CTH XX to Arcadian Avenue	51.6		4.8
	Waukesha	CTH SR/Town Line Road extension (part)	STH 190 to Weyer Road	7.3		1.5
			Subtotal	79.7	150.8	9.4
2046 to 2050	Milwaukee	Lake Pkwy Extension	E. Edgerton Avenue to STH 100	219.7		6.0
			Subtotal	219.7	465.5	6.0
			Total	883.4	1,347.6	99.2

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

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

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

Source: SEWRPC

Table 4.19
Estimated Gap Between Preliminary Recommended Plan Costs and Existing and Reasonably Expected Revenues

Constant Year 2015 Dollars (Average Annual Through Year 2050)	
Public Transit	
Capital	$24 million
Operating	$96 million
Year of Expenditure Dollars (Average Annual Through Year 2050)	
Public Transit	
Capital	$55 million
Operating	$133 million

Source: SEWRPC

Given that TSM, TDM, and bicycle and pedestrian facility costs are primarily included in the costs for arterial streets and highways, and typically represent a fraction of the cost to reconstruct an arterial facility, there would also likely be enough revenue to fund the TSM, TDM, and bicycle and pedestrian elements as proposed under the Preliminary Plan. As discussed in Chapter 3 of Volume I, the TSM and bicycle and pedestrian elements of the year 2035 regional transportation plan have also been substantially implemented since that plan was adopted, further supporting this conclusion.

Although a funding gap was not identified for the arterial, TDM, TSM, or bicycle and pedestrian elements, a significant funding shortfall was identified for the proposed public transit system (see Table 4.19). The overall funding gap between the forecast capital and operating costs for the proposed transit system and the forecast revenues for transit is about $120 million annually in year 2015 constant dollars and about $188 million annually in YOE dollars. The identified funding gap is a result of significantly constrained funding for public transit. Public transit in Southeastern Wisconsin is funded in a unique way, heavily dependent on Federal and State funding. The local share of funding for public transit in the Region is provided through county or municipal budgets, largely provided by property taxes, with public transit competing annually with mandated services and projects. Increasingly, due to the constraints in property tax-based funding, counties and municipalities have found it difficult to provide funding to address transit needs, and to respond to any shortfalls in Federal and State funding.

The financial analysis identified a significant funding gap for the proposed public transit system.

Fiscally Constrained Transportation Plan

Federal regulations require the Region's transportation plan to only include projects that can be funded with existing and reasonably expected revenues. Therefore, only the funded portion of the Preliminary Plan would be considered the regional transportation plan by the Federal Government and is titled the Fiscally Constrained Transportation Plan (FCTP) for VISION 2050. The FCTP has been determined to include essentially all transportation elements of the Preliminary Plan except for the public transit element, which cannot be implemented within expected funds due to a gap in funding. Therefore, transit service under the FCTP would be expected to decline rather than significantly improve as proposed under the Preliminary Plan, with the exception of the East West BRT project being studied by Milwaukee County and the initial Milwaukee Streetcar lines, which have secured funding or have identified reasonably expected sources of funding. The FCTP transit system (described below) is consistent with the trends of declining transit service levels over the last 15 years, which were a result of transit funding levels during that period of time. Because the Federal regulations guiding this analysis of the

projected costs and expected revenues require that the financial analysis of the Preliminary Plan assume that expected revenues maintain the restrictions placed on them by current laws, the analysis cannot assume that funding for the arterial streets and highways element can be flexed to transit projects, as that is not permitted at this time by the State Legislature.

Consequences of Not Addressing Transit Funding Gap

If the transit funding gap identified above is not addressed, the transit element of the Preliminary Plan cannot be expected to be achieved. The effect on the transit system is not only an inability to implement and operate the proposed transit improvements and expansion, but also reductions in current transit service. The following identifies the specific transit service reductions that would be likely given the anticipated funding gap, as well as the specific transit improvements and expansion that would not be achieved. The resulting transit system is considered the transit system of the FCTP and is shown on Map 4.23.

- Reductions in frequency and service areas for local transit services, rather than increases in frequency and expanded service areas
- Fewer commuter bus routes, rather than expansion of commuter bus services
- Buses not replaced on the recommended schedule and remaining in operation beyond their normal service life
- No rapid transit lines (except for the BRT line between downtown Milwaukee and the Milwaukee Regional Medical Center)
- No commuter rail lines
- No regionwide shared-ride taxi service
- No streetcar expansion beyond the initial phases of the Milwaukee Streetcar
- No expansion of intercity passenger rail services
- Limited fixed-guideway transit stations to support transit-oriented development

Given the transit funding gap, it is necessary to estimate the costs and revenues that would be associated with the FCTP. Table 4.20 provides this comparison based on year 2015 constant dollars, and Table 4.21 based on YOE dollars. The estimates of revenue and the basis for those estimates are presented in Tables 4.15 and 4.16.

The evaluation of the Preliminary Plan, and of the alternatives during the previous stage of VISION 2050, illustrated numerous benefits of improving and expanding transit service. The transit funding gap would result in the Region not realizing these benefits, and not implementing the proposed transit system would have the following negative consequences:

- Reduction in traffic carrying capacity in the Region's heavily traveled corridors and densely developed activity centers as less transit service would result in more people using automobiles.

Map 4.23
Public Transit Element of the Fiscally Constrained Transportation Plan

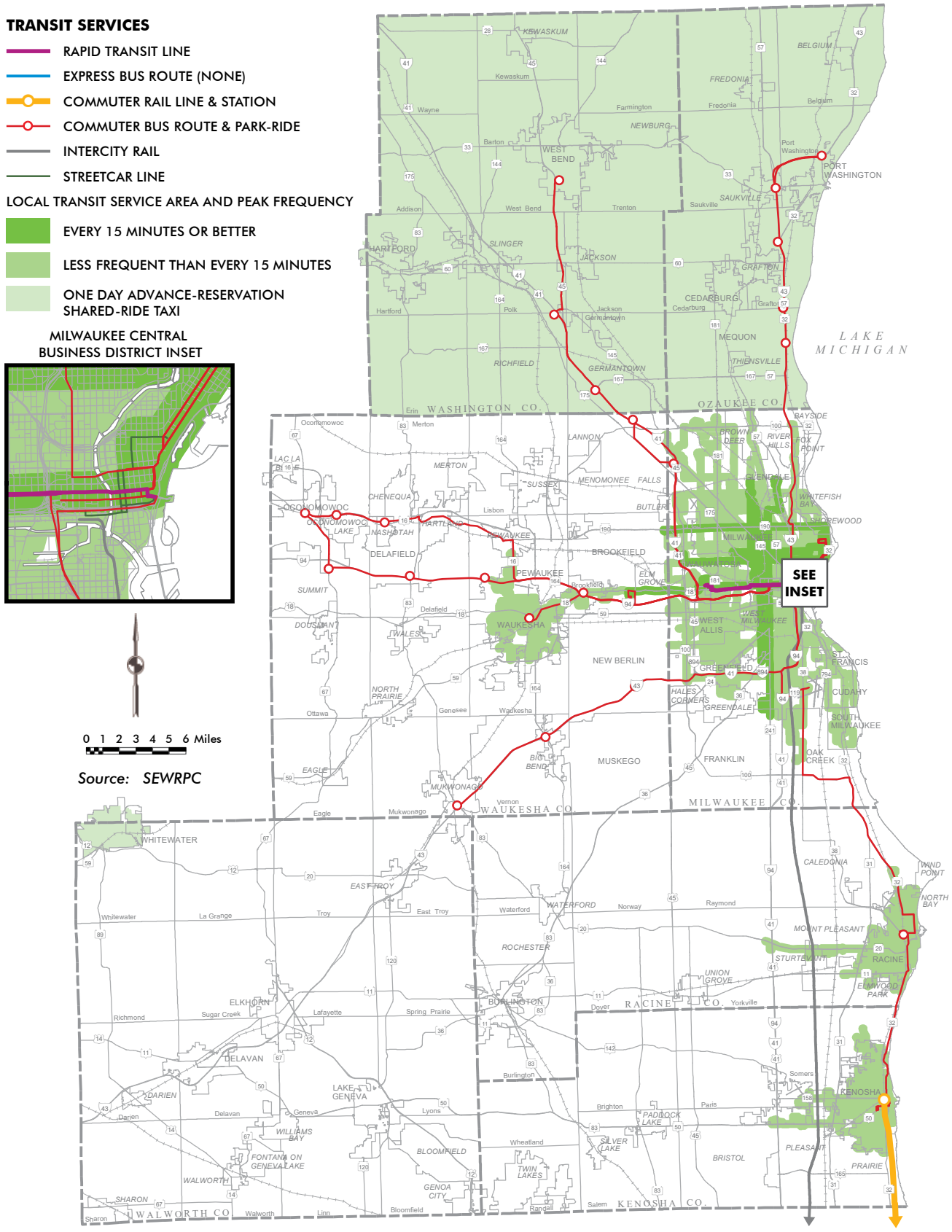


Table 4.20
Average Annual Costs and Revenues Associated with the Fiscally Constrained Transportation Plan in 2015 Constant Dollars: 2016-2050

Cost or Revenue Item		2015 Constant Dollars
Transportation System Cost (average annual 2016-2050 expressed as millions of dollars)[a]		
Arterial Street and Highway System		
Capital		
Freeway Reconstruction		$281
Surface Arterial Reconstruction/Resurfacing and Freeway Resurfacing[b]		381
	Subtotal	$662
Operating		84
	Subtotal	$746
Transit System		
Capital		$26
Operating[c]		$129
	Subtotal	$155
	Total	$901
Transportation System Revenues (average annual 2016-2050 expressed as millions of dollars)[a]		
Highway Capital		
Freeway Reconstruction (Federal/State)		$275
Surface Arterial Reconstruction/Resurfacing and Freeway Resurfacing		
Federal/State		338
Local		67
	Subtotal	$680
Highway Operating		
State		$41
Local		38
	Subtotal	$759
Transit Capital		
Federal		$16
Local		9
	Subtotal	$25
Transit Operating		
Federal		$24
State		76
Local		29
	Subtotal	$129
	Subtotal	$154
	Total	$913

[a] *The estimated arterial street and highway system and transit system costs include all capital costs and operating and maintenance costs. The estimated costs include the necessary costs to preserve the existing transportation system, such as arterial street resurfacing and reconstruction and transit system bus replacement, and the estimated costs of the transportation system improvement and expansion under the Fiscally Constrained Transportation Plan. The freeway system capital costs include the cost to resurface the existing freeway system, as needed, estimated at $1.1 billion or $32 million per year; the cost to rebuild those segments of the existing freeway system that have not yet been rebuilt to modern design standards, estimated at $8.4 billion or $240 million per year; the incremental cost to rebuild 116 miles of the freeway system with additional lanes, estimated at $961 million or $27 million per year; the cost of two new freeway interchanges, estimated at $73 million; and the cost of the extension of the USH 12 freeway from Elkhorn to Whitewater, estimated at $438 million. These freeway capital costs include the cost to reconstruct IH 43 between Howard Avenue and Silver Spring Drive to modern design standards. Should it be determined that this segment of IH 43 be widened, the project cost would incrementally increase by $168 million. With respect to freeway resurfacing, it was assumed that segments of freeway that were reconstructed before 2016 would be resurfaced on average two times by 2050 and segments of freeway that are recommended to be reconstructed in 2016 and beyond would be resurfaced on average one time by 2050. Surface arterial capital costs include the estimated costs of the necessary resurfacing and reconstruction of the 3,137 miles of surface arterials that will require preservation of capacity over the plan design period, the estimated costs of reconstruction and widening with additional traffic lanes of about 176 miles of surface arterials, and the estimated costs of new construction of 65 miles of surface arterials. The estimated costs of resurfacing and reconstruction are based on the estimated lifecycle of existing surface arterials, and includes reconstruction of about 50 percent of surface arterials with approximately 40 percent resurfaced once, and two resurfacings on about 50 percent of surface arterials. Unit costs for surface arterial resurfacing, reconstruction, widening, and new construction vary by cross-section from $0.4 to $13.4 million per mile (rural or urban, divided or undivided, and number of traffic lanes) and are based upon actual project costs over the past several years. The estimated capital cost of surface arterials is $348 million per year, including $296 million for preservation (resurfacing and reconstruction) and $52 million for new arterials and arterials reconstructed with additional traffic lanes. Transit system capital costs include preservation of the existing transit system, including bus replacement on a 15-year schedule and replacement of fixed facilities, and costs associated with the initial phases of the Milwaukee Streetcar and Milwaukee County's BRT line between downtown Milwaukee and the Milwaukee Regional Medical Center, including needed additional vehicles and facilities.*

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

Federal, State, and local highway capital and operating revenues are based on historical expenditures over the last several years and are documented in Table 4.15. Federal, State, and local transit capital and operating revenues are based on historical expenditures over the last several years and assessment of available Federal formula and program funds and are documented in Table 4.16.

[b] *Also includes the costs associated with the bicycle and pedestrian, TSM, and TDM elements of the Fiscally Constrained Transportation Plan.*

[c] *Net operating cost (total operating costs less fare-box revenue). Like all amounts in this table, transit system operating costs represent the average annual costs for the transit system during the plan design period (2015-2050). Because the transit system changes in size (and therefore cost) over the life of the plan, the amounts in this table do not represent the operating costs of the full transit system in the year 2050.*

Source: SEWRPC

Table 4.21
Average Annual Costs and Revenues Associated with the Fiscally Constrained Transportation Plan Based on Year of Expenditure: 2016-2050

Cost or Revenue Item		YOE Dollars
Transportation System Cost (average annual 2016-2050 expressed as millions of dollars)[a]		
Arterial Street and Highway System		
Capital		
Freeway Reconstruction		$428
Surface Arterial Reconstruction/Resurfacing and Freeway Resurfacing[b]		590
	Subtotal	$1,018
Operating		130
	Subtotal	$1,148
Transit System		
Capital		$37
Operating[c]		$167
	Subtotal	$204
	Total	$1,352
Transportation System Revenues (average annual 2016-2050 expressed as millions of dollars)[a]		
Highway Capital		
Freeway Reconstruction (Federal/State)		$417
Surface Arterial Reconstruction/Resurfacing and Freeway Resurfacing		
Federal/State		520
Local		92
	Subtotal	$1,029
Highway Operating		
State		$60
Local		55
	Subtotal	$1,144
Transit Capital		
Federal		$18
Local		19
	Subtotal	$37
Transit Operating		
Federal		$29
State		107
Local		31
	Subtotal	$167
	Subtotal	$204
	Total	$1,348

[a] *The estimated arterial street and highway system and transit system costs include all capital costs and operating and maintenance costs. The estimated costs include the necessary costs to preserve the existing transportation system, such as arterial street resurfacing and reconstruction and transit system bus replacement, and the estimated costs of the transportation system improvement and expansion under the Fiscally Constrained Transportation Plan. The freeway system capital costs include the estimated cost to rebuild those segments of the existing freeway system that have not yet been rebuilt to modern design standards, the estimated incremental cost to rebuild 116 miles of the freeway system with additional lanes, the estimated cost of two new freeway interchanges, and the estimated cost of the extension of the USH 12 freeway from Elkhorn to Whitewater. Surface arterial capital costs include the costs of the estimated necessary resurfacing and reconstruction of the 3,137 miles of surface arterials that will require preservation of capacity over the plan design period, the estimated costs of reconstruction and widening with additional traffic lanes of about 176 miles of surface arterials, and the estimated costs of new construction of 65 miles of surface arterials.*

The conversion of year 2015 constant dollar cost to year of expenditure cost utilizes inflation rates based upon historical trends. The rate of inflation used for highway costs and transit construction costs of 2.3 percent was provided by WisDOT. The inflation rate of 2.5 percent used for transit vehicle costs is based on the historical increase in the purchase price of transit vehicles as experienced by the transit operators of the Region. With regard to transit operating costs, the inflation rate of 2.0 percent is based on the historical inflation from the Consumer Price Index for the Milwaukee area and discussions with Milwaukee County Transit System staff. The average annual capital and operating costs were calculated by evenly distributing the total year of expenditure costs over 35 years.

Federal, State, and local highway capital and operating revenues are based on historical expenditures over the last several years and are documented in Table 4.15. Federal, State, and local transit capital and operating revenues are based on historical expenditures over the last several years and assessment of available Federal formula and program funds and are documented in Table 4.16.

[b] *Also includes the costs associated with the bicycle and pedestrian, TSM, and TDM elements of the Fiscally Constrained Transportation Plan.*

[c] *Net operating cost (total operating costs less fare-box revenue). Like all amounts in this table, transit system operating costs represent the average annual costs for the transit system during the plan design period (2015-2050). Because the transit system changes in size (and therefore cost) over the life of the plan, the amounts in this table do not represent the operating costs of the full transit system in the year 2050.*

Source: SEWRPC

- Carbon emissions from transportation would be slightly higher as travelers would be more dependent on their cars.

- Access to jobs, healthcare, education, and other daily needs would decrease, particularly for the 1 in 10 households in the Region without access to a car. In addition, for those that would maintain access to transit, a large number of the Region's jobs would be inaccessible due to excessive travel time. This particularly impacts minority populations and low-income populations, which use public transit at a rate proportionally higher than other population groups.

- Reduced ability to develop compact, walkable neighborhoods, which encourage active transportation and improve public health.

- 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.

- Reduced ability for the Region's residents to age in place as their ability to drive declines.

- Reduced labor force availability for employers.

- Lack of transit as a regional amenity has the potential to reduce the economic competitiveness of the Region, given that only five out of the other 39 metropolitan areas with more than 1.5 million residents in the United States (Cincinnati, Columbus, Detroit, Indianapolis, and San Antonio) do not have light rail, bus rapid transit, or commuter rail.

- Increased costs for some of the Region's households due to an inability to replace one or more of the household's cars with an annual transit pass. As a result, these households would have less money to save or spend on goods that have a greater impact on the local economy than expenses associated with a car.

- Reduced ability for communities to reduce or eliminate parking requirements, developers to build fewer spaces, and commercial and residential tenants to pay less for goods and rent.

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

All of these consequences 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. If the Region is to experience even a modest growth in jobs, the Region will need to in-migrate population and labor force. An inability to sustain and expand public transit service presents an obstacle to attracting labor force and business growth to Southeastern Wisconsin.

Potential Revenue Sources to Address Transit Funding Gap

As long recommended in previous regional transportation plans, transit system improvement and expansion, as proposed under the Preliminary Plan, would require State legislation to create local dedicated transit funding and a renewal of adequate annual State financial assistance to transit. In terms of State financial assistance to transit, the State should consider restoring the cut in transit funding from the 2011-2013 State budget, raising funding back to historical levels, and increasing future funding at the rate of inflation. The Wisconsin Transportation Finance and Policy Commission recommended an annual increase in statewide transit funding of $36.3 million along with recommended revenue sources to support the additional funding (including restoring the cut in transit funding from the 2011-2013 budget, raising funding back to historical levels, and creating a transit capital program). In the 2015-2017 State budget, the WisDOT Secretary proposed an additional $60.7 million in statewide transit funding during the biennium, including a new capital program and increases to State transit operating assistance. Implementing these modest measures would have the potential to partially address the transit funding gap.

The Preliminary Plan identifies a number of potential ways to address the transit funding gap and fund the proposed transit system.

A sales tax is the most common dedicated local transit funding source in other areas of the country and has previously been proposed for the Region.[28] A sales tax has the potential to generate the needed revenue to implement the transit improvements proposed under the Preliminary Plan. Milwaukee has by far the largest transit system of its peers not supported by dedicated funding. When comparing the Milwaukee metro area to 26 peer metro areas from the Midwest and across the nation, two-thirds of the peers have a local dedicated source of funding—typically a sales tax—which provides the bulk of their funding. The other peer metro area transit systems without dedicated funding provide one-half to one-fifth the transit service per capita provided in Milwaukee. In addition, the Milwaukee area is the most dependent on State funding compared to its 26 peers. The transit systems nationwide supported by sales tax revenue typically have a sales tax of 0.25 to 1.0 percent. In some of these areas, the sales tax rate varies by jurisdiction depending on the amount of transit service received by each jurisdiction.

Enacting dedicated local transit funding, like a sales tax, would require State legislation.

As noted above, a sales tax could address the transit funding gap for the Preliminary Plan, and was previously approved as part of an advisory referendum in Milwaukee County and proposed in State legislation. It should be noted that a one-half percent dedicated sales tax would likely generate significantly more revenue in some counties than the level of transit service proposed in those counties. Alternatively, a sales tax could be levied only in the more urban areas of the Region that would be served by a majority of the proposed transit improvements and expansion. Lastly, if a dedicated sales tax is enacted for transit, counties and municipalities may be able to eliminate or partially eliminate the use of property tax revenues to fund transit.

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

[28] *In November 2008, an advisory referendum passed in Milwaukee County approving a 1 percent sales tax, including a one-half percent sales tax for public transit. In the 2009-2011 State budget, then-Governor Doyle proposed a regional transit authority (RTA) with a one-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 one-half percent sales tax dedicated funding for MCTS, but then-Governor Doyle vetoed this dedicated funding. The budget also created 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 biennial Legislature. The legislation came very close to passing, but was not adopted into State law.*

Table 4.22
Potential Revenue Sources to Address Funding Gap for Transit Under the Preliminary Recommended Plan

Revenue Source	Description with Approximate Revenues (2015 Constant Dollars)
Sales tax	Would involve an increase in existing sales tax rates, with the revenues dedicated to public transit. If enacted in each county, a 0.1% increase could generate about $25-30 million annually in the Region.
Vehicle registration fee ("wheel tax")	Would involve an increase in the existing vehicle registration fee, with the revenues dedicated to public transit. Each $1 increase could generate about $1.5 to 1.8 million annually in the Region.
Motor fuel tax ("gas tax")	Would involve an increase in the existing motor fuel tax levied by the State, with the revenues dedicated to public transit. Each $0.01 increase could generate about $9 million annually in the Region (assuming today's fuel consumption levels), declining to about $7 million (assuming year 2050 fuel consumption levels).
VMT/mileage-based registration fee ("VMT fee")	Would involve charging a fee to owners of passenger vehicles and light trucks based on the total distance they drive during a year. Assuming the fee would not be charged on the first 3,000 miles and would be capped at 20,000 miles, each $0.01 per mile fee could generate about $70 to 85 million annually in the Region.
Property tax increase	Would involve an increase in the existing property tax rate, with the revenues dedicated to public transit. Each $0.01 increase per $1,000 of valuation would generate about $1.7 million annually in the Region.
Vehicle rental fee	Would involve charging an additional fee for vehicles rented in the Region. State legislation previously allowed a vehicle rental fee of up to $18 per rental for KRM commuter rail costs, but it was repealed. In the KRM corridor, each $1 could generate about $400,000 to 500,000 annually.
Hotel room tax	Would involve increases to existing tax rates on short-term lodging (hotels, motels, etc.), with the revenues dedicated to public transit. A 1.0% increase could generate about $1.5 to 2 million annually in the Region.
Flex Federal highway funding to transit	Would involve flexing to public transit a portion of existing Federal highway funding that is allocated to the State, including Surface Transportation Program (STP), National Highway Performance Program (NHPP), and/or Congestion Mitigation and Air Quality Improvement Program (CMAQ) funding. In the past, about $14 million in STP-Milwaukee Urbanized Area (STP-M) funding has been utilized for transit projects. It should be noted there are Federal limitations on the use of Federal highway funds. For example, STP and NHPP funding can only be used for capital costs.
State transit capital assistance program	Would involve creating a program to grant funding for major transit capital improvement projects. A transit capital program previously created by the State would have provided up to $100 million in grant funding for Southeastern Wisconsin, but the program was repealed. The Wisconsin Transportation Finance and Policy Commission and the WisDOT Secretary also both proposed a transit capital program, which would have provided $15 million annually.
Capital cost value-capture	Would attempt to recover some or all of the value that a fixed-guideway station or other related infrastructure would generate for the private landowners in the station area. Examples include property tax TIF, sales tax TIF, development fees, and real estate transfer fee. Revenues would be generated on a project-specific basis and could be used for station and associated infrastructure costs.

Source: Wisconsin Transportation Finance and Policy Commission, Wisconsin Legislative Fiscal Bureau, Wisconsin Department of Revenue, Wisconsin Counties Association, Wisconsin Department of Transportation, and SEWRPC

The proposed increases in transit service under the Preliminary Plan have the potential to increase the amount of Federal funding the Region receives.

There are a number of other potential revenue sources that could provide additional transit funding in the Region (see Table 4.22). In order to help address the transit funding gap identified for the Preliminary Plan, these sources could be considered. Like the sales tax, the ability to implement most of the identified funding sources would require State legislation. Also like the sales tax, some revenue sources could be levied only in the more urban areas of the Region that would be served by a majority of the proposed transit improvements and expansion, and counties and municipalities may be able to partially eliminate the use of property tax revenues to fund transit.

In addition to the revenue generated by a dedicated local transit funding source, the proposed increases in transit service under the Preliminary Plan have the potential to increase the amount of Federal funding the Region receives. FTA Section 5307 Urbanized Area Formula Grant funding is

partially allocated to urbanized areas based on transit service and ridership. If additional routes are implemented and services are provided, more FTA 5307 funding would be allocated to the Region's urbanized areas. In addition to FTA Section 5307, the Region could obtain additional funding from a number of other FTA funding programs due to the additional transit service proposed under the Preliminary Plan. Based on the amount of additional transit service proposed in the Preliminary Plan, the Region could expect to receive up to $63 million (average annual in 2015 constant dollars) in additional FTA funding if the Preliminary Plan is implemented.

In addition to providing adequate funding, implementation of the significant improvements and expansion of transit would be bolstered through the creation of a regional transit authority (RTA) with the ability to collect dedicated funding, and construct, manage, and operate the proposed transit system. A number of the proposed transit services extend across city and county boundaries and a regional agency could assist in the implementation of these proposed services. Legislative efforts to create an RTA have not progressed since 2010.[29]

4.4 PUBLIC FEEDBACK ON PRELIMINARY RECOMMENDED PLAN

The fifth and final round of visioning workshops, held in spring 2016, focused on reviewing the Preliminary Recommended Plan and the funding and benefits associated with the Preliminary Plan.

A fifth round of interactive workshops, open to the general public and held throughout the Region, was conducted between April 25 and May 4, 2016. The workshops were the final round of public workshops held across the Region during the VISION 2050 process. The five rounds of workshops were used to provide information on, and obtain input into, the development of the year 2050 regional land use and transportation plan. As was done in the first four rounds, the Commission hosted one workshop in each county, with the Commission's eight partner community organizations holding individual workshops for their constituents between April 19 and May 3, 2016. A summary report of the eight partner workshops held in the spring of 2016 can be found in Appendix J-1 to this volume. As in the previous four rounds of workshops, the Commission staff offered to hold individual workshops by request, and held one such requested workshop in the spring of 2016.[30]

The focus of the fifth round of workshops was reviewing the Preliminary Recommended Plan and the funding and benefits associated with the Preliminary Plan. The funding and benefits information included a summary of the financial analysis of the Preliminary Plan, the identification of a funding gap for the public transit element, and the Fiscally Constrained Transportation Plan (FCTP), which included a reduction in transit service rather than the significant improvement and expansion proposed in the Preliminary Plan.[31] Attendees were also made aware of a demonstration of air quality conformity of the FCTP and the 2015-2018 regional transportation improvement program.

Each workshop was held in an interactive open house format, allowing residents to attend at any time during the two-hour timeframe of a workshop.

Each workshop was held in an interactive open house format, allowing residents to attend at any time during the two-hour timeframe of a

[29] *Ibid.*

[30] *The Commission staff held an individual workshop in May 2016 for City of Wauwatosa elected officials and staff.*

[31] *During consideration of the Preliminary Plan, the term Federally Recognized Transportation Plan (FRTP) was changed to Fiscally Constrained Transportation Plan (FCTP). Any public comment referring to the FRTP is related to the FCTP presented in this chapter.*

workshop. Attendees were greeted by staff and provided a brief orientation presentation to familiarize them with the Preliminary Plan and the open house format of the workshop. Staff also distributed a 20-page booklet summarizing the Preliminary Recommended Plan and its funding and benefits. Each workshop was arranged in six stations: 1) VISION 2050 Overview, 2) Land Use, 3) Public Transit, 4) Bicycle and Pedestrian, 5) Arterial Streets and Highways (including TSM, TDM, and Freight), and 6) Funding and Benefits of the Preliminary Plan. Staff was available at each station to answer attendee questions and comment cards (color-coded to coincide with each station) were available to allow attendees to comment on each element of the Preliminary Plan. The comment cards included questions specific to their respective elements in an attempt to obtain feedback that could be considered in preparing a final recommended plan, which is presented in Volume III of this report. Attendees could also provide oral comment on the Preliminary Plan to a court reporter at each of the seven public workshops.

Nearly 360 residents attended one of the above workshops held in the spring of 2016—about 160 people participated in the public or requested workshops and about 200 people participated in the eight partner workshops.

The Commission staff made available an interactive website dedicated to exploring the Preliminary Plan and its evaluation through May 6, 2016 (the end of the public comment period), particularly for those who were unable to attend one of the spring 2016 workshops. The website replicated the information and activities at the workshops. The site had an initial page with four tabs, which described land use, bicycle and pedestrian facilities, public transit, and arterial streets and highways under the Preliminary Plan compared to the Trend from the alternatives stage and existing conditions. Within each tab was a navigable map with GIS layers that could be turned on and off and the ability to flip between existing conditions, the Trend, and the Preliminary Plan, allowing users to quickly compare what was included. Each tab also provided key recommendations from each element; a space to provide feedback on each element and respond to the questions included on the comment cards from the workshops; and links to the 20-page summary booklet, the preliminary VISION 2050 plan report chapter on the Preliminary Plan, the preliminary VISION 2050 plan report appendix on the Preliminary Plan evaluation, and a summary brochure.

Following the initial page describing the Preliminary Plan, there was a page discussing funding for the Preliminary Plan and a page describing the potential benefits of the Preliminary Plan. These pages included interactive graphics, maps, and charts, along with the ability to provide comments on the transit funding gap and the FCTP. The final page of the site allowed users to provide any general feedback on the Preliminary Plan, encouraging comment on the FCTP as well as a demonstration of air quality conformity of the FCTP and the 2015-2018 regional transportation improvement program.

A total of about 510 residents participated in reviewing the Preliminary Plan, either at a workshop or online, providing a total of about 500 comments related to the plan (includes comments provided at a workshop or via mail, email, and online). The results are discussed below (a more detailed summary of the results can be found in Appendix J-2 to this volume, including Commission staff responses to comments, as appropriate), followed by a summary of the notable changes made to the Preliminary Plan as staff developed the final recommended plan.

Public Comment on the Preliminary Recommended Plan

Overall, as was the case with the feedback received on the alternative plans, most participants at the workshops and through the online tool did not want to follow current trends in land use and transportation system development. There was significant support of the compact, walkable development and the improved and expanded public transit services envisioned under the Preliminary Plan. The detailed evaluation of the Preliminary Plan and information regarding the FCTP allowed participants to more fully consider the potential benefits and consequences of the Preliminary Plan, particularly as it relates to public transit service. Although specific questions were asked regarding each plan component and element, the public provided a wide range of feedback, which is briefly summarized below and is summarized in more detail in Appendix J-2.

There was significant support for more compact, walkable development and the improved and expanded public transit services envisioned under the Preliminary Plan.

Land Use

There were almost 110 total comments received on the land use component of the Preliminary Plan, with 64 comments in support, six comments in opposition, and 38 comments requiring a clarifying response.

There were 64 comments in support of the land use component of the Preliminary Plan, and six comments in opposition.

Comments in support of the land use component covered a wide range of topic areas, including the environment, housing, and compact development. The most frequent reasons for supporting the land use component were preserving farmland (7 comments), protecting environmental corridors (6), supporting walkable neighborhoods (6), supporting a variety of housing options throughout the Region (5), a land use development pattern that supports transit (5), limiting urban sprawl (4), and supporting TOD (4).

Comments in opposition centered on the population projections used as a basis for preparing the Preliminary Plan and property rights. Two commenters expressed concern that the population projections show an unrealistic amount of growth for the Region and two commenters expressed concern about government policy influencing the preservation of farmland and infringing on individual property rights.

Public Transit

There were over 130 total comments received on the public transit element of the Preliminary Plan, with the overwhelming majority in support. There were 111 comments in support, 18 comments suggesting a change or addition to the public transit element, six comments requiring a clarifying response, and no comments in opposition.

There were 111 comments in support of the public transit element of the Preliminary Plan, and no comments in opposition.

Numerous commenters expressed support for all of the recommendations included in the public transit element (38). Other commenters cited specific recommendations they supported or specific reasons for their support, such as: expanding and enhancing intercity and commuter rail services that connect the Region to other areas (14); implementing commuter rail in the Region (13); expanding transit service to compete with other Regions and attract new, especially younger, residents (11); and expanding public transit to enable residents to access more jobs (7). Providing more transit service to rural areas of the Region was the most frequent suggestion for changes or additions to the public transit element (3).

Bicycle and Pedestrian

Almost 80 comments were received on the bicycle and pedestrian element, again with most in support. There were 58 comments in support, one comment in opposition, three comments suggesting changes or additions, and 14 comments requiring a clarifying response. Numerous commenters expressed general support for the bicycle and pedestrian element (25), citing

There were 58 comments in support of the bicycle and pedestrian element of the Preliminary Plan, and one comment in opposition.

a wide range of benefits. Some of the benefits cited in the comments included improved public health and reduced healthcare costs, reduced air pollution, and improved safety. The other most frequently cited reasons for support included expanding the off-street bicycle path network (11) and enhanced bicycle facilities (8).

Comments suggesting changes or additions to the bicycle and pedestrian element include two suggestions to encourage Safe Routes to School programs and one suggestion to reinstate the State's Complete Streets law. The comment in opposition suggested addressing bicycle facility planning locally rather than regionally.

There were 39 comments in support of the arterial streets and highways element of the Preliminary Plan, and 29 comments in opposition.

Arterial Streets and Highways (including TSM, TDM, and Freight Transportation)

Over 90 comments were received on the arterial streets and highways, TSM, TDM, and freight transportation elements. There were 39 comments in support, 29 comments in opposition, and 24 comments suggesting changes or making other observations.

Five commenters expressed support for constructing the USH 12 freeway between the Cities of Elkhorn and Whitewater, five commenters expressed support for adding a lane in each direction on IH 43 between Howard Avenue and Silver Spring Drive, four commenters expressed general support in relation to widening or adding highways, and three commenters expressed support for the Lake Parkway extension to STH 100. Several other projects received a single comment in support.

Adding a lane in each direction on IH 43 between Howard Avenue and Silver Spring Drive received the most comments in opposition (16). In addition, 11 commenters expressed general opposition to widening or adding freeways and highways to address traffic congestion in the Region. Those commenters cited a number of reasons, including focusing on improving and expanding alternative modes of travel and doubt that widenings will reduce traffic congestion.

The most frequent suggestions for changes or additions included improving the IH 94 interchange at Moorland Road rather than constructing an interchange at Calhoun Road (4) and moving the alignment for the proposed arterial near Lenwood Lake from N. River Road to STH 144 in Washington County (3).

There were 29 comments in support of generating additional public revenue to fund the public transit element of the Preliminary Plan, and two comments in opposition.

Funding and Benefits of the Preliminary Recommended Plan

There were over 40 comments regarding funding and benefits of the Preliminary Plan. There were 29 comments in support of generating additional public revenue to fund the public transit element, two comments in opposition, and five comments required a clarifying response. Eight commenters indicated they believed the public transit element included in the FCTP was inadequate. Several of the commenters indicated their preferences for which funding sources should be pursued so the Region could achieve the public transit element included in the Preliminary Plan. The most frequently cited sources included increasing fuel tax rates (7), implementing a VMT fee (7), and increasing sales tax rates (6).

Additional Comments

There were 32 additional comments received on the Preliminary Plan. There were 19 additional comments in support of the Preliminary Plan. They included 12 commenters that complimented the VISION 2050 planning process and seven commenters that generally supported the plan and its

implementation. There were four comments in opposition to the plan. Two commenters expressed concern that many residents who might generally object to the plan did not comment due to a lack of interest in the planning process. Two commenters expressed concern about the robust transportation infrastructure proposed under the Preliminary Plan and stated that low taxes are more important to attracting businesses than infrastructure investment.

There were also three comments requesting changes or additions. The commenters stated that not enough emphasis was placed in the public outreach materials on the benefits of the Preliminary Plan related to improving public health and improving opportunities for minority residents and low-income residents.

4.5 NOTABLE CHANGES TO PRELIMINARY RECOMMENDED PLAN FOR FINAL RECOMMENDED PLAN

Based on feedback received on the Preliminary Plan, staff made revisions to the public transit, bicycle and pedestrian, and arterial streets and highways elements as they prepared the final plan.

The input received on the Preliminary Recommended Plan was considered during the next step of the VISION 2050 process, as Commission staff prepared a final recommended year 2050 land use and transportation plan for Southeastern Wisconsin. The final recommended plan is presented in Volume III of this report. Below is a summary of the notable changes made to the Preliminary Plan as staff developed the final plan.

Changes to the Land Use Component
Based on the extensive public outreach and feedback received throughout the VISION 2050 process, including the final round of public involvement on the Preliminary Plan, no changes to the land use component of the Preliminary Plan were made in the final plan.

Changes to the Public Transit Element
Based on the feedback received on the public transit element of the Preliminary Plan, the following changes were made in the final plan (map changes are shown on Maps 4.24 and 4.25):

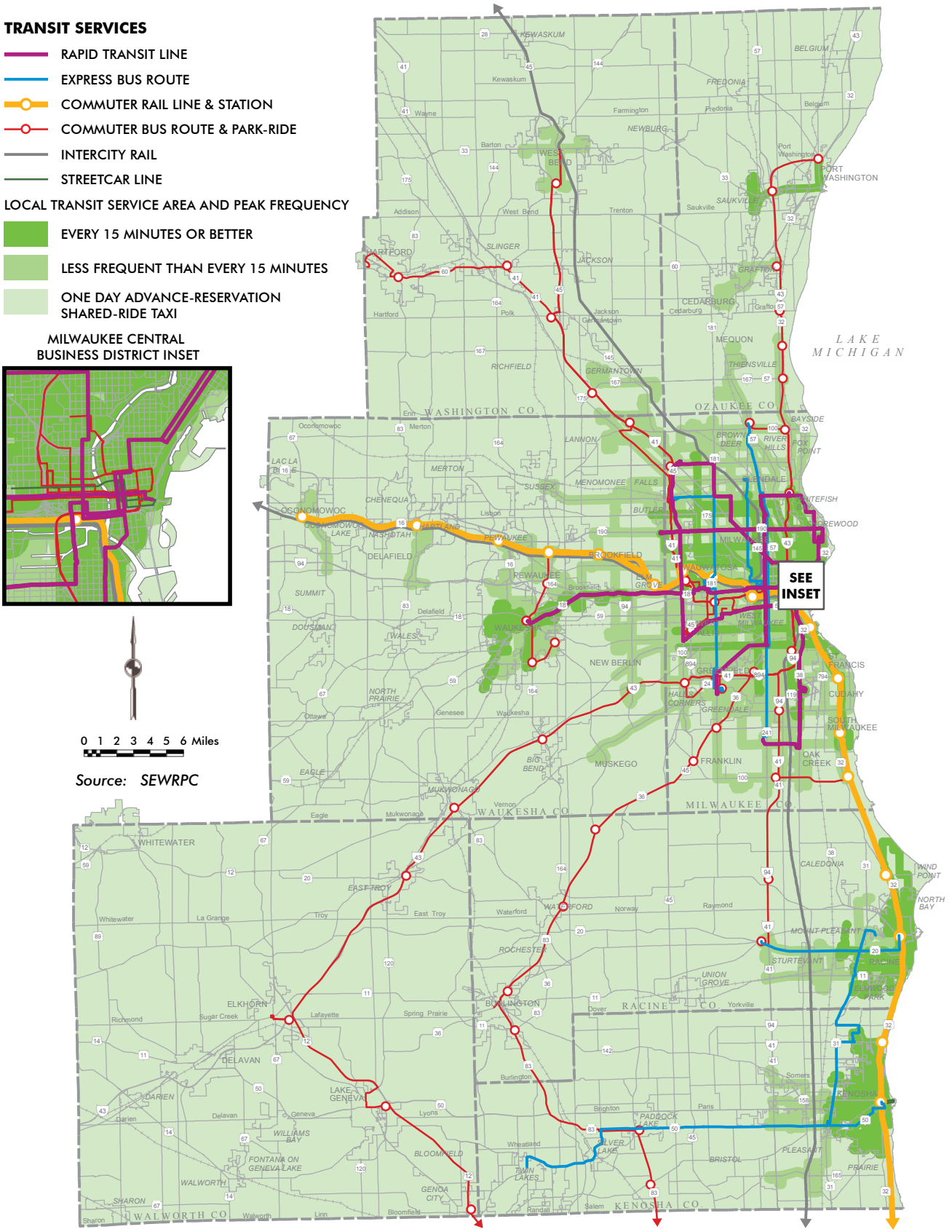
- As requested by the City of Milwaukee, the recommendation for a rapid transit network was revised to remove references to the potential extension of Milwaukee streetcar service as rapid transit light rail service. Instead, streetcar service would be provided as a Milwaukee downtown circulator and local transit service connecting to nearby neighborhoods. As part of this revision, the currently planned extent of the City of Milwaukee streetcar network is included as local transit service in the final plan. The Milwaukee Central Business District Inset on Maps 4.24 and 4.25 display this change.

- As requested by the City of Milwaukee, a commuter rail extension was included along the 30th Street Industrial Corridor between downtown Milwaukee and Century City.

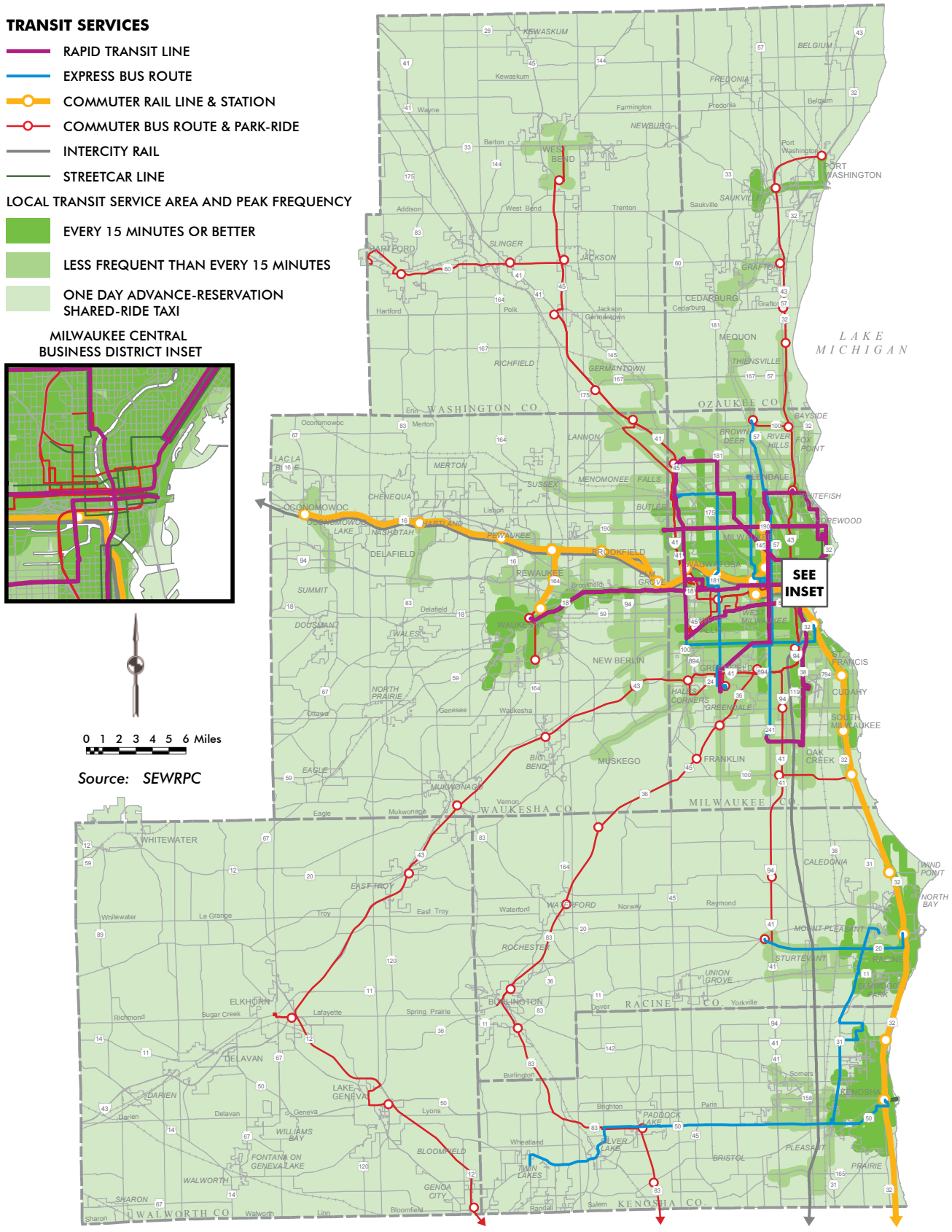
- As requested by the City of Waukesha, a commuter rail extension was included along Canadian National's existing freight line from Pewaukee to downtown Waukesha, connecting downtown Waukesha to downtown Milwaukee via commuter rail.

- As requested by members of the public, elected officials, and members of the VISION 2050 Public Transit Task Force, a few minor revisions were made to commuter and express bus routes.

Map 4.24
Transit Services: Preliminary Recommended Plan



Map 4.25
Transit Services: Final Recommended Plan



Changes to the Bicycle and Pedestrian Element
Based on the feedback received on the bicycle and pedestrian element of the Preliminary Plan, the following changes were made in the final plan:

- As requested by members of the public, elected officials, and members of the VISION 2050 Non-Motorized Transportation Task Force, a few minor revisions were made to off-street bicycle paths and enhanced bicycle facility corridors.

- As requested by members of the public and members of the VISION 2050 Non-Motorized Transportation Task Force, language was added recommending local governments work to implement Safe Routes to School programs as appropriate to Recommendation 3.6, which recommends that local governments prepare community bicycle and pedestrian plans to supplement the regional plan.

Changes to the Transportation Systems Management Element
Based on the feedback received on the transportation systems management element of the Preliminary Plan, no changes were made in the final plan.

Changes to the Travel Demand Management Element
Based on the feedback received on the travel demand management element of the Preliminary Plan, no changes were made in the final plan.

Changes to the Arterial Streets and Highways Element
Based on the feedback received on the arterial streets and highways element of the Preliminary Plan, the following changes were made in the final plan:

- As requested by members of the public and members of the Commission's jurisdictional highway planning committees for various counties, a few minor revisions were made to the locations of proposed new arterial streets and highways in the Region.

The Widening of IH 43 between Howard Avenue and Silver Spring Drive in Milwaukee County
The Commission staff was requested by the Commission's Advisory Committees on Regional Transportation Planning and Regional Land Use Planning to analyze the benefits and impacts of adding a lane to this segment of IH 43 at the time of its reconstruction (see Appendix I of this volume). The potential benefits and impacts were presented to the public during the fifth round of VISION 2050 workshops. Appendix J includes a summary of the public feedback received on this corridor.

Staff proposed three options for the Advisory Committees to consider with respect to addressing this segment of IH 43 in the final plan:

- **Option 1** – Include the widening of IH 43 between Howard Avenue and Silver Spring Drive in the final plan. Under this option, the final plan would recommend that the preliminary engineering conducted for the reconstruction of this segment of IH 43 include the consideration of alternatives for rebuilding the freeway with additional lanes and also rebuilding it with the existing number of lanes. Should, at the conclusion of preliminary engineering, a determination be made that IH 43 between Howard Avenue and Silver Spring Drive be reconstructed with the existing number of traffic lanes, then VISION 2050 would be amended accordingly.

- **Option 2** – Not make any recommendation with respect to how IH 43 between Howard Avenue and Silver Spring Drive would be reconstructed in the final plan, similar to the Commission staff's suggested compromise during the development of the regional freeway reconstruction plan completed in 2003. Under this option, VISION 2050 would recommend that the preliminary engineering conducted for the reconstruction of this segment of IH 43 include the consideration of alternatives for rebuilding the freeway with additional lanes and rebuilding it with the existing number of lanes. Following the conclusion of preliminary engineering, VISION 2050 would be amended to reflect the decision made as to how IH 43 between Howard Avenue and Silver Spring Drive would be reconstructed. This option would further recommend that any construction along this segment of IH 43 prior to preliminary engineering—such as bridge reconstruction—should fully preserve and accommodate the future option of rebuilding the freeway with additional lanes.

- **Option 3** – Recommend maintaining IH 43 between Howard Avenue and Silver Spring Drive with the same number of traffic lanes that exist today in the final plan. Under this option, VISION 2050 would recommend that the preliminary engineering conducted for the reconstruction of this segment of IH 43 include the consideration of alternatives for rebuilding the freeway with additional lanes and rebuilding it with the existing number of lanes. Should, at the conclusion of preliminary engineering, a determination be made that IH 43 between Howard Avenue and Silver Spring Drive be reconstructed with additional traffic lanes, then VISION 2050 would be amended accordingly.

The Advisory Committees unanimously recommended including Option 2 in the final plan.

Changes to the Freight Transportation Element
Based on the feedback received on the freight transportation element of the Preliminary Plan, no changes were made in the final plan.

APPENDICES

APPENDIX H
COMPLETE RESULTS OF THE PRELIMINARY RECOMMENDED PLAN EVALUATION

INTRODUCTION

This appendix presents the complete evaluation results for the Preliminary Recommended Plan, which is documented in Chapter 4 of Volume II of the VISION 2050 plan report. Similar to the evaluation of the VISION 2050 alternatives, the evaluation of the Preliminary Plan was conducted based on the VISION 2050 plan objectives and evaluation criteria, set forth in Chapter 3 of Volume II. Given both evaluations used the same 50 evaluation criteria, which are intended to achieve the same VISION 2050 plan objectives, the evaluation for the Preliminary Plan does not repeat all of the discussion from the evaluation of the VISION 2050 alternatives related to the importance of a criterion or how a criterion was estimated. This background information can be found in Appendix F of Volume II, which documents the complete evaluation results of the alternatives.

As described in Chapter 4 of Volume II, the total regional household and employment growth under the Preliminary Plan is modestly higher than the Trend, which should be taken into account when comparing the results for some of the criteria. It should also be noted that the arterial street and highway system under the Trend presented in the Preliminary Plan evaluation was slightly modified from that presented in the alternatives evaluation. The Trend utilized for comparison to the Preliminary Plan reflects the addition and removal of some widenings and new facilities, as identified by the Commission's County Jurisdictional Highway Planning Committees. These modifications were incorporated into both the Preliminary Plan and the Trend to provide for a consistent comparison.

Appendix H is organized into four important themes for VISION 2050:

- Healthy Communities (Appendix H-1)
- Equitable Access (Appendix H-2)
- Cost and Financial Sustainability (Appendix H-3)
- Mobility (Appendix H-4)

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CRITERION 1.1.1: NUMBER OF PEOPLE LIVING IN WALKABLE AREAS

The evaluation of the VISION 2050 alternatives noted that developing walkable neighborhoods can have numerous positive benefits to the health and vibrancy of communities in the Region, and compared the alternatives in terms of their walkability.[32] Like Alternative Plans I and II, the Preliminary Recommended Plan would result in more people living in walkable areas and more developed land that is walkable, as shown in Table H.1 and Maps H.1 through H.3. A more compact development pattern tends to be more walkable, and the Preliminary Plan, which includes higher-density development than the Trend and an emphasis on TOD, would result in additional areas identified as being walkable.

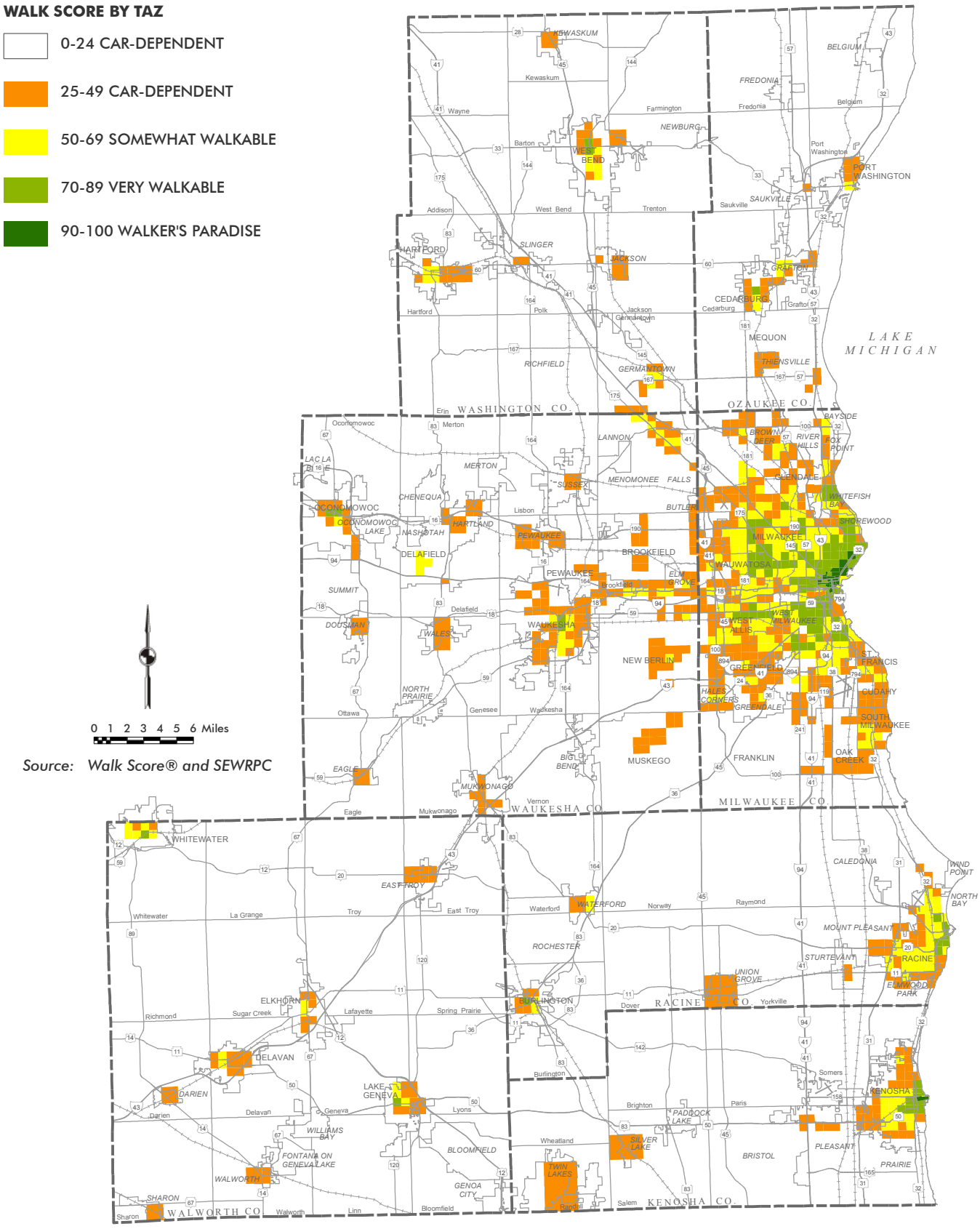
Table H.1
Number of People Living in Walkable Areas

Plan	Population in Walkable Areas	Total Population	Percent of Total Population in Walkable Areas	Developed Land that is Walkable (Acres)	Total Developed Land (Acres)	Percent of Developed Land that is Walkable
Existing - 2010	702,600	2,020,000	34.8	56,400	467,000	12.1
Trend - 2050	724,600	2,354,000	30.8	59,200	568,400	10.4
Plan - 2050	844,000	2,389,200	35.3	73,300	527,500	13.9

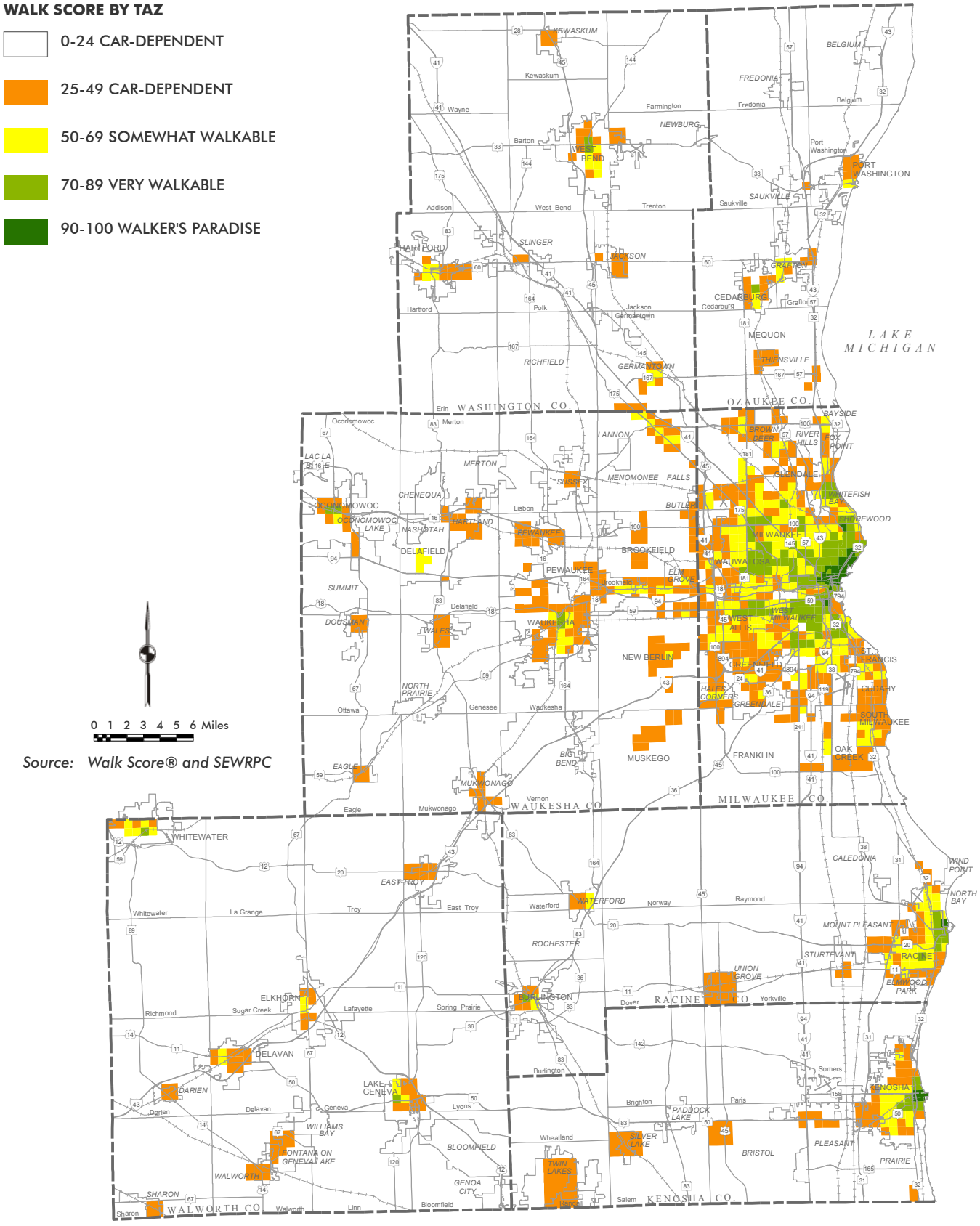
Source: WalkScore® and SEWRPC

[32] *The term "walkable" refers to the ease by which people can walk in an area to various destinations, such as schools, parks, retail services, and employment.*

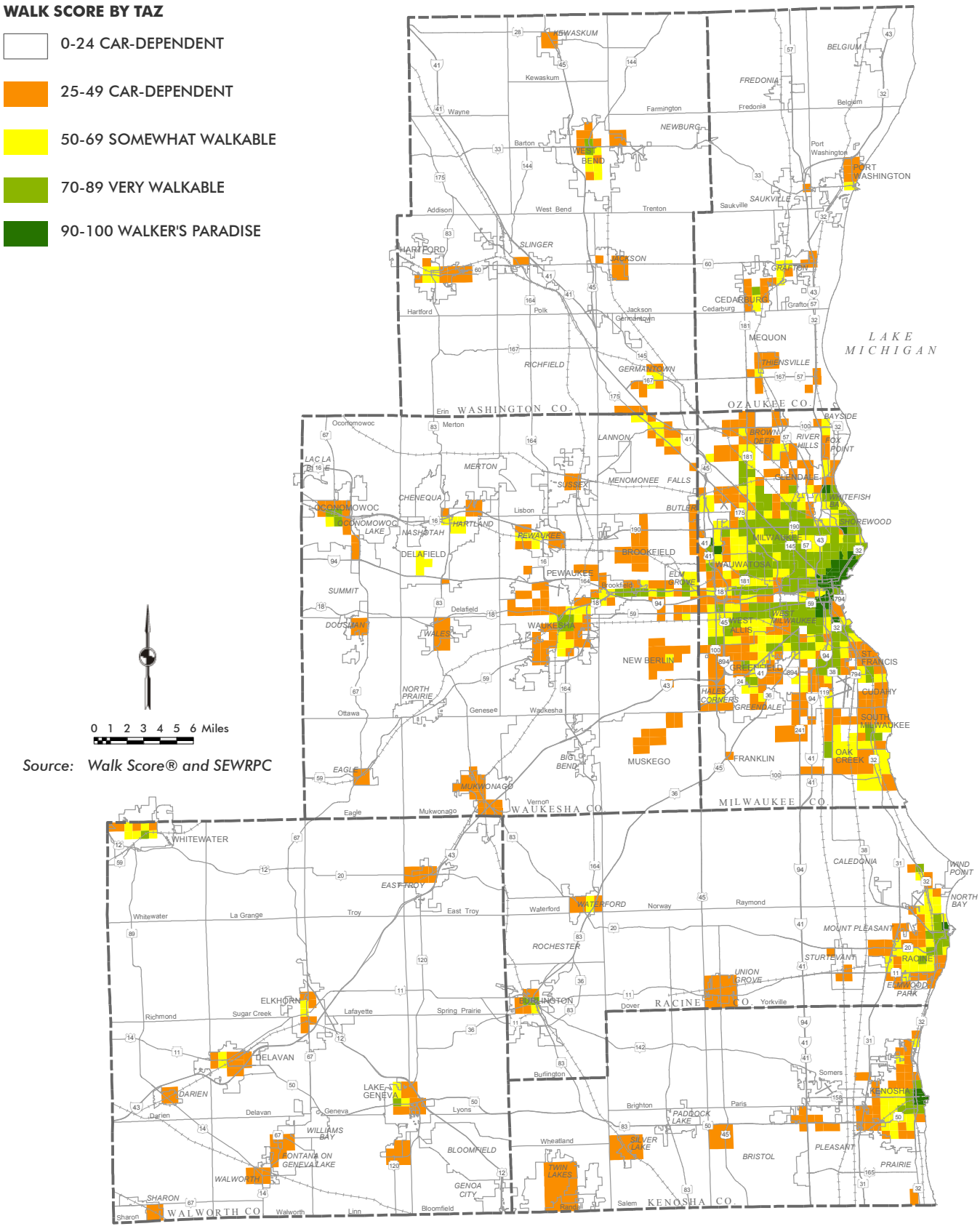
Map H.1
Walkability in the Region: Existing



Map H.2
Walkability in the Region: Trend



Map H.3
Walkability in the Region: Preliminary Recommended Plan



CRITERION 1.1.2: POPULATION DENSITY

Population density (number of people per square mile) is a result of the residential development pattern. The Preliminary Recommended Plan has a higher-density development pattern than the Trend, which results in better performance under most of the evaluation criteria because public infrastructure and services can be provided more efficiently; alternatives to automobile travel can be more efficiently provided and receive greater use; and less agricultural land and open space would be converted to urban uses.

Table H.2
Population Density

Plan	Residential Land (square miles)	Population	Population per Square Mile	Incremental Residential Land (square miles)	Population Change	Population per Square Mile of New Residential Development
Existing - 2010	400.9	2,020,000	5,038.7	N/A	N/A	N/A
Trend - 2050	517.7	2,354,000	4,547.0	116.8	334,000	2,859.6
Plan - 2050	459.7	2,389,200	5,197.3	58.8	369,200	6,278.9

Source: SEWRPC

CRITERION 1.1.3: EMPLOYMENT DENSITY

Employment density under the Preliminary Recommended Plan is somewhat lower than under the Trend because of assumptions made regarding industrial jobs in preparing the Preliminary Plan. Continuing increases in efficiency in the industrial sector would result in decreased job density. This assumption was not included in the employment data prepared for the alternative plans. This resulted in higher job densities reported for the alternative plans, including the Trend. The job allocation pattern under the Preliminary Plan is similar to that of Alternative Plan II, with significant concentrations of jobs in rapid transit and commuter rail station areas.

Table H.3
Employment Density

Plan	Employment Supporting Land (square miles)	Jobs	Employment per Square Mile	Incremental Employment Supporting Land (square miles)	Employment Change	Jobs per Square Mile for New Employment Supporting Development
Existing - 2010	128.1	1,176,600	9,185.0	N/A	N/A	N/A
Trend - 2050	146.9	1,386,900	9,441.1	18.8	210,300	11,186.2
Plan - 2050	151.6	1,405,700	9,272.4	23.5	229,100	9,748.9

Source: SEWRPC

CRITERION 1.2.1: BICYCLE LEVEL OF SERVICE

Bicycle level of service (BLOS) refers to the degree of comfort that a bicyclist may experience when riding on a roadway. Both the Trend and Preliminary Recommended Plan would result in considerable improvement in BLOS compared to the existing network. BLOS in the Trend compared to the existing network is greatly improved due to the expectation that on-street bicycle accommodations would be added on all surface arterial streets and highways as they are resurfaced or reconstructed, where feasible. Like Alternative Plans I and II, the Preliminary Plan would result in a significant improvement to BLOS where enhanced bicycle facilities would be implemented in regional corridors, as the increased separation from vehicles and other traffic conditions would greatly reduce the discomfort that bicyclists might experience when riding on arterials in proximity to high traffic volumes and speeds.

Table H.4 includes the miles of each BLOS grade within each county and for the Region, as well as the distance weighted average BLOS grade for each county and for the Region under existing conditions, the Trend, and the Preliminary Plan. Maps H.4 through H.6 illustrate BLOS by arterial link under existing conditions, the Trend, and the Preliminary Plan. The Preliminary Plan includes 1,847 miles of arterials with BLOS grades of A or B, while the Trend includes 1,442 miles with grades A or B. Maps H.7 through H.9 illustrate BLOS by TAZ for the three networks, which aggregates the BLOS scores for arterial links, separate paths, and off-street paths within each TAZ using a weighted average.

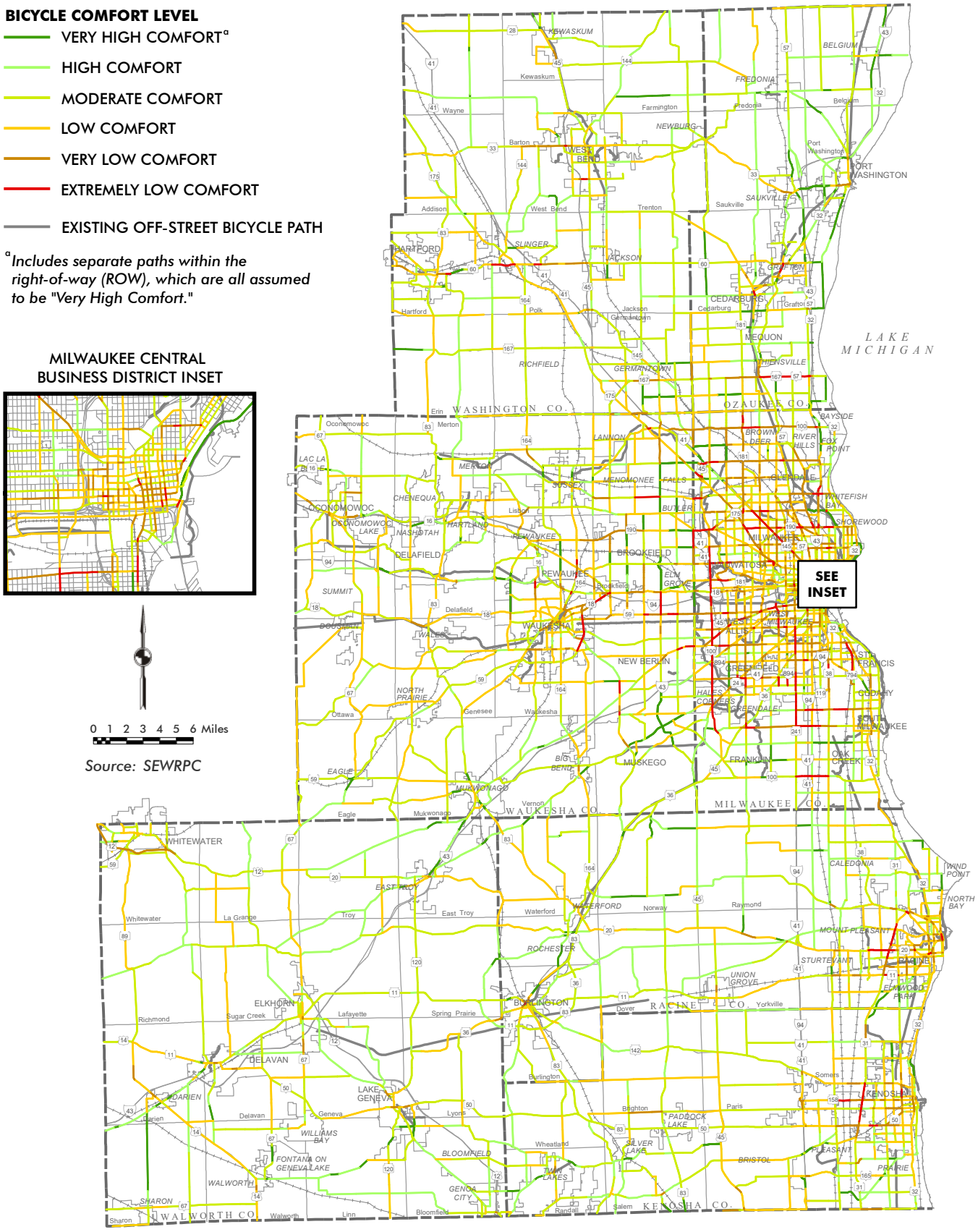
Table H.4
Bicycle Level of Service

	County	Miles of Arterials by Bicycle Level of Service Grade						Average Comfort Level[a]
		Very High Comfort (BLOS A)	High Comfort (BLOS B)	Moderate Comfort (BLOS C)	Low Comfort (BLOS D)	Very Low Comfort (BLOS E)	Extremely Low Comfort (BLOS F)	
Existing - 2015	Kenosha	14	68	145	100	18	4	C
	Milwaukee	28	63	217	238	140	47	D+
	Ozaukee	39	69	117	45	7	3	C+
	Racine	22	115	152	118	15	4	C
	Walworth	20	126	175	92	9	0	C
	Washington	17	91	198	85	10	2	C
	Waukesha	47	91	296	244	34	9	C
	Region	187	624	1,299	923	232	70	C
Trend - 2050	Kenosha	17	76	204	51	7	4	C+
	Milwaukee	93	224	304	98	17	2	C+
	Ozaukee	49	137	77	15	4	0	B-
	Racine	34	137	218	33	8	1	B-
	Walworth	38	179	191	13	0	0	B-
	Washington	34	155	195	30	3	0	B-
	Waukesha	56	214	319	113	23	5	C+
	Region	321	1,121	1,508	354	62	12	C+
Plan - 2050	Kenosha	58	84	175	32	4	0	B-
	Milwaukee	234	201	226	68	7	1	B
	Ozaukee	76	138	59	9	1	0	B
	Racine	81	150	183	21	0	0	B
	Walworth	43	195	178	6	0	0	B-
	Washington	44	185	166	20	0	0	B-
	Waukesha	104	296	282	46	3	0	B-
	Region	640	1,249	1,269	202	15	1	B-

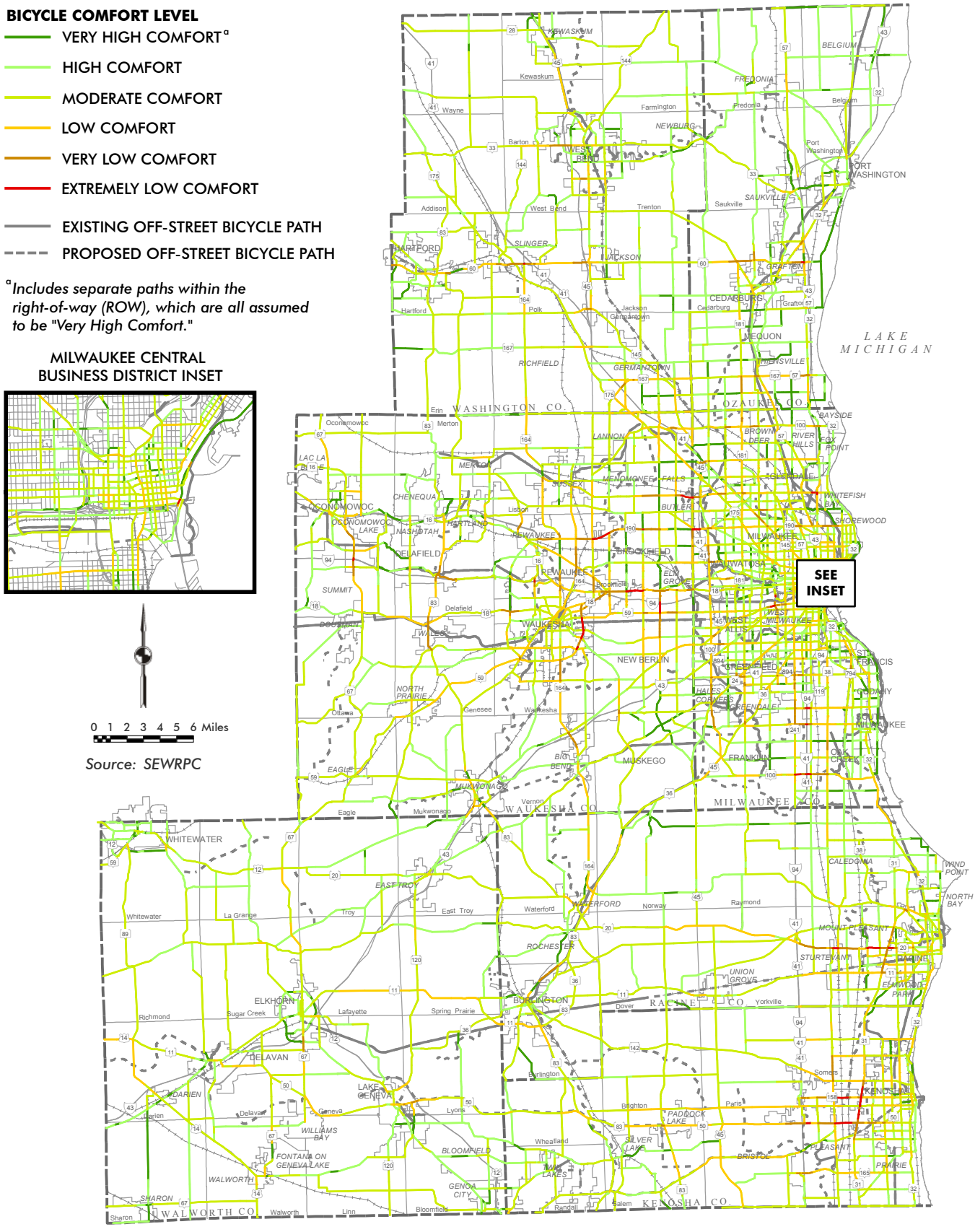
[a] *A distance weighted average was used to aggregate the BLOS scores for arterial links, separate paths, and off-street paths within each travel analysis zone (TAZ). Comfort level by county was calculated by using a weighted average of TAZs within each county.*

Source: SEWRPC

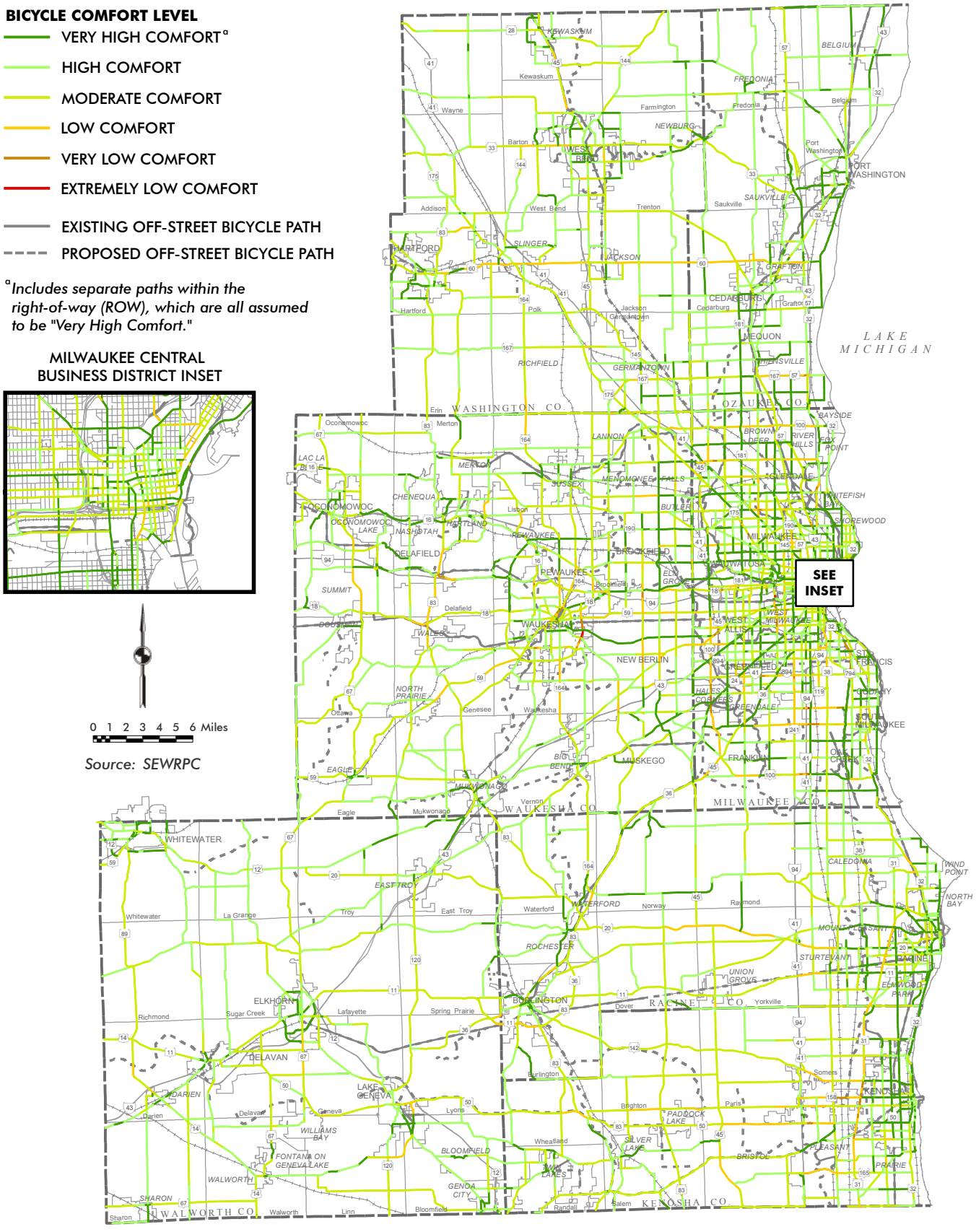
Map H.4
Bicycle Comfort Level for On-Street Bicycle Accommodations in the Region: Existing



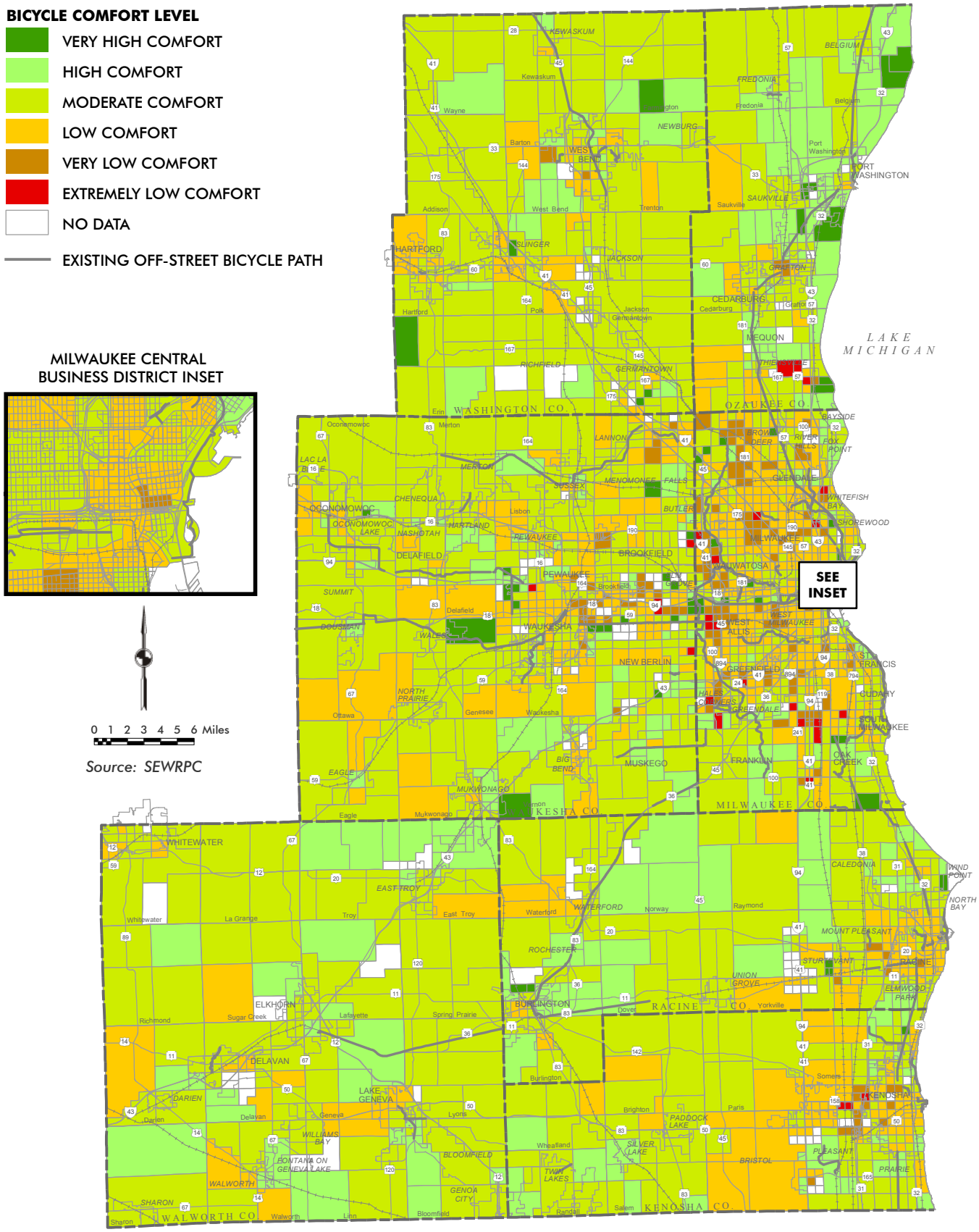
Map H.5
Bicycle Comfort Level for On-Street Bicycle Accommodations in the Region: Trend



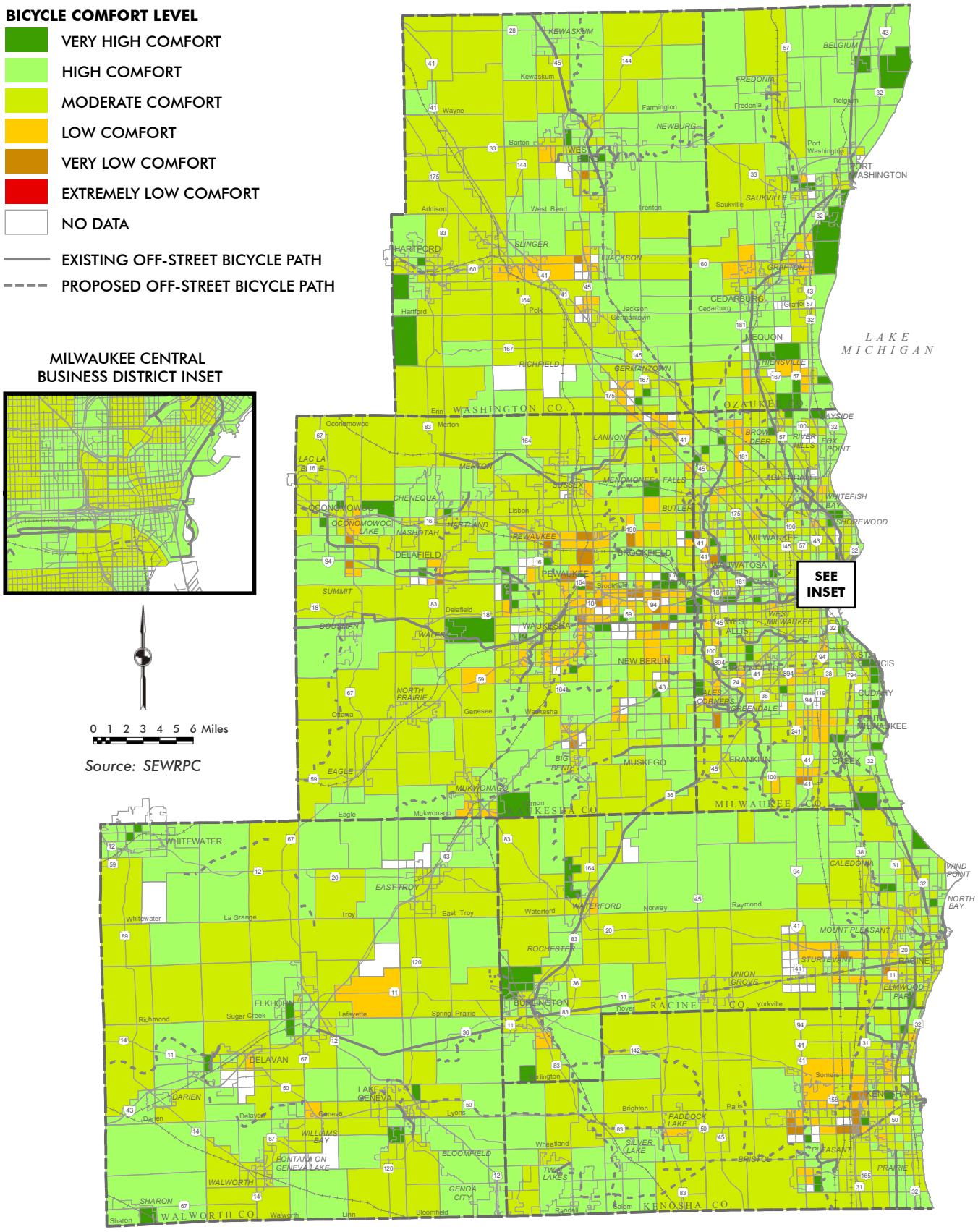
Map H.6
Bicycle Comfort Level for On-Street Bicycle Accommodations in the Region: Preliminary Recommended Plan



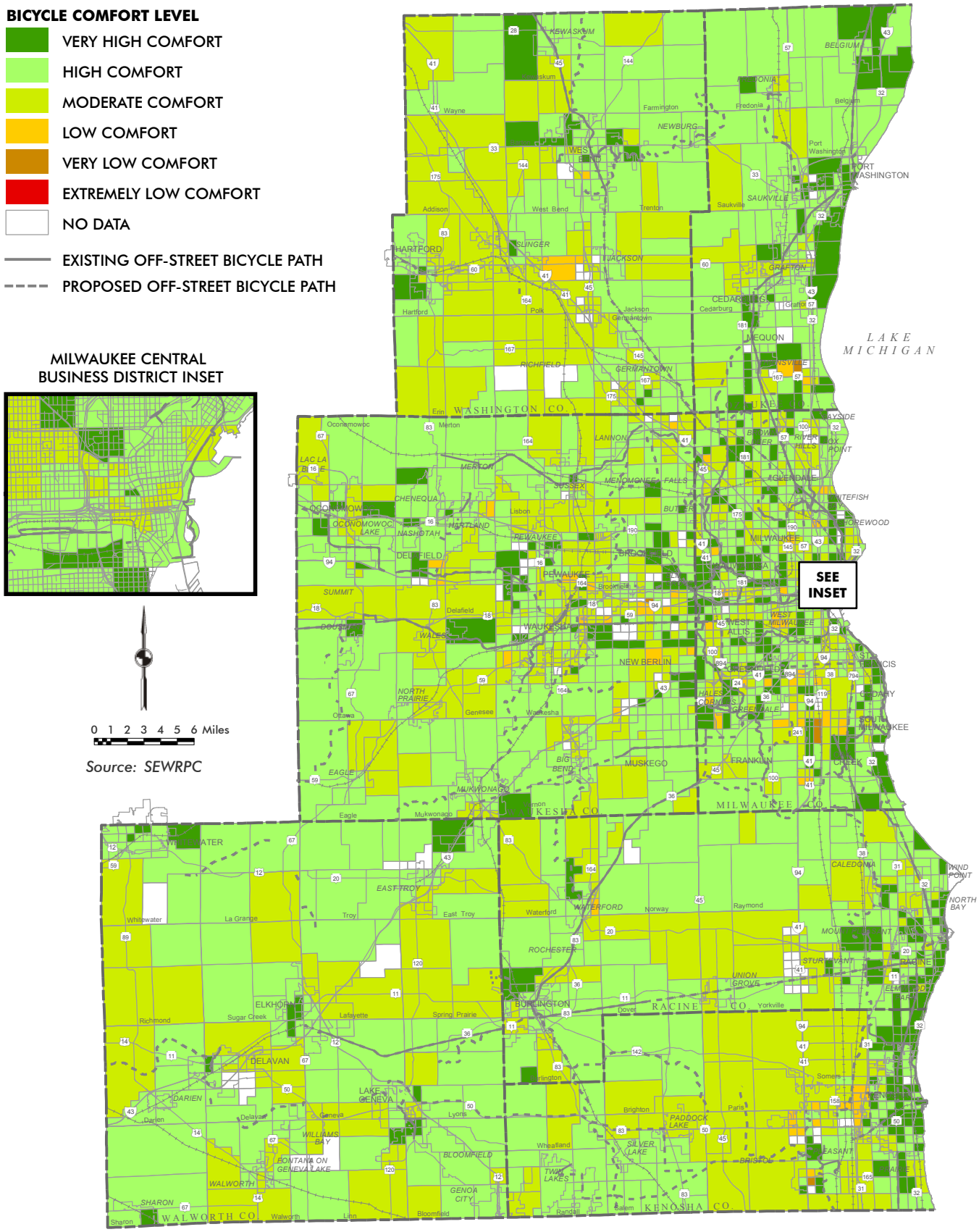
Map H.7
Bicycle Comfort Level by Travel Analysis Zone in the Region: Existing



Map H.8
Bicycle Comfort Level by Travel Analysis Zone in the Region: Trend



Map H.9
Bicycle Comfort Level by Travel Analysis Zone in the Region: Preliminary Recommended Plan

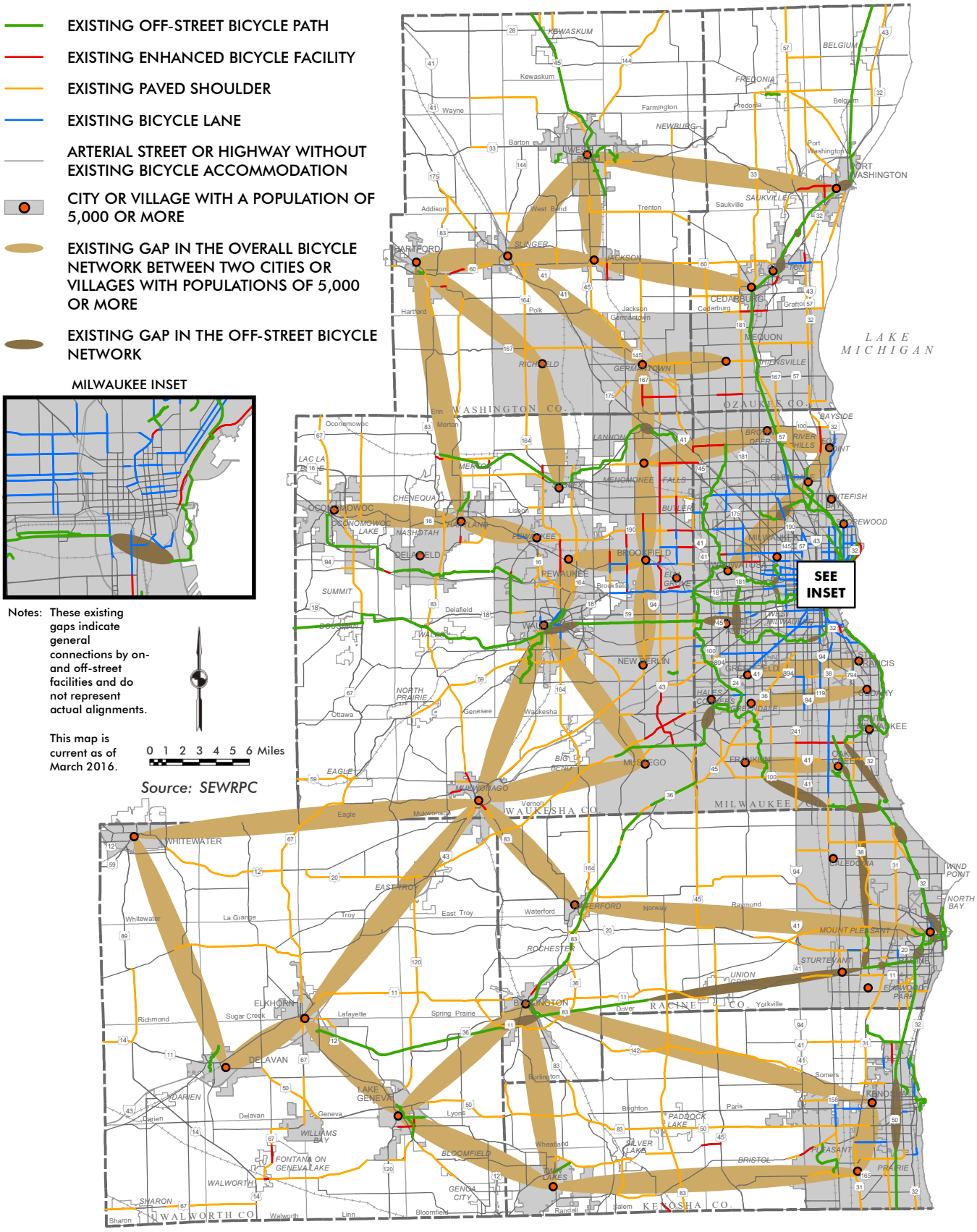


CRITERION 1.2.2: BICYCLE NETWORK CONNECTIVITY

One of the analyses conducted during the alternatives stage involved assessing the connectivity of the existing bicycle network, and how well the alternatives would address any gaps in the network. Map H.10 presents the existing bicycle network connectivity and existing gaps identified in the bicycle network. Similar to the Trend and Alternative Plans I and II, the Preliminary Recommended Plan would address these gaps through provision of on- and off-street bicycle facilities. For on-street, the Preliminary Plan proposes implementing bicycle facilities, where feasible, when surface arterial streets and highways are resurfaced or reconstructed.[33] Unlike the Trend, the Preliminary Plan also proposes implementing enhanced bicycle facilities in regional corridors that connect several communities, which can improve on-street connectivity at a higher level by going beyond a standard bicycle lane, paved shoulder, or widened outside travel lane. For off-street, the Preliminary Plan proposes expansion of the off-street bicycle path system, which would further improve the connectivity of communities within the Region and improve bicycle travel within and between counties in the Region. Some existing paths have small gaps that require bicyclists to use streets to reach the next segment of the path. Although these streets make a connection, some streets may not be perceived as safe or comfortable for a bicyclist due to a lack of bicycle facilities, high vehicle volumes, and/or high vehicle speeds. These small gaps would be addressed in the Preliminary Plan either by constructing additional off-street path segments or by providing adequate on-street bicycle facilities for these connections.

[33] *There may be locations in urban environments where on-street bicycle accommodations may not be feasible. For example, where the right-of-way is restricted by two traffic lanes and two parking lanes, such as on Brady Street in the City of Milwaukee.*

Map H.10
Existing Bicycle Network Connectivity



CRITERION 1.2.3: BENEFITS AND IMPACTS TO PUBLIC HEALTH

The evaluation of the VISION 2050 alternatives indicated the ways in which public health can be benefited or impacted by the Region's development pattern and transportation options. The Preliminary Recommended Plan was prepared in an attempt to maximize the benefits and minimize the impacts on public health. Recognizing that walking and biking on a regular basis can curb obesity-related health issues and has the potential to reduce healthcare costs related to caring for these conditions, the Preliminary Plan encourages active transportation through provision of well-connected infrastructure that makes it easier to bike and walk.

The improved connectivity over existing conditions under the Preliminary Plan would be in the form of on- and off-street bicycle facilities to address gaps in the regional bicycle network, including enhanced facilities in regional corridors, and by more compact development and more sidewalks. The more compact development under the Preliminary Plan would also improve biking and walking access by focusing on providing a mix of uses within short distances. In addition, the Preliminary Plan proposes significant transit improvements and expansion, which can have health benefits since public transit trips often begin and end by either walking or biking. By providing the additional alternative transportation options and more compact development pattern, the Preliminary Plan would also modestly improve emissions by limiting the need to drive and allowing for more green space that can absorb some pollution. Further, as discussed in Criterion 1.4.4, Federal standards on fuel and vehicle fuel economy and improved vehicle emissions controls have resulted in the significant reduction of vehicle-related air pollution, and transportation-related emissions are expected to continue to significantly decline into the future based on current Federal standards.

CRITERION 1.3.1: REMAINING FARMLAND AND UNDEVELOPED LAND

Agricultural land use in the Region has decreased by 482 square miles since 1963. Despite this decrease, a large portion of the Region remains in agricultural use (about 1,156 square miles), and agriculture remains an important part of the regional economy. Table H.5 shows that some agricultural land would be expected to be converted to urban uses to accommodate projected regional growth under the Trend and Preliminary Recommended Plan, but much less agricultural land would be converted under the Preliminary Plan, including Class I and II soils (National Prime Farmlands) as classified by the U.S. Natural Resources Conservation Service.

Table H.5
Remaining Farmland and Undeveloped Land

Plan	Agricultural Land (square miles)	Percent Change	Unused and Other Open Land (square miles)	Percent Change	Agricultural Land and Other Unused and Open Land Covered by Class I and II Soils (square miles)	Percent Change
Existing - 2010	1,156	--	671	--	887	--
Trend - 2050	1,078	-6.7	592	-11.7	828	-6.7
Plan - 2050	1,097	-5.1	628	-6.4	842	-5.1

Source: SEWRPC

CRITERION 1.3.2: IMPACTS TO NATURAL RESOURCE AREAS

Table H.6 compares the transportation system improvement impacts to natural resource areas in the Region under the Trend and Preliminary Recommended Plan. Specifically, impacts were estimated for primary and secondary environmental corridors, isolated natural resource areas, wetlands, natural areas, critical species habitat areas, Wisconsin Department of Natural Resources (DNR) managed lands[34] and Legacy Places,[35] lands protected by land trusts or other conservation lands, and prime agricultural areas (farmland with Class I or Class II soils).

- **Public Transit:** Public transit under the Preliminary Plan would not be expected to require the expansion of arterial street and highway or railroad right-of-ways, even with the proposed significant increases in public transit service. As a result, the proposed public transit system would not be expected to impact any of the Region's natural resource areas.

- **Arterial Streets and Highways:** While both the Trend and Preliminary Plan would be expected to have impacts to the Region's natural resource areas, the impacts are expected to be modest—typically representing less than 0.1 percent of the total area of natural resource areas. The Trend would be expected to have a greater impact on natural resource areas in the Region than the Preliminary Plan. It would have more capacity expansion due to the need to address the increased traffic resulting from less compact development and a decline in transit. There would be a modest decrease in impacts to natural resource areas under the Preliminary Plan—generally 3 to 9 percent less than the Trend, depending on the type of natural resource area—due to the greater emphasis on infill development and redevelopment and improvement and expansion of transit service.

[34] *The DNR has acquired large areas of park and open space lands in the Region and manages those lands for a variety of resource protection and recreational purposes.*

[35] *The DNR has identified Legacy Places that are critical for meeting Wisconsin's conservation and outdoor recreation needs through the year 2050. Source: Wisconsin Department of Natural Resources,* Wisconsin Land Legacy Report: An inventory of places to meet Wisconsin's future conservation and recreation needs, *2006.*

Table H.6
Transportation System Impacts to Natural Resource Areas

Category	Trend (2050)	Plan (2050)
Environmental Corridors (Acres)[a]		
Primary	229.7	218.8
Secondary	65.2	51.5
Isolated Natural Resource Areas	43.1	39.0
Other Natural Resource Areas (Acres)[b]		
Wetlands	171.9	158.6
Natural Areas	18.2	17.9
Critical Species Habitat Areas	2.0	1.8
DNR Managed Lands	40.2	39.9
DNR Legacy Places	132.3	126.3
Land Trust or Other Conservation Organization Lands	2.9	2.9
Prime Agricultural Lands (Class I or Class II)	718.6	694.9

[a] *Existing primary environmental corridors in the Region total about 311,900 acres, existing secondary environmental corridors total about 51,600 acres, and existing isolated natural resource areas total about 45,800 acres.*

[b] *Existing wetlands in the Region total about 201,700 acres, natural areas total about 64,600 acres, critical species habitat areas total about 19,800 acres, DNR managed lands total about 64,900 acres, DNR Legacy Places total about 137,800 acres, and land trust or other conservation organization lands total about 12,700 acres. Existing prime agricultural lands in the Region total about 567,900 acres.*

Source: SEWRPC

CRITERION 1.4.1: PRESERVATION OF AREAS WITH HIGH GROUNDWATER RECHARGE POTENTIAL

The Preliminary Recommended Plan recognizes that groundwater is a key element of the Region's natural resource base, and the land use development pattern can affect the amount of recharge entering the groundwater system. Like Alternative Plans I and II, the Preliminary Plan would preserve more areas with high and very high groundwater recharge potential than the Trend. Of the existing 794 square miles of these areas, approximately 51 square miles would be converted to urban uses under the Trend, compared to 33 square miles under the Preliminary Plan. The result is that about 94 percent of the areas would be preserved under the Trend, compared to about 96 percent under the Preliminary Plan.

CRITERION 1.4.2: IMPERVIOUS SURFACE

As discussed in the alternatives evaluation, impervious surfaces can have negative impacts on stormwater absorption and water quality. The percent of the Region's total land area covered by impervious surfaces is anticipated to increase by the year 2050 when compared to existing conditions, but the more compact development pattern under the Preliminary Recommended Plan would result in less impervious surface (11.2 percent of the Region) than the Trend (11.4 percent of the Region), as shown in Table H.7. The Preliminary Plan also proposes expanded implementation of green infrastructure for managing stormwater through infiltration (e.g., green roofs, porous pavements, rain gardens, and biofiltration and infiltration facilities), which can mitigate the impacts of impervious surfaces or reduce the amount of impervious surface beyond the Preliminary Plan levels estimated in this analysis.

From an individual watershed perspective, as impervious surfaces grow as a percentage of the overall land area within the watershed, significant declines in water quality can result. Table H.7 shows the watersheds with more than 25 percent of their area covered by impervious surfaces highlighted in orange, and watersheds with 10 to 25 percent of their area covered by impervious surfaces highlighted in yellow.

Table H.7
Impervious Surface

Watershed	Total Acres	Existing (2010)		Trend (2050)		Plan (2050)	
		Acres	Percent	Acres	Percent	Acres	Percent
Des Plaines River[a]	85,989	5,676	6.6	7,741	9.0	7,749	9.0
Fox River[a]	598,280	46,192	7.7	54,414	9.1	53,246	8.9
Kinnickinnic River	16,239	5,895	36.3	6,056	37.3	6,084	37.5
Menomonee River	86,891	20,693	23.8	22,046	25.4	22,317	25.7
Milwaukee River[a]	277,550	30,797	11.1	35,175	12.7	34,264	12.3
Oak Creek	17,752	4,181	23.6	4,671	26.3	4,747	26.7
Pike River	32,913	4,665	14.2	6,080	18.5	6,050	18.4
Rock River[a]	390,889	23,766	6.1	28,198	7.2	27,124	6.9
Root River	126,082	14,560	11.5	16,660	13.2	16,677	13.2
Sauk Creek[a]	22,161	1,378	6.2	1,692	7.6	1,616	7.3
Sheboygan River[a]	6,944	285	4.1	320	4.6	385	5.5
Lake Michigan Direct[a]	59,738	11,575	19.4	12,831	21.5	12,888	21.6
Region	1,721,428	169,663	9.9	195,885	11.4	193,146	11.2

[a] *These watersheds extend beyond the borders of the Region. Only the portion of the watershed contained within the Region is included here.*

Source: SEWRPC

CRITERION 1.4.3: ENERGY USE

As discussed during the evaluation of the VISION 2050 alternatives, energy use is impacted by technologies that make homes and transportation more energy efficient, individual actions to conserve energy, the development pattern, and the mode and technology used for transportation.

- **Building Type and Development Pattern:** Multifamily housing tends to be more energy efficient than single-family housing because multifamily housing units typically have shared ceilings/floors and walls. The Preliminary Recommended Plan proposes a more compact development pattern, which supports a greater number of multifamily housing units. The Preliminary Plan would add more multifamily housing units (42 percent of the new housing units) than the Trend (25 percent of the new housing units). Using these figures and data from the EIA, the average energy use per household added under the Preliminary Plan would be 102.1 million BTU per year, which is about 10 percent less than the Trend (111.8 million BTU per year).[36]

- **Transportation:** The vast majority of energy used by the transportation sector comes from petroleum fuels, including gasoline and diesel. Total petroleum fuel usage in the transportation sector is directly affected by vehicle fuel economy and VMT. Based on current Federal standards on vehicle fuel economy, vehicles are expected to become significantly more fuel efficient, which will significantly reduce transportation-related energy use. Given this expected downward trend, there is a relatively large difference between existing and future levels of energy use under both the Trend and Preliminary Plan. Existing transportation-related energy use is estimated to be about 124.1 million BTUs per household per year, which is significantly higher than the Trend (87.4 million BTUs in the year 2050) and Preliminary Plan (86.6 million BTUs in the year 2050). Between the Trend and Preliminary Plan, the differences are comparatively small, but the variations in the development pattern and transportation system still have an impact. In addition to supporting more multifamily housing, which tends to be more energy efficient, more compact development patterns also tend to have destinations closer to residents. This results in shorter auto trips, makes public transit a more viable alternative to driving, and also encourages biking and walking trips, all of which can reduce transportation-related energy use. The significant improvements to public transit in the Preliminary Plan would also result in more transit ridership and lower VMT.

[36] *It should be noted that home energy use under both the Trend and Preliminary Plan could be less than estimated given that new homes tend to be more energy efficient than older homes.*

CRITERION 1.4.4: GREENHOUSE GAS EMISSIONS AND OTHER AIR POLLUTANTS

The alternatives evaluation noted that reducing air pollution caused by human activity is important to the health and welfare of the Region's residents and can reduce unintended economic impacts caused by the effects of air pollutants. The evaluation showed that, from a transportation perspective, Federal standards on the sulfur content in fuel and vehicle fuel economy and improved vehicle emissions controls have been the primary drivers in the reduction of vehicle-related air pollution in recent years. Based on current Federal standards, fuels are expected to continue to become cleaner and vehicles are expected to become more fuel efficient, resulting in the continued significant decline of transportation-related emissions.

Table H.8 presents existing and future levels for a range of transportation-related criteria pollutants, mobile source air toxics, and GHG emissions. Levels were estimated using MOVES2014, the U.S. Environmental Protection Agency (EPA) emission modeling system for transportation sources. Given the expected downward trend in transportation-related emissions, there is a relatively large difference between existing and future levels for several emission types under both the Trend and Preliminary Plan. Between the Trend and Preliminary Plan, the differences are comparatively small, but the variations in the development pattern and transportation system still have an impact. The Preliminary Plan would further reduce transportation-related GHG emissions by providing more transportation options as alternatives to driving and the more compact development patterns would also reduce the distance required to travel. This would reduce the length of auto trips, make public transit a more viable alternative to driving, and encourage biking and walking trips, all of which would reduce transportation-related emissions.

In addition, the added multifamily housing associated with the compact development pattern under the Preliminary Plan would reduce the amount of energy used by the Region's households, and in doing so would also reduce air pollutant emissions. About 24.7 tons of CO_2 (per year in the year 2050)[37] would be produced per household added under the Trend (25 percent multifamily housing units), based on structure type and the primary sources of energy used by electrical power plants in the Region. Compared to the Trend, the Preliminary Plan (having 42 percent multifamily housing units) would perform somewhat better at 22.5 tons of CO_2 produced per new household (per year in the year 2050).[38] The Trend and Preliminary Plan compare similarly regarding the amount of other GHG emissions and air pollutants produced by the energy used per new household.

[37] The Trend CO_2 data has been revised from that presented under the alternatives evaluation to reflect updated information from the U.S. Environmental Protection Agency Power Profiler website.

[38] Emissions per housing unit are based on the end use energy consumed. End use refers to the energy content of electricity and other fuels at the point of use by customers, such as households.

Table H.8
Transportation-Related Greenhouse Gas Emissions and Other Air Pollutants

Pollutant Name	Type	Average Annual Emissions from Transportation Sources (tons)		
		Existing (2010)	Trend (2050)	Plan (2050)
Carbon Dioxide (CO_2)	GHG	10,435,000	7,369,000	7,232,000
Methane (CH_4) (in CO_2 equivalents)	GHG	10,200	8,400	8,200
Nitrous Oxide (N_2O) (in CO_2 equivalents)	GHG	100,300	35,200	34,500
Carbon Monoxide (CO)	Criteria	124,200	26,400	26,000
Fine Particulate Matter ($PM_{2.5}$)	Criteria	1,382	231	226
Sulfur Dioxide (SO_2)	Criteria and precursor for $PM_{2.5}$	182	54	53
Nitrogen Oxides (NO_x)	Precursor for Ozone/$PM_{2.5}$	28,460	3,640	3,580
Volatile Organic Compounds (VOC)	Precursor for Ozone/$PM_{2.5}$	12,740	2,120	2,070
Acetaldehyde (C_2H_4O)	Air toxic	150	30	30
Acrolein (C_3H_4O)	Air toxic	15	3	3
Ammonia (NH_3)	Air toxic	704	480	471
Benzene (C_6H_6)	Air toxic	309	33	32
Butadiene (C_4H_6)	Air toxic	47	4	3
Formaldehyde (CH_2O)	Air toxic	233	68	66

Source: U.S. Environmental Protection Agency and SEWRPC

CRITERION 1.4.5: IMPACTS TO WATER RESOURCES AND WATER QUALITY

As discussed in the alternatives evaluation, significant surface water quality improvements have been made since passage of the Federal Clean Water Act in 1972. The land development pattern and transportation system investment under the Preliminary Recommended Plan is designed to have a positive impact on future improvements.

- **Impervious Surfaces:** Criterion 1.4.2 (Impervious Surfaces) discusses the impact of the growth of impervious surfaces on water quality. The amount of the Region's land area covered by impervious surfaces in 2050 would be less under the Preliminary Plan (11.2 percent) than under the Trend (11.4 percent). The difference is due to the Preliminary Plan's more compact development pattern, which could reduce the amount of pollutants delivered to some of the Region's streams, rivers, and lakes in stormwater runoff from impervious surfaces.

- **Areas with High Groundwater Recharge Potential:** About 40 percent of the Region's residents are dependent upon groundwater for their water supply, as discussed in Criterion 1.4.1 (Preservation of Areas with High Groundwater Recharge Potential). Some areas of the Region have higher potential for recharge of groundwater than others, and the land development pattern can affect the amount of recharge entering the groundwater system. The Preliminary Recommended Plan would preserve significantly more areas with high groundwater recharge potential than the Trend. Approximately 51 square miles (about 6 percent) of the total 794 square miles of areas with high and very high groundwater recharge potential would be converted to urban uses under the Trend, compared to 33 square miles (about 4 percent) under the Preliminary Plan.

- **Reducing the Use of Salt for De-icing:** In winter, salt spread on roads and parking lots can quickly lead to significant increases in salinity in nearby streams, rivers, wetlands, and lakes, and can also have long-term effects on groundwater. Many communities in the Region have adopted winter road maintenance practices that use road salt efficiently while maintaining safe driving conditions. Additional reductions in the amount of salt delivered to surface water and groundwater, while maintaining safety for vehicles and pedestrians, may come from other communities improving their application efficiency, reductions in de-icing salt applied to privately maintained impervious surfaces, and possible future development of more environmentally friendly and cost-effective alternatives to road salt.

  Future road salt use in the Region could also be affected by the increase in pavement surface associated with the Preliminary Plan's proposed widening at the time of the reconstruction of about 8 percent of the arterial streets and highways and the construction of new arterial facilities, representing about 2 percent of the arterial system. The Trend would be expected to have slightly more of an effect on salt use than the Preliminary Plan, as the Trend has slightly more proposed widenings than the Plan. Existing nonarterial (collector or land access street) streets would also increase over the next 35 years, although the more compact development pattern of the Preliminary Plan would result in about 12 percent fewer miles of nonarterial roadway than the Trend. The Preliminary Plan would also be expected to require fewer

surface parking lots (as more compact development and improved public transit lead to lower per capita demand for parking and more parking in covered parking garages). Therefore, the Preliminary Plan may result in less salt reaching the Region's streams, rivers, wetlands, and lakes, than the Trend.

CRITERION 1.4.6: ABILITY TO ADDRESS ISSUES RELATED TO CLIMATE CHANGE

Under the alternatives evaluation, this criterion discussed the possible effects of climate change on Wisconsin and potential strategies for adapting to these effects. These effects and strategies are being investigated by the Wisconsin Initiative on Climate Change Impacts (WICCI), and the Southeastern Wisconsin Regional Planning Commission is collaborating with the effort. The ability of the alternatives to support these potential strategies was assessed during the alternatives evaluation. The Preliminary Recommended Plan would perform similarly to Alternative Plans I and II in that regard.

- **Preserving Areas with High Groundwater Recharge Potential and Minimizing Impervious Surfaces:** Preserving areas with high groundwater recharge potential and minimizing impervious surfaces would help mitigate flooding resulting from the projected increase in large storm events and improve water quality in the Region by promoting recharging of the groundwater system. The Preliminary Plan would support the Milwaukee Metropolitan Sewerage District in its efforts to preserve and create green infrastructure within its service area as it would convert less non-urban land area with high or very high groundwater recharge potential to urban uses than the Trend (see Criterion 1.4.1), and would result in less impervious surface area in the Region (see Criterion 1.4.2). The Preliminary Plan also encourages implementing sustainable development measures, such as green roofs, porous pavement, rain gardens, and biofiltration and infiltration facilities, to increase stormwater infiltration and reduce negative impacts on water quality.

- **Preserving Natural Resource Areas:** Preserving natural resource areas would help adapt to climate change in several ways, including providing storage and filtration of precipitation and runoff from large storm events. The Preliminary Plan would accommodate the Region's forecast growth with higher-density development than the Trend. This helps to preserve natural resource areas by requiring that less agricultural land and open space—which can function as habitat for native animal and plant species—be converted to urban uses. It also allows for more green space that can absorb pollution.

  Southeastern Wisconsin's natural resource areas would be impacted by expansion of the Region's arterial street and highway system, but the Preliminary Plan would result in slightly less natural resource areas experiencing transportation impacts than the Trend (see Criterion 1.3.2).

- **Reducing Greenhouse Gases and Other Air Pollutants:** Federal standards on fuel and vehicle fuel economy and improved vehicle emissions controls are expected to result in a significant decline in transportation-related emissions in the future, even with forecast increases in regional travel and traffic (see Criterion 1.4.4). The Preliminary Recommended Plan would further reduce, albeit somewhat modestly, greenhouse gas emissions and emissions of other air pollutants that have harmful health and environmental effects, specifically air pollutants such as nitrogen oxides (NO_x), volatile organic compounds (VOCs), and fine particulate matter ($PM_{2.5}$), which have harmful effects that would be enhanced in a warmer and wetter climate.

Walking and bicycling produce essentially no emissions, and public transit generally produces fewer emissions per trip than personal vehicles. The Preliminary Recommended Plan would result in more people living in walkable areas, provide a high-quality regional transit system, and provide a robust bicycle network, encouraging more travel by alternative travel modes (see Criteria 1.1.1, 1.2.1, 1.2.2, and 4.5.3).

- **Increasing Transportation System Resiliency to Flooding:** As noted in the alternatives evaluation, identifying streets, highways and other transportation facilities (e.g., bus stops and park-ride lots) that are susceptible to flooding, and identifying adjacent roadway facilities that could serve as alternative routes when flooding occurs, would help the Region's transportation system become more resilient with respect to the projected increase in frequency of large storm events. The Preliminary Plan proposes that the Commission staff initiate a study to identify transportation facilities in low-lying areas, such as within 1-percent-annual-probability (100-year recurrence interval) floodplains, and identify potential improvements that would help the regional transportation system become more resilient to flooding.

CRITERION 1.4.7: OVERALL ENVIRONMENTAL SUSTAINABILITY

Environmental sustainability involves managing natural resources to meet the needs of present and future generations. In evaluating environmental sustainability related to the condition of the Region's natural resources, including water resources and air quality, the Preliminary Plan clearly performs better than the Trend. The Preliminary Plan's more compact development pattern results in fewer impacts on the Region's natural resources.

- **Natural and Agricultural Resource Areas:** The Region's future development pattern affects encroachment of urban development and transportation infrastructure on resources such as primary and secondary environmental corridors, isolated natural resource areas, wetlands, natural areas, critical species habit sites, and agricultural land.

  Under both the Trend and Preliminary Recommended Plan, new urban development would avoid environmentally significant lands, particularly primary environmental corridors. To the extent possible, new urban development would also avoid secondary environmental corridors and isolated natural resource areas. In addition, to the extent possible, new development would attempt to preserve other wetlands, woodlands, natural areas, critical species habitat sites, and park and open space sites outside of environmental corridors.

  The Preliminary Plan performs better than the Trend with respect to its impact on agricultural land. Incremental households and employment would not be added to farmland preservation areas identified in county farmland preservation plans under the Trend or Preliminary Plan; however, significantly more agricultural land outside of farmland preservation areas would be converted to urban uses under the Trend (77 square miles) than the Preliminary Plan (58 square miles).

  In terms of potential impacts directly related to the transportation system, both the Trend and Preliminary Plan would have a minimal impact on natural and agricultural resources (see Criterion 1.3.2). The Trend would have a slightly greater impact because the arterial street and highway network would experience greater expansion to address congestion levels under the Trend than under the Preliminary Plan.

- **Water Resources:** Both surface water and groundwater are susceptible to varying degrees of degradation due to land development patterns. The Preliminary Plan performs slightly better than the Trend in the amount of estimated impervious surface because of its more compact development pattern (see Criterion 1.4.2). The Des Plaines River and Fox River watersheds would be close to exceeding 10 percent impervious surface under the Trend, which could lead to declines in the biological integrity of streams. Impervious surface levels within these watersheds are somewhat lower under the Preliminary Plan.

  The Preliminary Plan also performs better than the Trend in preserving areas with high groundwater recharge potential. Approximately 51 square miles (about 6 percent) of areas with high and very high groundwater recharge potential would be converted to urban uses under the Trend, compared to 33 square miles (about 4 percent) under the Preliminary Plan.

- **Air Quality:** The Preliminary Recommended Plan would have a less negative impact on the Region's air quality than the Trend. Walking and bicycling produce essentially no greenhouse gas (GHG) emissions or emissions of other air pollutants, and public transit generally produces fewer emissions per trip than personal vehicles. Encouraging the use of these modes of transportation results in less air pollution produced in the Region. The compact development pattern of the Preliminary Plan results in more people living in walkable areas than the Trend. The Preliminary Plan also has higher-quality bicycle facilities and transit service than the Trend. Although the differences in transportation air pollutant emissions between the Trend and Preliminary Plan are modest—generally about 1 to 2 percent lower under the Preliminary Plan than the Trend—transportation emissions under both are projected to significantly decline from current levels due to Federal fuel and vehicle fuel economy standards and improved vehicle emissions controls, even with forecast increases in regional travel and traffic.

  In addition, the Preliminary Recommended Plan's more compact development pattern reduces emissions by providing more multifamily housing, which is more energy efficient than single-family housing, and therefore produces fewer emissions. The Trend would add fewer multifamily housing units (25 percent of new housing units) than the Preliminary Plan (42 percent).

  The Preliminary Plan also encourages incorporating environmental performance features into new residential and commercial building design to further reduce energy use and resulting emissions of GHGs and other pollutants. A report issued by the World Green Building Council indicates that new high environmental performance buildings could reduce energy use by 25 to 50 percent compared to new conventional buildings.

- **Adapting to Climate Change:** The possible effects of climate change on Wisconsin and potential strategies for adapting to these effects are being investigated by the Wisconsin Initiative on Climate Change Impacts (WICCI).[39] The Preliminary Plan would better support these potential adaption strategies than the Trend (see Criterion 1.4.6).

- **Sustainable Transportation Infrastructure:** The Preliminary Recommended Plan proposes significantly improved and expanded transit infrastructure. Increasing the use of transit, and other modes of transportation that provide an alternative to driving, produces numerous benefits related to environmental sustainability. While projected increases in transit ridership and non-motorized travel may be relatively modest with respect to their effect on total regional travel (see Criterion 4.1.1), the expanded transit infrastructure would provide the capacity to carry even more of the Region's residents. By increasing the capacity of the transportation system to handle more travel by alternative modes to the automobile, the system would be capable of producing even greater advances to the environmental sustainability of the Region.

[39] *SEWRPC is collaborating with this effort.*

CRITERION 1.5.1: HOMES, BUSINESSES, LAND, AND PARKLAND ACQUIRED

The number of residential, business, and governmental/institutional buildings that potentially would be relocated, the number of historic buildings and sites that would be impacted, and the amount of right-of-way and parkland that potentially would be acquired as a result of transportation system improvements were estimated for the Trend and Preliminary Recommended Plan, as shown in Table H.9.

- **Public Transit:** Public transit under the Preliminary Plan would not be expected to require the expansion of arterial street and highway or railroad right-of-ways, even with the proposed significant increases in public transit service. As a result, the proposed public transit system would not be expected to require any building relocations or result in right-of-way or parkland impacts.

- **Arterial Streets and Highways:** The Trend would be expected to have a greater impact on buildings and parkland in the Region than the Preliminary Plan (note: no historic buildings or sites would be expected to be within the right-of-way of a new or widened arterial street or highway under the Trend or Preliminary Plan). The Trend would have more capacity expansion due to the need to address the increased traffic resulting from less compact development and a decline in transit under the Trend. There would be a modest decrease in the number of building relocations (about a 9.3 percent decrease), right-of-way acquisitions (a 6.6 percent decrease), and parkland acquisitions (a 2.3 percent decrease) under the Preliminary Plan compared to the Trend, due to the greater emphasis on infill development and redevelopment and improvement and expansion of transit service.

Table H.9
Homes, Businesses, Land, and Parkland Acquired

Category	Trend (2050)	Plan (2050)
Estimated Right-of-Way Impacts (Acres)	2,500.9	2,335.1
Relocations		
Residential	298	269
Businesses	67	63
Governmental/Institutional	1	0
Historic Buildings and Sites		
Buildings	0	0
Sites	0	0
Parkland (Acres)[a]		
State	41.3	40.1
County	41.9	41.8
Local	42.8	41.1

[a] *Existing State parkland in the Region totals about 67,400 acres, existing county parkland totals about 31,400 acres, and existing local parkland totals about 24,700 acres.*

Source: SEWRPC

CRITERION 1.6.1: CRASHES BY MODE

As discussed in the alternatives evaluation, many factors can contribute to the occurrence of vehicular crashes. It is not possible at the regional level—considering a 3,600-mile arterial street and highway network—to be able to consider all factors in projecting the number of crashes for each alternative. For the evaluation of the alternatives, the crashes for each VISION 2050 alternative were estimated by applying the estimated average existing crash rate to the future level of freeway and surface arterial vehicle-miles of travel under each VISION 2050 alternative. However, as requested by the Advisory Committee on Regional Transportation Planning, Commission staff made an attempt to estimate the number of future crashes based on the level of congestion on the year 2050 arterial street and highway system under the Trend and Preliminary Recommended Plan. As well, this Advisory Committee had requested that the Commission staff attempt to estimate the future number of crashes involving a fatality and serious injury, and these estimates are included here.

- **Vehicular Crashes:** As shown in Tables H.10 and H.11, the projected number of total crashes and crashes involving a fatality or serious injury under the Trend and the Preliminary Plan are very similar, varying by less than 3 percent. Taking into account the effect of the reduction in traffic congestion under the Trend and Preliminary Plan, the estimated number of total crashes and fatality/serious injury crashes would be slightly less than the crash estimates based strictly on the future level of vehicle-miles of travel—about 5 to 6 percent less for total crashes and about 1 to 2 percent less for fatality and serious injury crashes. It should be noted that these projected number of crashes under the Trend and Preliminary Plan are based on the existing roadway design and conditions of the Region's arterials, and does not account for the implementation of improved roadway design and safety measures, which would occur with roadway resurfacing and reconstruction. In addition, these projected number of crashes do not account for any future improvements in vehicle safety design and changes in safety laws and enforcement practices, which would particularly have an effect on the number of fatal and serious injury crashes.

- **Transit Crashes:** The data for the number of crashes that involve transit vehicles—buses and trains—are not readily available and because transit crashes represent a small proportion of the total number of crashes on arterial streets and highways, it is difficult to accurately estimate the total number crashes involving transit vehicles under the Trend and Preliminary Recommended Plan. It would be expected that the number of crashes involving transit vehicles would increase under the Preliminary Plan as transit service levels increases; however, crash rates would likely decrease particularly since fixed-guideway transit vehicles will be separated from traffic under the Preliminary Plan. Additionally, the increased use of transit under the Preliminary Plan would be expected to provide improvements in overall travel safety, as travel by public transit tends to be safer than travel by personal vehicle, and increased transit use results in fewer vehicles on the roadways (resulting in less opportunity for crashes).

Table H.10
Average Annual Total Crashes on Arterial Streets and Highways

Based on Vehicle-Miles of Travel			
Plan	**Surface Arterials**	**Freeways**	**Total**
Existing - 2009 to 2013[a]	25,200	4,300	29,500
Trend - 2050	30,900	5,700	36,600
Plan - 2050	30,300	5,700	36,000

Based on Congestion Levels			
Plan	**Surface Arterials**	**Freeways**	**Total**
Existing - 2009 to 2013[a]	25,200	4,300	29,500
Trend - 2050	28,900	5,600	34,500
Plan - 2050	28,500	5,700	34,200

[a] *The number and rate of existing crashes were estimated based on year 2009 through 2013 crash data available from the University of Wisconsin's Traffic Operations and Safety Laboratory (TOPS Lab). Due to the random nature of crashes, the frequency of crashes from year to year can fluctuate and it is possible that the number of crashes in one year may be higher or lower than a typical year. Thus, to avoid annual anomalies that can skew the analysis, the annual average of the number of crashes over the five-year period was used.*

Source: SEWRPC

Table H.11
Average Annual Crashes Involving Fatalities/ Serious Injuries on Arterial Streets and Highways

Based on Vehicle-Miles of Travel			
Plan	**Surface Arterials**	**Freeways**	**Total**
Existing - 2009 to 2013[a]	730	90	820
Trend - 2050	890	120	1,010
Plan - 2050	875	120	995

Based on Congestion Levels			
Plan	**Surface Arterials**	**Freeways**	**Total**
Existing - 2009 to 2013[a]	730	90	820
Trend - 2050	885	115	1,000
Plan - 2050	865	115	980

[a] *The number and rate of existing crashes were estimated based on year 2009 through 2013 crash data available from the University of Wisconsin's Traffic Operations and Safety Laboratory (TOPS Lab). Due to the random nature of crashes, the frequency of crashes from year to year can fluctuate and it is possible that the number of crashes in one year may be higher or lower than a typical year. Thus, to avoid annual anomalies that can skew the analysis, the annual average of the number of crashes over the five-year period was used.*

Source: SEWRPC

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CRITERION 2.1.1: LEVEL OF ACCESSIBILITY TO JOBS AND ACTIVITY CENTERS FOR MINORITY POPULATIONS AND LOW-INCOME POPULATIONS BY MODE

As discussed in the alternatives evaluation, significant disparities exist between whites and minorities in the Region, particularly in the Milwaukee metropolitan area, with respect to educational attainment levels, per capita income, and poverty.[40] These disparities are more pronounced than in almost all other metro areas. Reducing these disparities requires significant action on many fronts. With respect to the transportation element of VISION 2050, the relevant actions primarily revolve around ensuring that the benefits and impacts of investments in the Region's transportation system are shared fairly and equitably and serve to reduce existing disparities between white and minority populations. One of the primary ways to measure this is to compare how well the Preliminary Recommended Plan improves the ability for existing minority populations and low-income[41] populations to reach jobs and other destinations. In addition, added since the alternatives evaluation, the criterion looks at how well the Preliminary Plan would improve the ability for two other existing transit-dependent populations—families with incomes less than twice the poverty level[42] and people with disabilities—to reach jobs and other destinations using transit. The transit and highway elements of the Preliminary Plan are designed in part to increase the level of accessibility by transit and automobile to jobs and other activity centers—such as retail centers, major parks, public technical colleges/universities, health care facilities, grocery stores, the Milwaukee Regional Medical Center (MRMC), and General Mitchell International Airport (GMIA)—for all residents of the Region, including for minority populations and low-income populations. The following sections describe the results of analyses to determine whether the existing minority populations and low-income populations would be expected to have improved accessibility to jobs and other activities by automobile and transit under the Preliminary Plan. In addition, a comparison is provided of the increases in transit accessibility to increases in highway accessibility for existing minority populations and low-income populations.

- **Improved Driving Accessibility to Jobs and Other Activities:** In Southeastern Wisconsin, the dominant mode of travel for all population groups is the automobile. For example, in Milwaukee County, minority populations use the automobile for 81 to 88 percent of their travel to and from work (depending on race or ethnicity), compared to 88 percent of the white population. Similarly, in Milwaukee County about 70 percent of travel by low-income populations to and from work is by automobile, compared to 89 percent for populations of higher income. Thus, improvements in accessibility by automobile to jobs and other activities would likely benefit a significant proportion of minority populations and low-income populations. The Region would generally be able to modestly improve accessibility via automobile with implementation of the highway improvements—new roadways and highway widenings—under both the Trend and Preliminary Plan.

[40] *These disparities are documented in SEWRPC Memorandum No. 221,* A Comparison of the Milwaukee Metropolitan Area to Its Peers.

[41] *For purposes of this criterion, a low-income person is defined as a person residing in a household with an income level at or below the poverty level (about $22,113 for a family of four in 2010).*

[42] *Studies have shown that families require an income of at least about twice the poverty level ($44,226 for a family of four in 2010) to be able to adequately meet their basic needs in food, clothing, shelter, and so forth.*

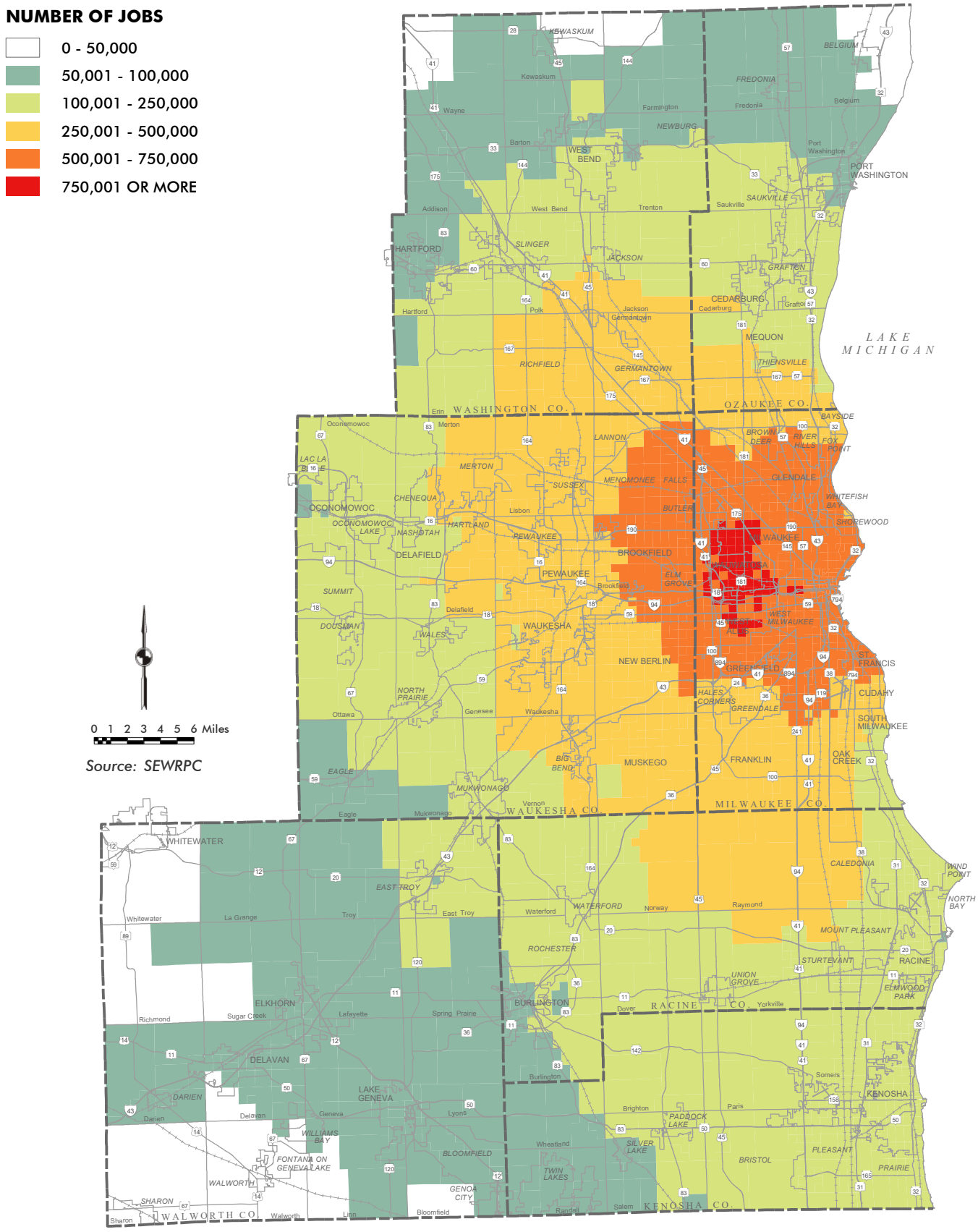
Should these improvements not be implemented, access to jobs and other activities using automobiles would be expected to decline for the residents of the Region, particularly residents in Milwaukee County, and as well for minority populations and low-income populations.

The number of jobs accessible in 30 minutes or fewer under existing conditions and for the Trend and Preliminary Plan is shown on Maps H.11 through H.13. These maps were compared to locations of existing minority populations and low-income populations, as shown on Maps H.14 and H.15. The highway improvements under the Trend and Preliminary Plan would modestly improve access to jobs for areas of existing concentrations of minority populations and low-income populations. Specifically, the highway improvements under the Trend and Preliminary Plan are projected to increase access to at least 500,000 jobs within 30 minutes by automobile for the existing minority population from about 70 percent of the minority population to about 73 percent, as shown in Table H.12. The Preliminary Plan would provide access to slightly more minorities (428,300 people) than the Trend (427,100 people). Similarly, the existing families in poverty with access to at least 500,000 jobs within 30 minutes by automobile would be expected to increase from 65 percent to about 69 percent. The Preliminary Plan would provide such access to slightly more families in poverty (36,100 families) than the Trend (36,000 families). The percentage of the existing minority population and families in poverty with access to at least 500,000 jobs within 30 minutes would be about 4 percent greater under both the Trend and Preliminary Plan than under existing conditions, compared to about 8 percent greater for the non-minority population and families not in poverty.

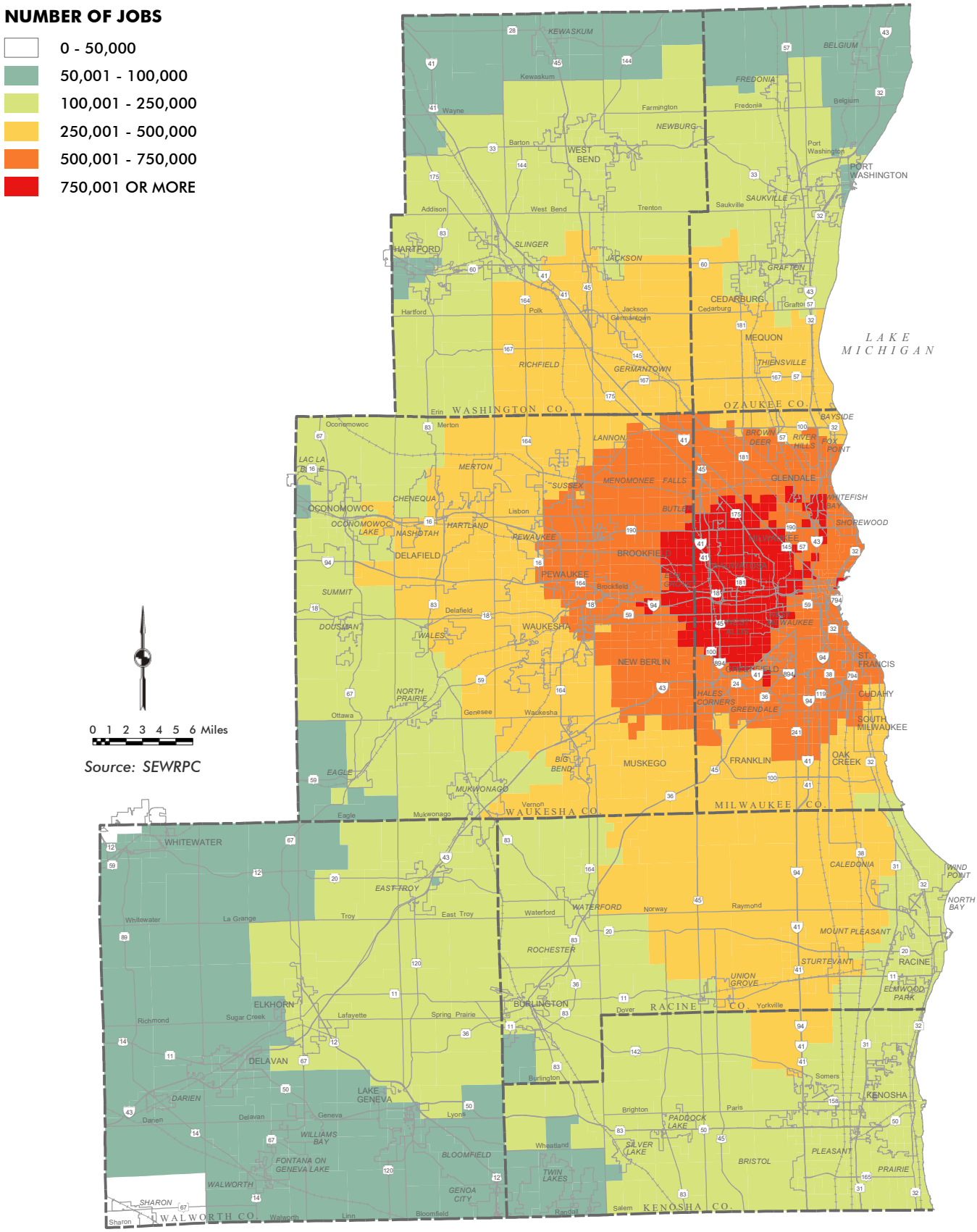
The estimated lower-wage jobs that would be accessible by automobile within 30 minutes under existing conditions, the Trend, and the Preliminary Plan are shown on Maps H.16 through H.18. Lower-wage jobs are estimated to represent about 32 percent of total jobs. Comparing these maps to areas of existing concentrations of minority populations and low-income populations (as shown on Maps H.14 and H.15) indicates that access to lower-wage jobs for these populations would improve with implementation of the highway improvements under the Trend and Preliminary Plan. As shown in Table H.13, it is projected that the existing minority population with access to at least 200,000 lower-wage jobs by automobile would increase from about 70 percent to about 73 percent under the Trend and Preliminary Plan, with the Preliminary Plan providing access to slightly more minorities (428,600 people) than the Trend (427,700 people). Similarly, the existing families in poverty with access to at least 200,000 lower-wage jobs by automobile would increase from about 64 percent to about 69 percent under the Trend and Preliminary Plan, with the Preliminary Plan providing access to slightly more families in poverty (36,100 families) than the Trend (36,000 families).

Criterion 4.2.1 (Travel Time to Important Places by Mode) includes an evaluation of access by automobile to various activity centers, including retail centers, major parks, public technical colleges/universities, health care facilities, grocery stores, MRMC, and GMIA. Based on this analysis, most of the Region's residents have reasonable access to these activity centers by automobile. As shown in Table H.14, nearly all (about 90 to 100 percent) of the existing minority population and families in poverty would have reasonable access by automobile

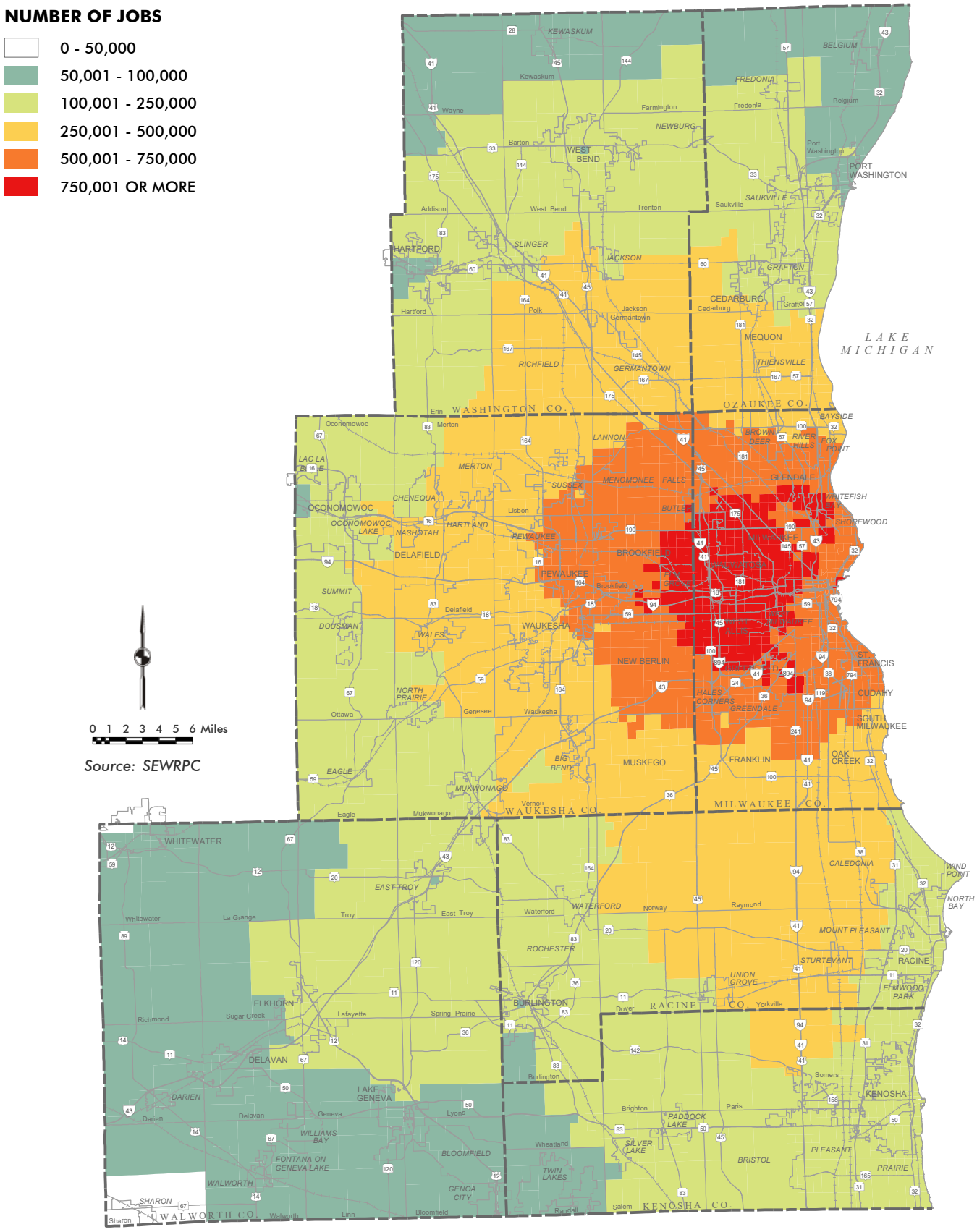
Map H.11
Jobs Accessible Within 30 Minutes by Automobile: Existing



Map H.12
Jobs Accessible Within 30 Minutes by Automobile: Trend



Map H.13
Jobs Accessible Within 30 Minutes by Automobile: Preliminary Recommended Plan

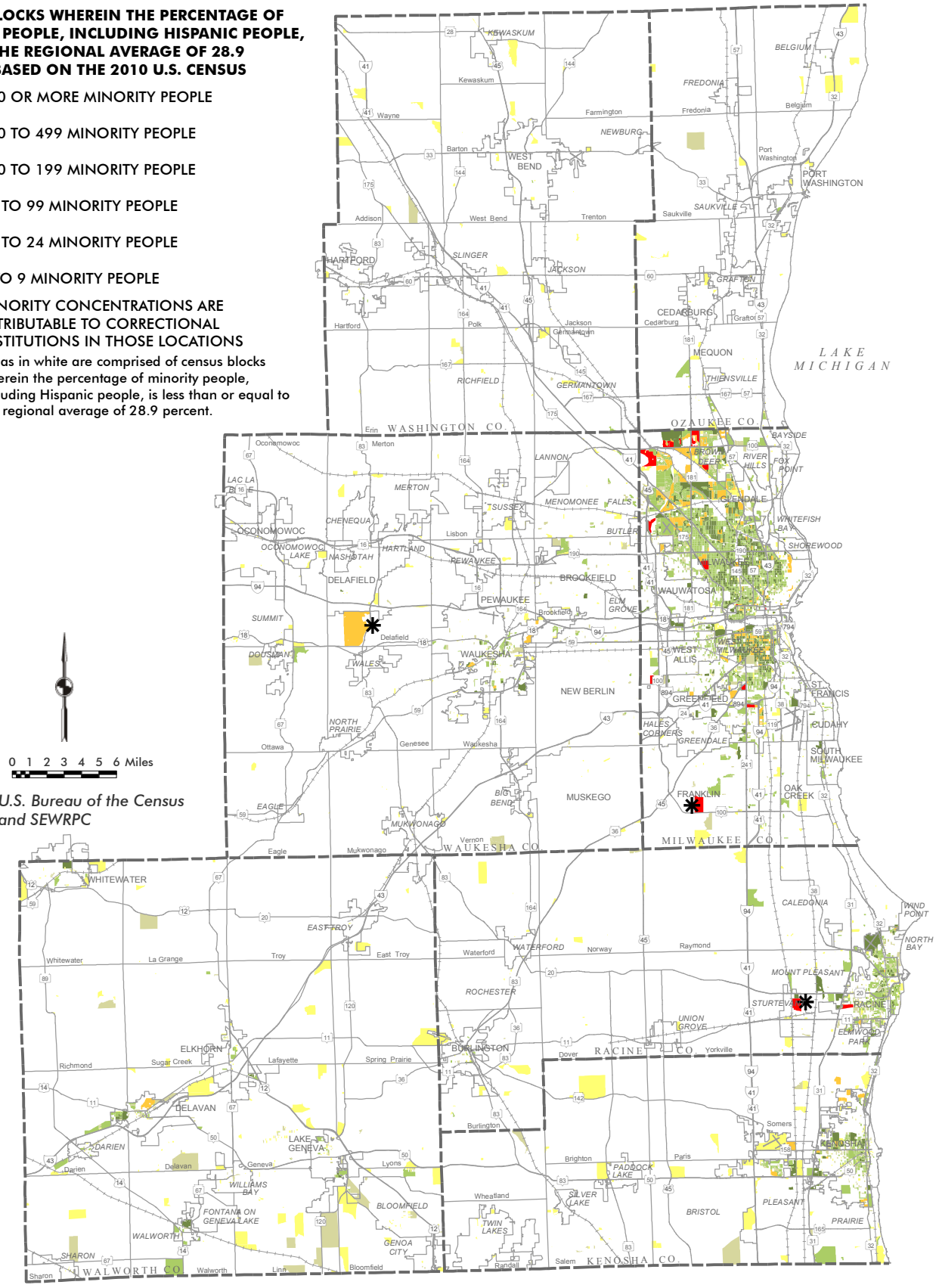


Map H.14
Concentrations of Total Minority Population in the Region: 2010

CENSUS BLOCKS WHEREIN THE PERCENTAGE OF MINORITY PEOPLE, INCLUDING HISPANIC PEOPLE, EXCEEDS THE REGIONAL AVERAGE OF 28.9 PERCENT BASED ON THE 2010 U.S. CENSUS

- 500 OR MORE MINORITY PEOPLE
- 200 TO 499 MINORITY PEOPLE
- 100 TO 199 MINORITY PEOPLE
- 25 TO 99 MINORITY PEOPLE
- 10 TO 24 MINORITY PEOPLE
- 1 TO 9 MINORITY PEOPLE
- * MINORITY CONCENTRATIONS ARE ATTRIBUTABLE TO CORRECTIONAL INSTITUTIONS IN THOSE LOCATIONS

Note: Areas in white are comprised of census blocks wherein the percentage of minority people, including Hispanic people, is less than or equal to the regional average of 28.9 percent.



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

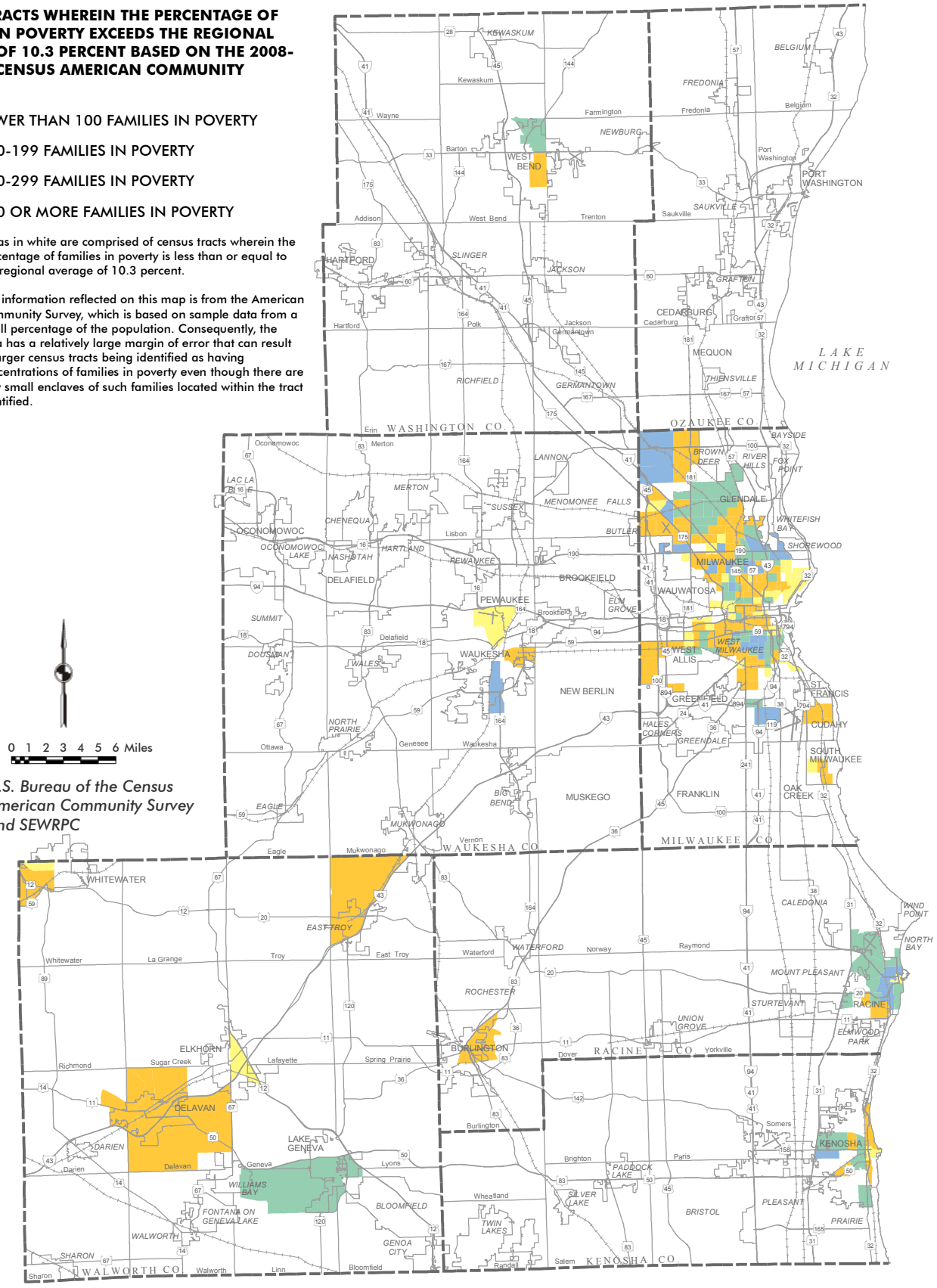
Map H.15
Concentrations of Families in Poverty in the Region: 2008-2012

CENSUS TRACTS WHEREIN THE PERCENTAGE OF FAMILIES IN POVERTY EXCEEDS THE REGIONAL AVERAGE OF 10.3 PERCENT BASED ON THE 2008-2012 U.S. CENSUS AMERICAN COMMUNITY SURVEY

- FEWER THAN 100 FAMILIES IN POVERTY
- 100-199 FAMILIES IN POVERTY
- 200-299 FAMILIES IN POVERTY
- 300 OR MORE FAMILIES IN POVERTY

Notes: Areas in white are comprised of census tracts wherein the percentage of families in poverty is less than or equal to the regional average of 10.3 percent.

The information reflected on this map is from the American Community Survey, which is based on sample data from a small percentage of the population. Consequently, the data has a relatively large margin of error that can result in larger census tracts being identified as having concentrations of families in poverty even though there are only small enclaves of such families located within the tract identified.



Source: U.S. Bureau of the Census American Community Survey and SEWRPC

Table H.12
Access to Jobs Within 30 Minutes by Automobile

Minority Population[a]

Plan	500,000 or More Jobs		250,000 or More Jobs		100,000 or More Jobs		Total Minority Population
	People	Percent	People	Percent	People	Percent	
Existing - 2010	407,700	69.9	467,500	80.2	562,900	96.6	582,900
Trend - 2050	427,100	73.3	475,400	81.6	570,300	97.8	582,900
Plan - 2050	428,300	73.5	476,400	81.7	569,600	97.7	582,900

Families in Poverty[a]

Plan	500,000 or More Jobs		250,000 or More Jobs		100,000 or More Jobs		Total Families in Poverty
	Families	Percent	Families	Percent	Families	Percent	
Existing - 2010	33,800	64.6	38,800	74.2	49,000	93.7	52,300
Trend - 2050	36,000	68.8	39,600	75.7	50,100	95.8	52,300
Plan - 2050	36,100	69.0	39,600	75.7	50,000	95.6	52,300

[a] *Minority population is based on the 2010 U.S. Census and families in poverty are based on the 2008-2012 American Community Survey.*

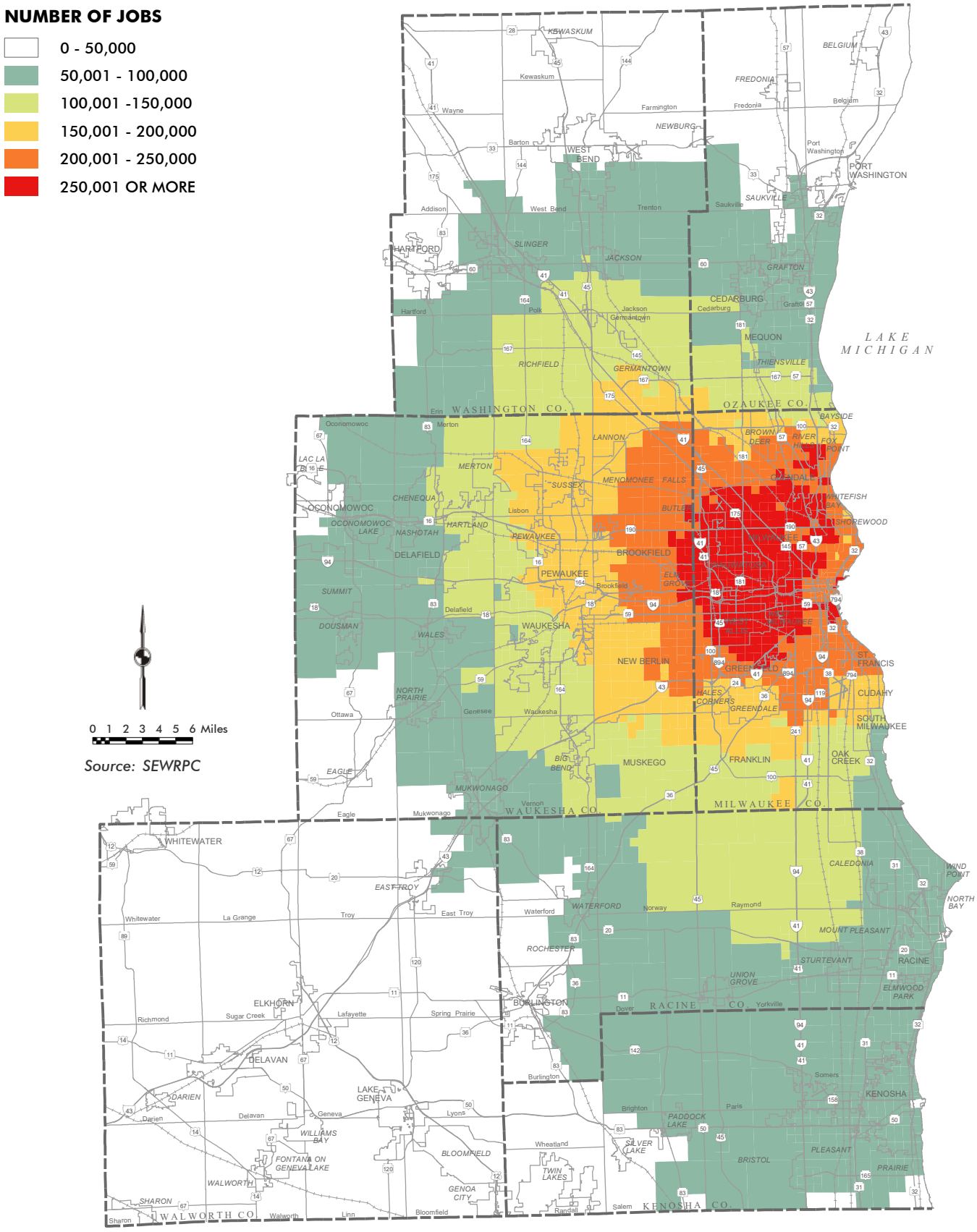
Source: U.S. Bureau of the Census, U.S. Census and American Community Survey; and SEWRPC

to most of these activity centers under both the Trend and Preliminary Plan, with the Preliminary Plan providing minimally more access than the Trend.

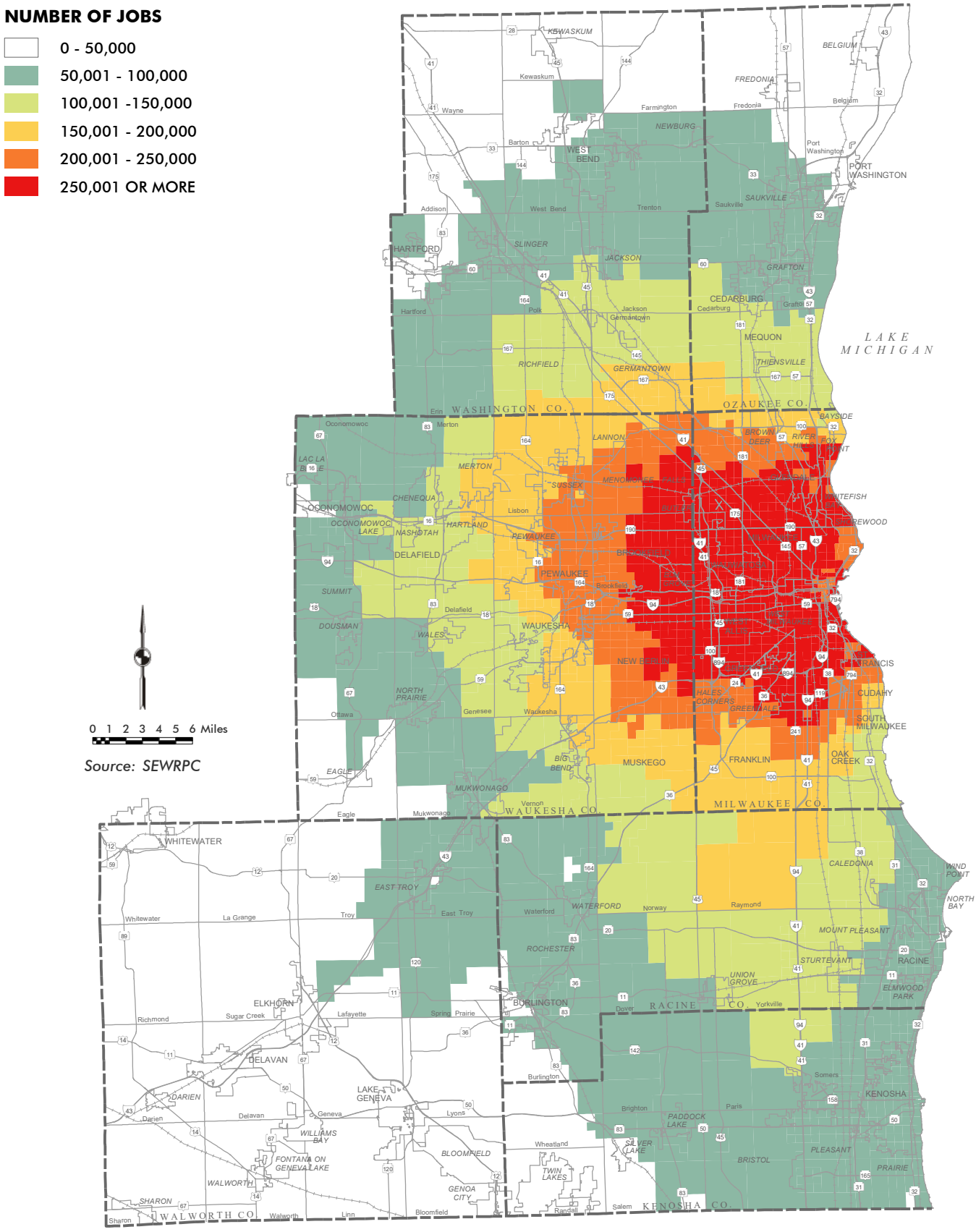
- **Improved Transit Accessibility to Jobs and Other Activities:** As discussed in the alternatives evaluation, although most minority residents use the automobile for their travel, they utilize public transit at a higher proportion relative to other modes of travel than the white populations in the Region. In Milwaukee County, about 4 to 13 percent of the minority population (depending on race or ethnicity) uses public transit to travel to and from work compared to 3 percent of the white population. Also in Milwaukee County, about 15 percent of the low-income population (residing in a family with income below the poverty level) uses public transit to travel to and from work compared to 5 percent of the population with higher wages. Another transit-dependent population group is people with disabilities, with about 10 percent of this population in Milwaukee County utilizing transit to and from work. Comparing the accessibility provided to employment and major activity centers under the Preliminary Plan to those of the Trend and existing conditions indicates that the Preliminary Plan significantly improves accessibility provided by transit, and many of the investments in transit are targeted in areas that would result in the minority populations, lower-income populations, and people with disabilities in the Region benefiting from these improvements.

  Maps H.19 through H.21 show those areas of the Region with the highest job densities that would be directly served by transit under existing conditions, the Trend, and the Preliminary Plan. As shown on these maps, the transit service areas under the Trend and Preliminary Plan would principally serve the areas of the Region with the highest density of jobs, with the transit service improvement and expansion under the Preliminary Plan providing access to more jobs than the Trend. Specifically, the Preliminary Plan would increase the number of jobs that would be served by transit from 734,000 jobs under current conditions to 1,010,000 jobs.

Map H.16
Lower-Wage Jobs Accessible Within 30 Minutes by Automobile: Existing



Map H.17
Lower-Wage Jobs Accessible Within 30 Minutes by Automobile: Trend



Map H.18
Lower-Wage Jobs Accessible Within 30 Minutes by Automobile: Preliminary Recommended Plan

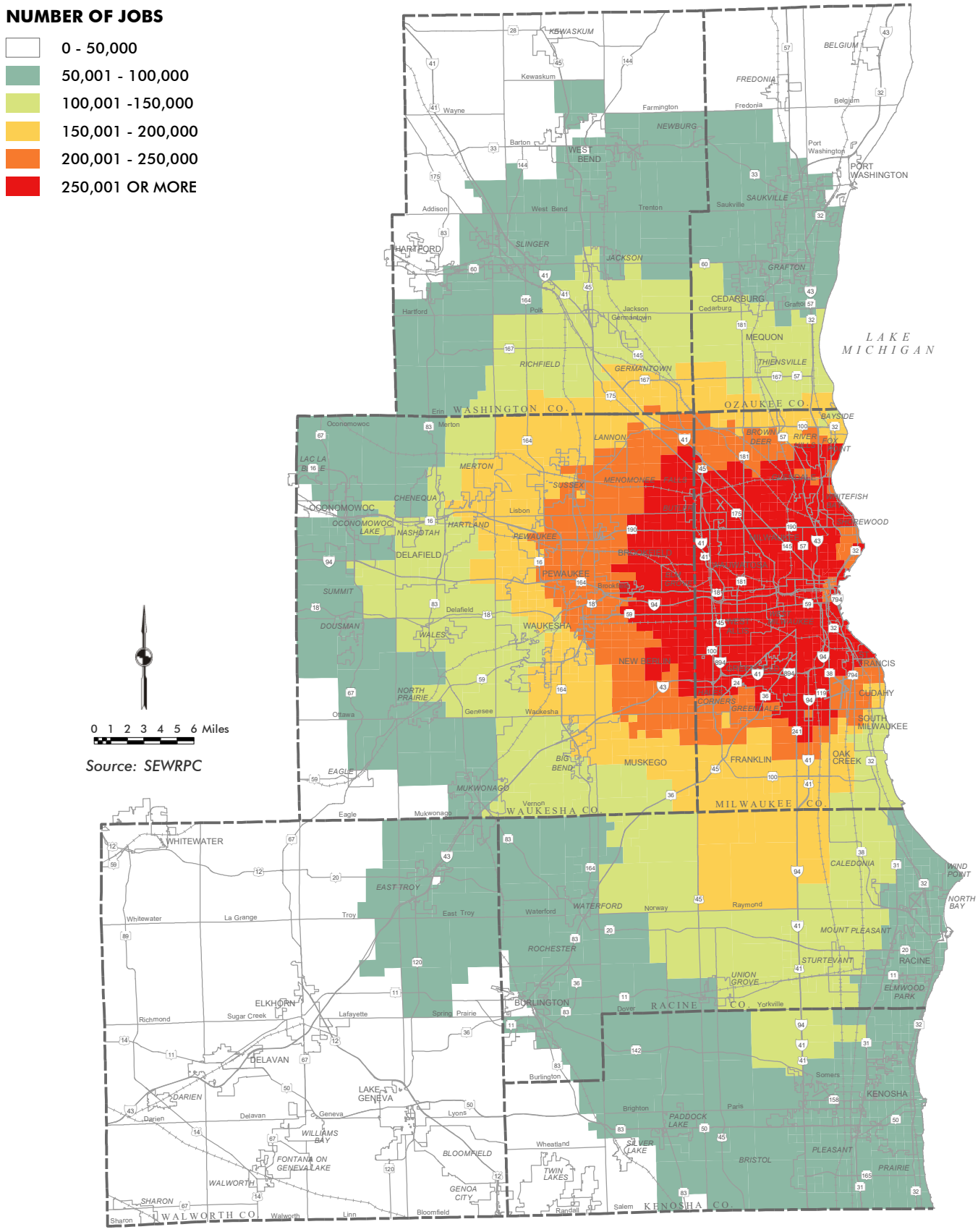


Table H.13
Access to Lower-Wage Jobs Within 30 Minutes by Automobile

Minority Population[a]

Plan	200,000 or More Jobs		100,000 or More Jobs		50,000 or More Jobs		Total Minority Population
	People	Percent	People	Percent	People	Percent	
Existing - 2010	407,400	69.9	468,700	80.4	558,300	95.8	582,900
Trend - 2050	427,700	73.4	475,800	81.6	563,500	96.7	582,900
Plan - 2050	428,600	73.5	476,300	81.7	563,300	96.6	582,900

Families in Poverty[a]

Plan	200,000 or More Jobs		100,000 or More Jobs		50,000 or More Jobs		Total Families in Poverty
	Families	Percent	Families	Percent	Families	Percent	
Existing - 2010	33,700	64.4	38,900	74.4	48,000	91.8	52,300
Trend - 2050	36,000	68.8	39,600	75.7	49,200	94.1	52,300
Plan - 2050	36,100	69.0	39,600	75.7	49,200	94.1	52,300

[a] *Minority population is based on the 2010 U.S. Census and families in poverty are based on the 2008-2012 American Community Survey.*

Source: U.S. Bureau of the Census, U.S. Census and American Community Survey; and SEWRPC

Table H.14
Reasonable Access to Activity Centers by Automobile[a]

Minority Population[b]

Activity Center	Existing (2010)		Trend (2050)		Plan (2050)		Total Minority Population
	Population	Percent	Population	Percent	Population	Percent	
Retail Centers	565,400	97.0	565,200	97.0	565,300	97.0	582,900
Major Parks	582,900	100.0	582,900	100.0	582,900	100.0	582,900
Public Technical Colleges and Universities	582,800	99.9	582,700	99.9	582,700	99.9	582,900
Health Care Facilities	581,800	99.8	582,900	100.0	582,900	100.0	582,900
Grocery Stores	582,900	100.0	582,900	100.0	582,900	100.0	582,900
General Mitchell International Airport	571,500	98.0	571,900	98.1	571,800	98.1	582,900
Milwaukee Regional Medical Center	531,000	91.1	537,900	92.3	538,100	92.3	582,900

Families in Poverty[b]

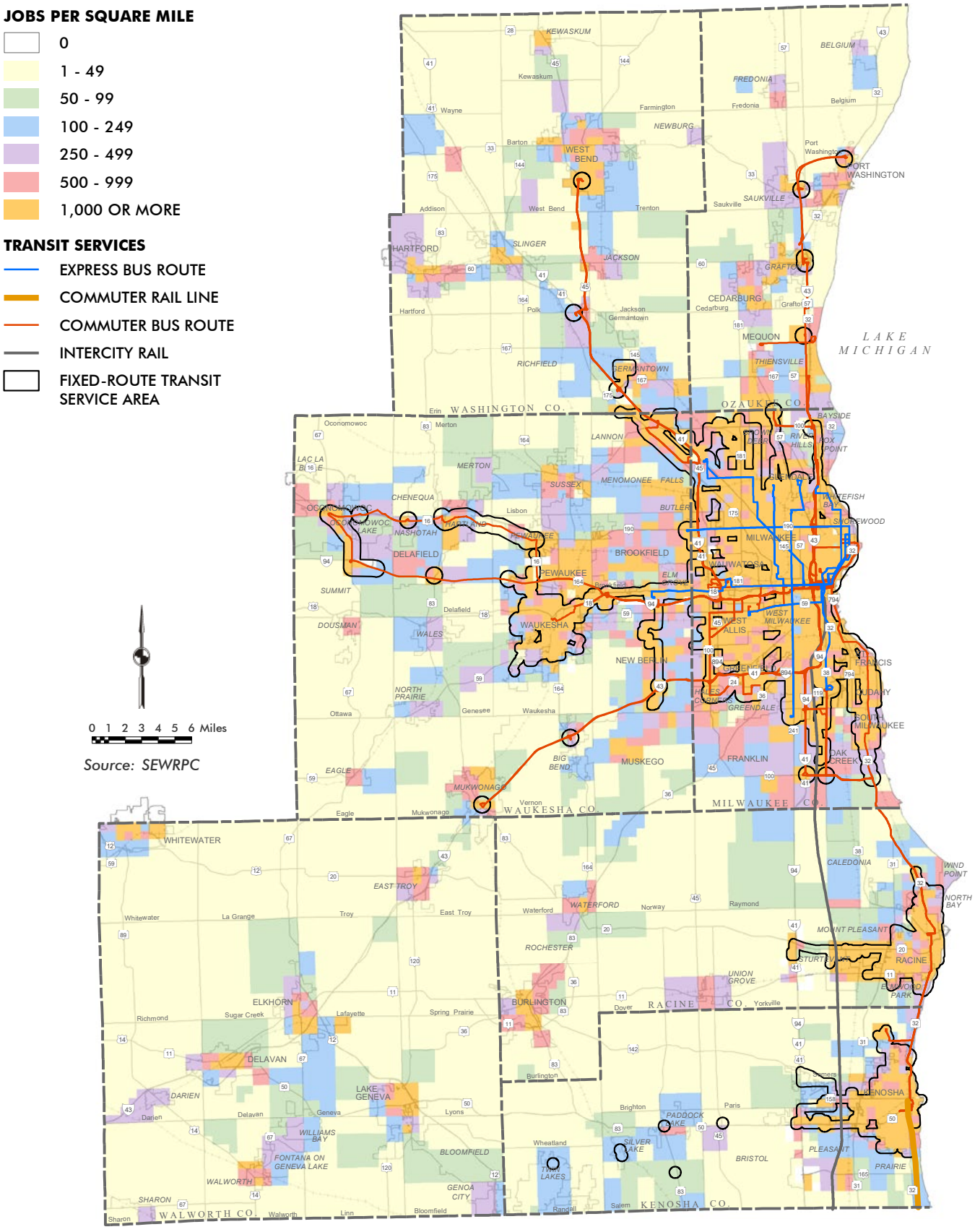
Activity Center	Existing (2010)		Trend (2050)		Plan (2050)		Total Families in Poverty
	Families	Percent	Families	Percent	Families	Percent	
Retail Centers	49,300	94.3	49,200	94.1	49,200	94.1	52,300
Major Parks	52,300	100.0	52,300	100.0	52,300	100.0	52,300
Public Technical Colleges and Universities	52,300	100.0	52,300	100.0	52,300	100.0	52,300
Health Care Facilities	52,100	99.6	52,300	100.0	52,300	100.0	52,300
Grocery Stores	52,300	100.0	52,300	100.0	52,300	100.0	52,300
General Mitchell International Airport	50,100	95.8	50,200	96.0	50,200	96.0	52,300
Milwaukee Regional Medical Center	46,300	88.5	47,200	90.2	47,200	90.2	52,300

[a] *Reasonable access is defined as the ability to travel by automobile within 60 minutes to General Mitchell International Airport and the Milwaukee Regional Medical Center and within 30 minutes to all the other activity centers.*

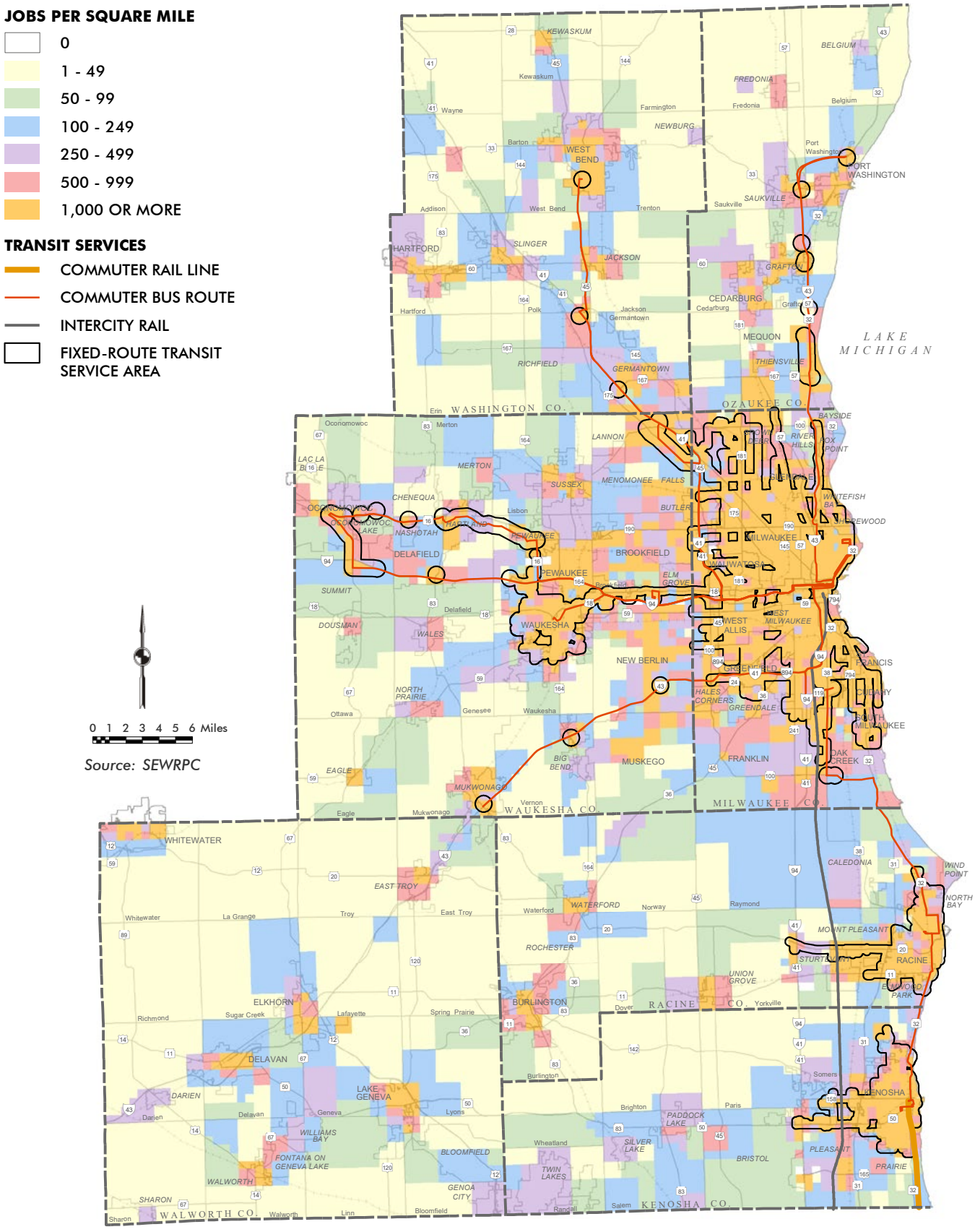
[b] *Minority population is based on the 2010 U.S. Census and families in poverty are based on the 2008-2012 American Community Survey.*

Source: U.S. Bureau of the Census, U.S. Census and American Community Survey; and SEWRPC

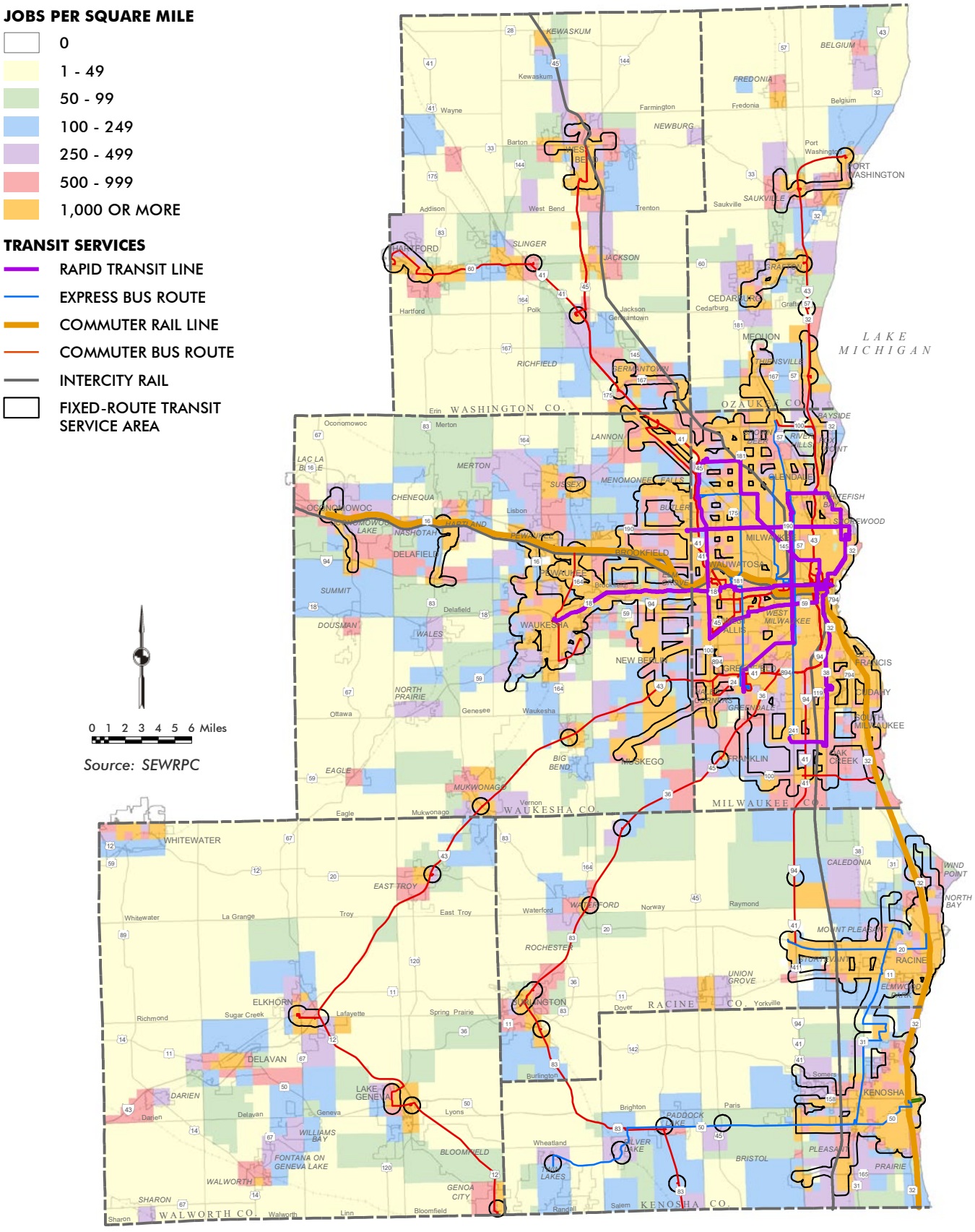
Map H.19
Comparison of Public Transit Element to Job Density: Existing



Map H.20
Comparison of Public Transit Element to Job Density: Trend



Map H.21
Comparison of Public Transit Element to Job Density: Preliminary Recommended Plan



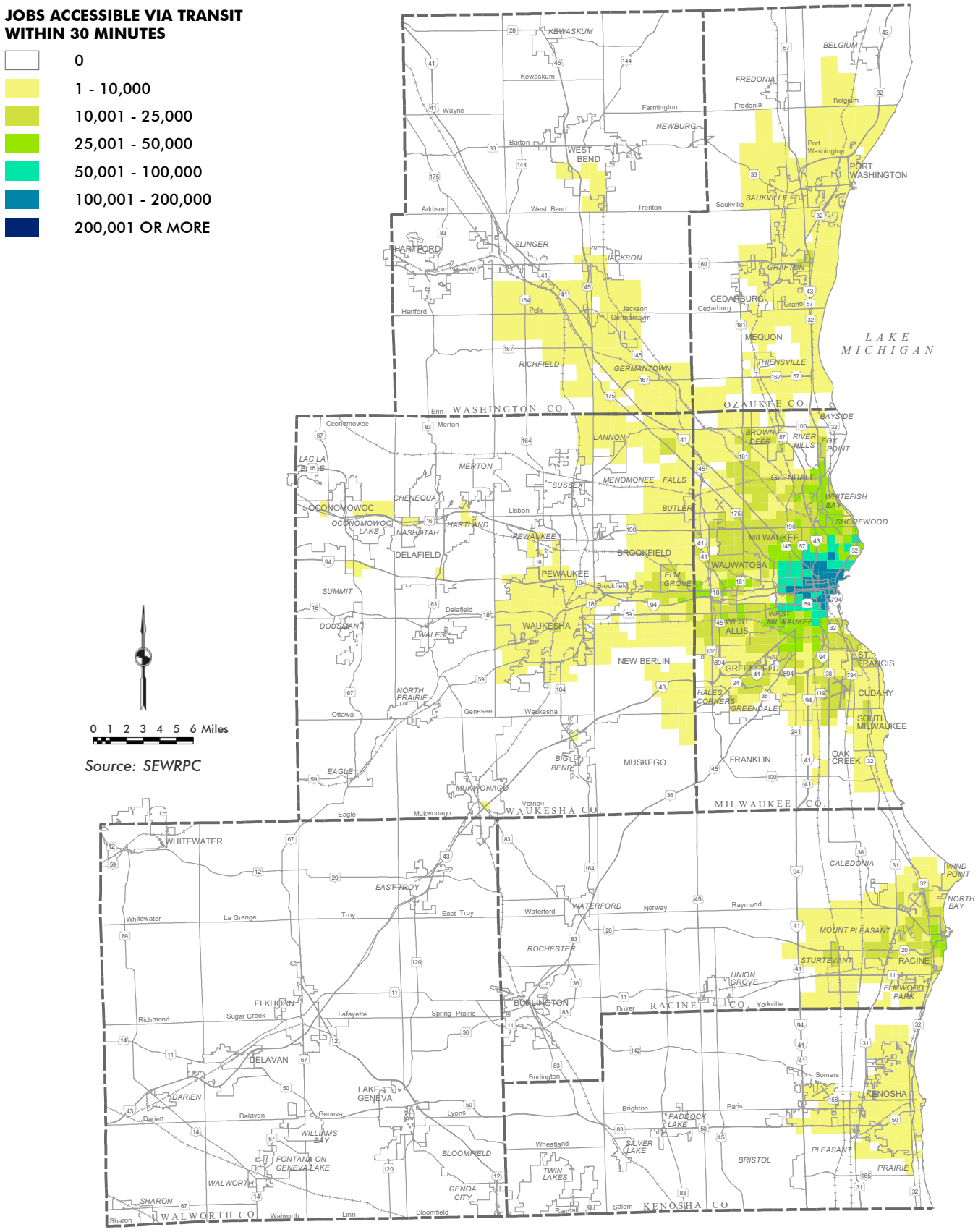
Maps H.22 through H.24 show the number of jobs that could be accessible within 30 minutes by transit under existing conditions, the Trend, and the Preliminary Plan. Comparing these maps to areas of existing concentrations of minority populations (Map H.14), lower-income populations (Map H.15 for families in poverty and Map H.25 for families with incomes less than twice the poverty level), and people with disabilities (Map H.26) indicates that access to jobs for these populations would improve significantly due to the improvement and expansion of transit service under the Preliminary Plan. As shown in Table H.15, the Preliminary Plan's proposed transit improvement and expansion (including rapid transit service) would provide access to at least 100,000 jobs within 30 minutes by transit to a significantly higher proportion of the existing minority population (16.9 percent), families in poverty (17.0 percent), families with incomes less than twice the poverty level (13.3 percent), and people with disabilities (11.8 percent) than the Trend (2.0 percent, 1.9 percent, 1.2 percent, and 1.2 percent, respectively).

As shown in Table H.16, the existing minority population with access to at least 100,000 jobs by transit would increase by about 14 percent under the Preliminary Plan, compared to about 8 percent for the non-minority population. The existing families in poverty with access to at least 100,000 jobs by transit would increase by about 14 percent and families with incomes less than twice the poverty level would increase by about 11 percent, compared to about 7 percent for families not in poverty and incomes higher than twice the poverty level. With respect to people with disabilities, access to 100,000 jobs by transit for both people with disabilities and without disabilities would increase by about 10 percent.

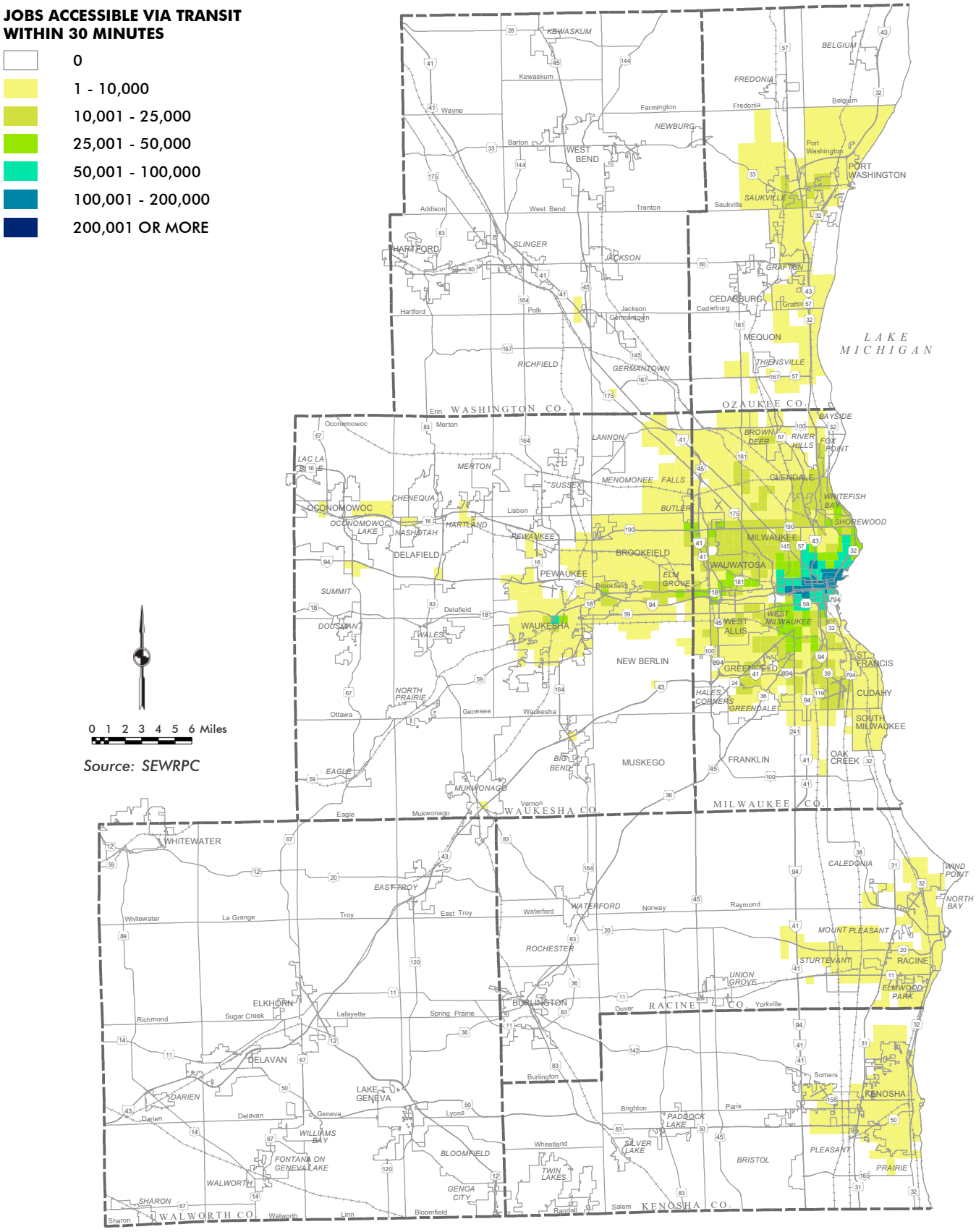
Maps H.27 through H.29 show the number of lower-wage jobs that would be accessible in 30 minutes under existing conditions, the Trend, and the Preliminary Plan. Lower-wage jobs are estimated to represent about 32 percent of total jobs in the Region. Comparing these maps to areas of existing concentrations of minority populations (Map H.14), lower-income populations (Map H.15 for families in poverty and Map H.25 for families with incomes less than twice the poverty level), and people with disabilities (Map H.26) shows that access to lower-wage jobs for these populations would improve significantly due to the improvement and expansion of transit service under the Preliminary Plan. As shown in Table H.17, it is projected that about 28 percent of the existing minority population would have access to at least 25,000 lower-wage jobs within 30 minutes by transit under the Preliminary Plan, compared to about 5 percent under the Trend. Similarly, it is projected that about 28 percent of the families in poverty and about 23 percent of families with incomes less than twice the poverty level would have access to at least 25,000 lower-wage jobs within 30 minutes by transit under the Preliminary Plan, compared to about 5 and 4 percent, respectively, under the Trend. With respect to people with disabilities, it is projected that about 20 percent of this population would have access to at least 25,000 lower-wage jobs within 30 minutes, compared to 3 percent under the Trend.

As described for Criterion 4.2.1 (Travel Time to Important Places by Mode), the substantial increases in transit service under the Preliminary Plan would provide access for more people to existing retail centers, major parks, public technical colleges/universities,

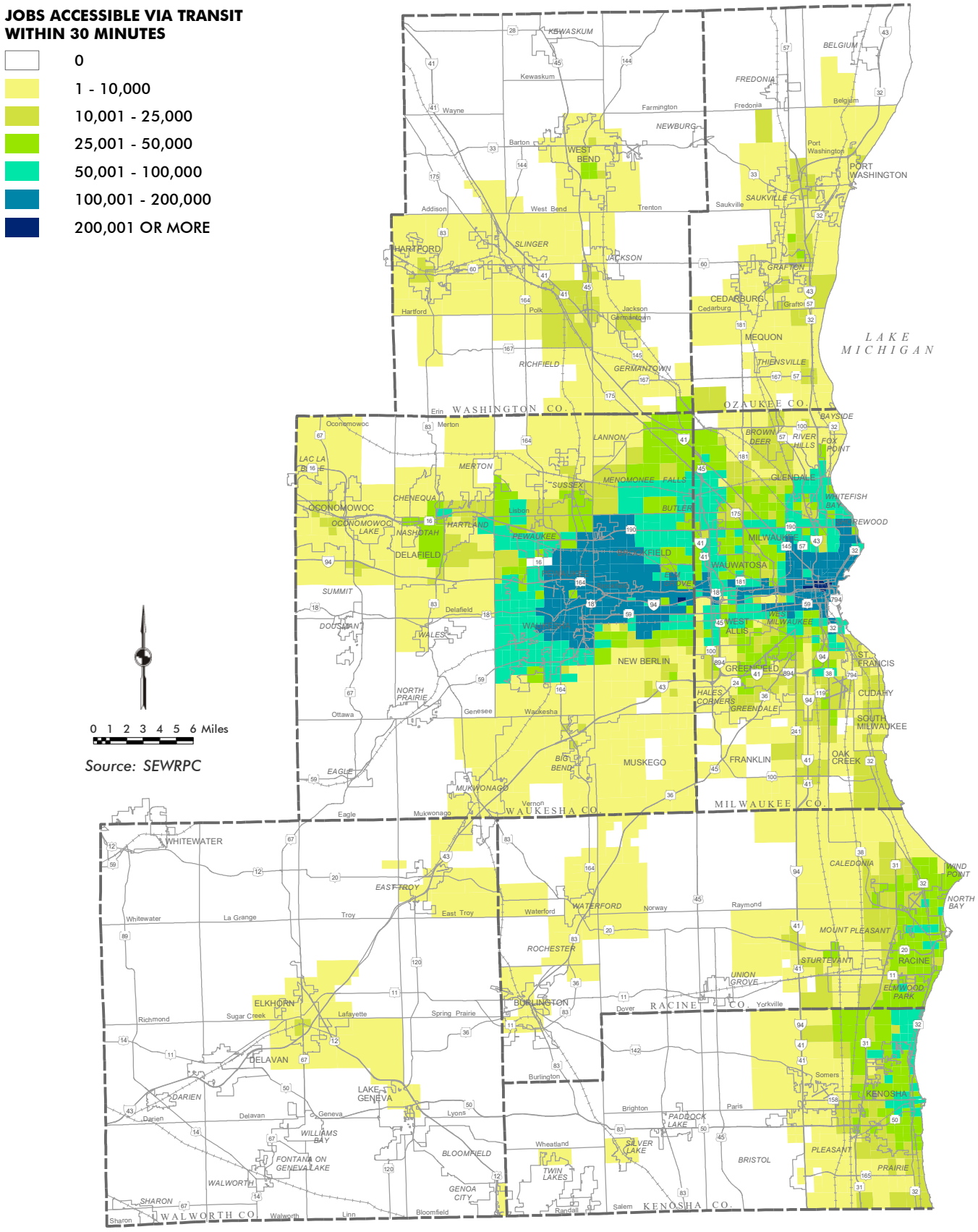
Map H.22
Jobs Accessible Within 30 Minutes by Transit: Existing



Map H.23
Jobs Accessible Within 30 Minutes by Transit: Trend



Map H.24
Jobs Accessible Within 30 Minutes by Transit: Preliminary Recommended Plan



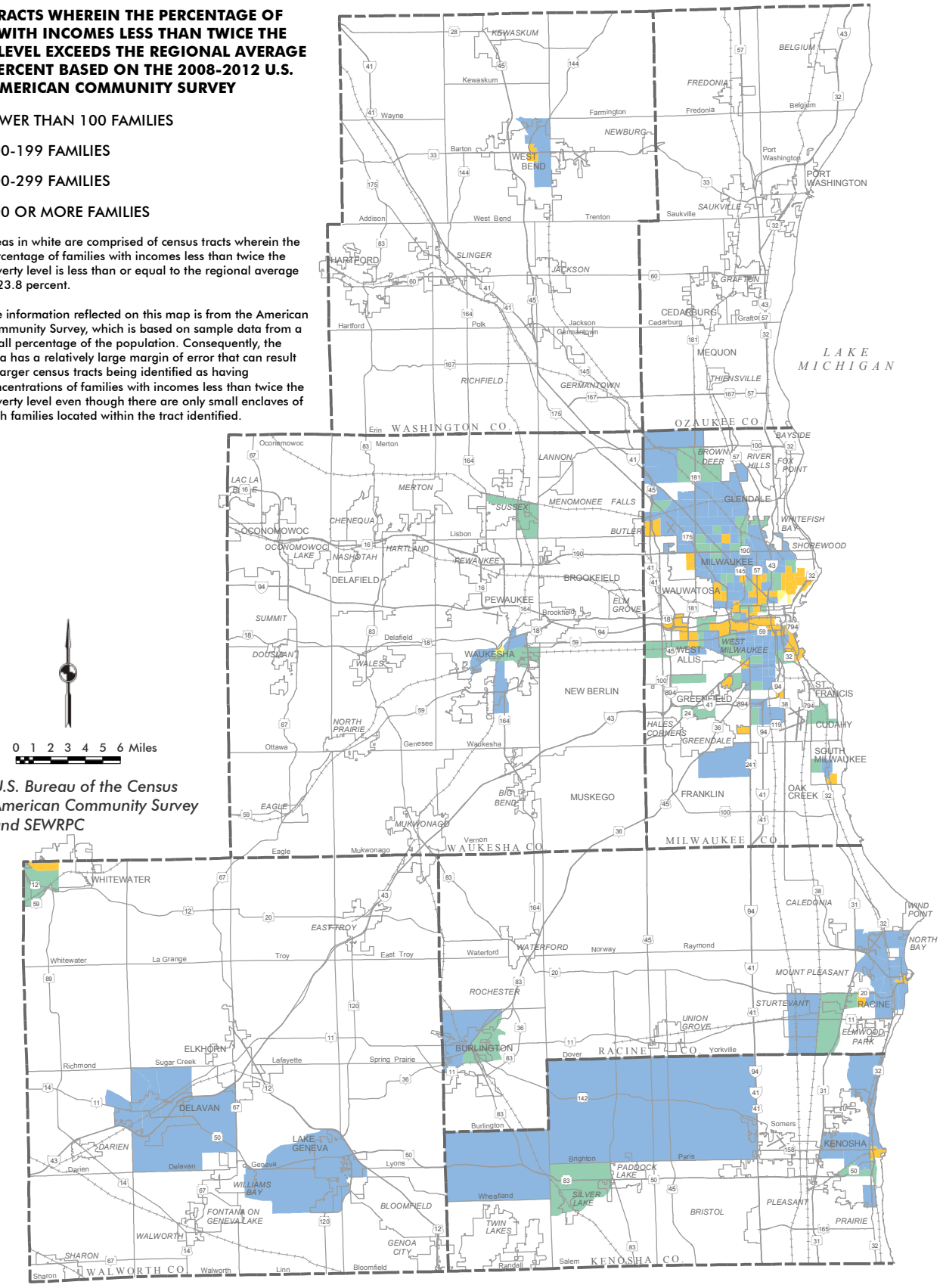
Map H.25
Concentrations of Families with Incomes Less Than Twice the Poverty Level: 2008-2012

CENSUS TRACTS WHEREIN THE PERCENTAGE OF FAMILIES WITH INCOMES LESS THAN TWICE THE POVERTY LEVEL EXCEEDS THE REGIONAL AVERAGE OF 23.8 PERCENT BASED ON THE 2008-2012 U.S. CENSUS AMERICAN COMMUNITY SURVEY

- FEWER THAN 100 FAMILIES
- 100-199 FAMILIES
- 200-299 FAMILIES
- 300 OR MORE FAMILIES

Notes: Areas in white are comprised of census tracts wherein the percentage of families with incomes less than twice the poverty level is less than or equal to the regional average of 23.8 percent.

The information reflected on this map is from the American Community Survey, which is based on sample data from a small percentage of the population. Consequently, the data has a relatively large margin of error that can result in larger census tracts being identified as having concentrations of families with incomes less than twice the poverty level even though there are only small enclaves of such families located within the tract identified.



Source: U.S. Bureau of the Census American Community Survey and SEWRPC

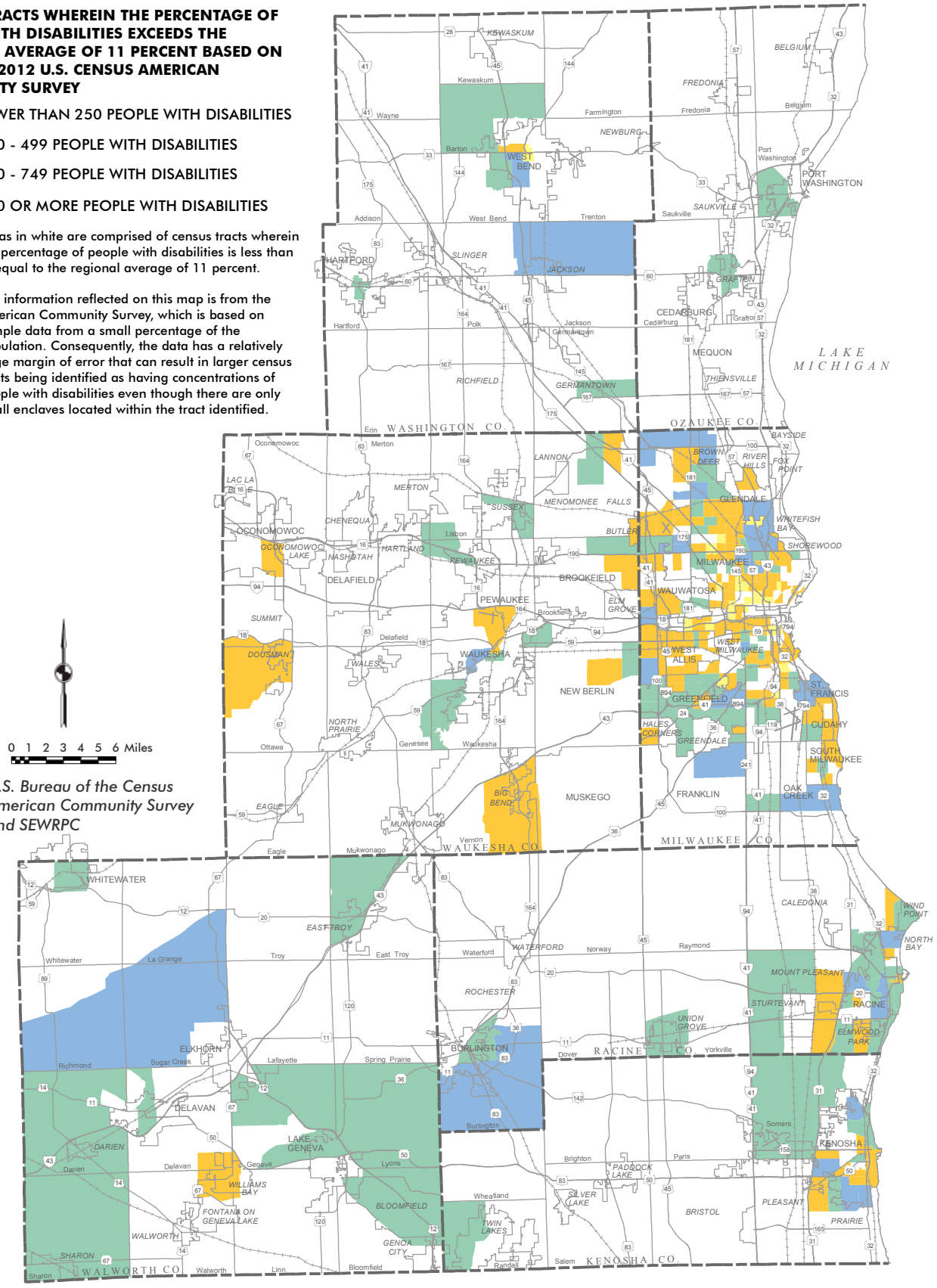
Map H.26
Concentrations of People with Disabilities: 2008-2012

CENSUS TRACTS WHEREIN THE PERCENTAGE OF PEOPLE WITH DISABILITIES EXCEEDS THE REGIONAL AVERAGE OF 11 PERCENT BASED ON THE 2008-2012 U.S. CENSUS AMERICAN COMMUNITY SURVEY

- FEWER THAN 250 PEOPLE WITH DISABILITIES
- 250 - 499 PEOPLE WITH DISABILITIES
- 500 - 749 PEOPLE WITH DISABILITIES
- 750 OR MORE PEOPLE WITH DISABILITIES

Notes: Areas in white are comprised of census tracts wherein the percentage of people with disabilities is less than or equal to the regional average of 11 percent.

The information reflected on this map is from the American Community Survey, which is based on sample data from a small percentage of the population. Consequently, the data has a relatively large margin of error that can result in larger census tracts being identified as having concentrations of people with disabilities even though there are only small enclaves located within the tract identified.



Source: U.S. Bureau of the Census American Community Survey and SEWRPC

Table H.15
Access to Jobs Within 30 Minutes by Transit

Minority Population[a]

Plan	100,000 or More Jobs		50,000 or More Jobs		10,000 or More Jobs		Total Minority Population
	People	Percent	People	Percent	People	Percent	
Existing - 2015	18,900	3.2	87,300	15.0	342,200	58.7	582,900
Trend - 2050	11,700	2.0	47,600	8.2	255,600	43.8	582,900
Plan - 2050	98,700	16.9	240,400	41.2	492,500	84.5	582,900

Families in Poverty[a]

Plan	100,000 or More Jobs		50,000 or More Jobs		10,000 or More Jobs		Total Families in Poverty
	Families	Percent	Families	Percent	Families	Percent	
Existing - 2015	1,700	3.3	7,900	15.1	29,300	56.0	52,300
Trend - 2050	1,000	1.9	4,200	8.0	22,000	42.1	52,300
Plan - 2050	8,900	17.0	21,300	40.7	42,000	80.3	52,300

Families with Incomes Less Than Twice the Poverty Level[a]

Plan	100,000 or More Jobs		50,000 or More Jobs		10,000 or More Jobs		Total Families with Incomes Less Than Twice the Poverty Level
	Families	Percent	Families	Percent	Families	Percent	
Existing - 2015	2,600	2.1	12,900	10.7	58,100	48.0	121,000
Trend - 2050	1,400	1.2	6,800	5.6	43,200	35.7	121,000
Plan - 2050	16,100	13.3	41,400	34.2	89,300	73.8	121,000

People with Disabilities[a]

Plan	100,000 or More Jobs		50,000 or More Jobs		10,000 or More Jobs		Total Population with Disabilities
	People	Percent	People	Percent	People	Percent	
Existing - 2015	4,300	1.9	15,600	7.1	80,700	36.6	220,600
Trend - 2050	2,700	1.2	10,300	4.7	59,600	27.0	220,600
Plan - 2050	26,000	11.8	63,900	29.0	144,800	65.6	220,600

[a] *Minority population is based on the 2010 U.S. Census and families in poverty, families with incomes less than twice the poverty level, and people with disabilities are based on the 2008-2012 American Community Survey.*

Source: U.S. Bureau of the Census, U.S. Census and American Community Survey; and SEWRPC

Table H.16
Additional Percent Having Access to 100,000 or More Jobs by Transit Under the Preliminary Recommended Plan

Minorities[a]

Plan	Minority Population	Non-Minority Population
Plan - 2050	14	8

Families in Poverty and with Incomes Less Than Twice the Poverty Level[a]

Plan	Families in Poverty	Families Not in Poverty	Families with Incomes Less Than Twice the Poverty Level	Families with Incomes More Than Twice the Poverty Level
Plan - 2050	14	7	11	7

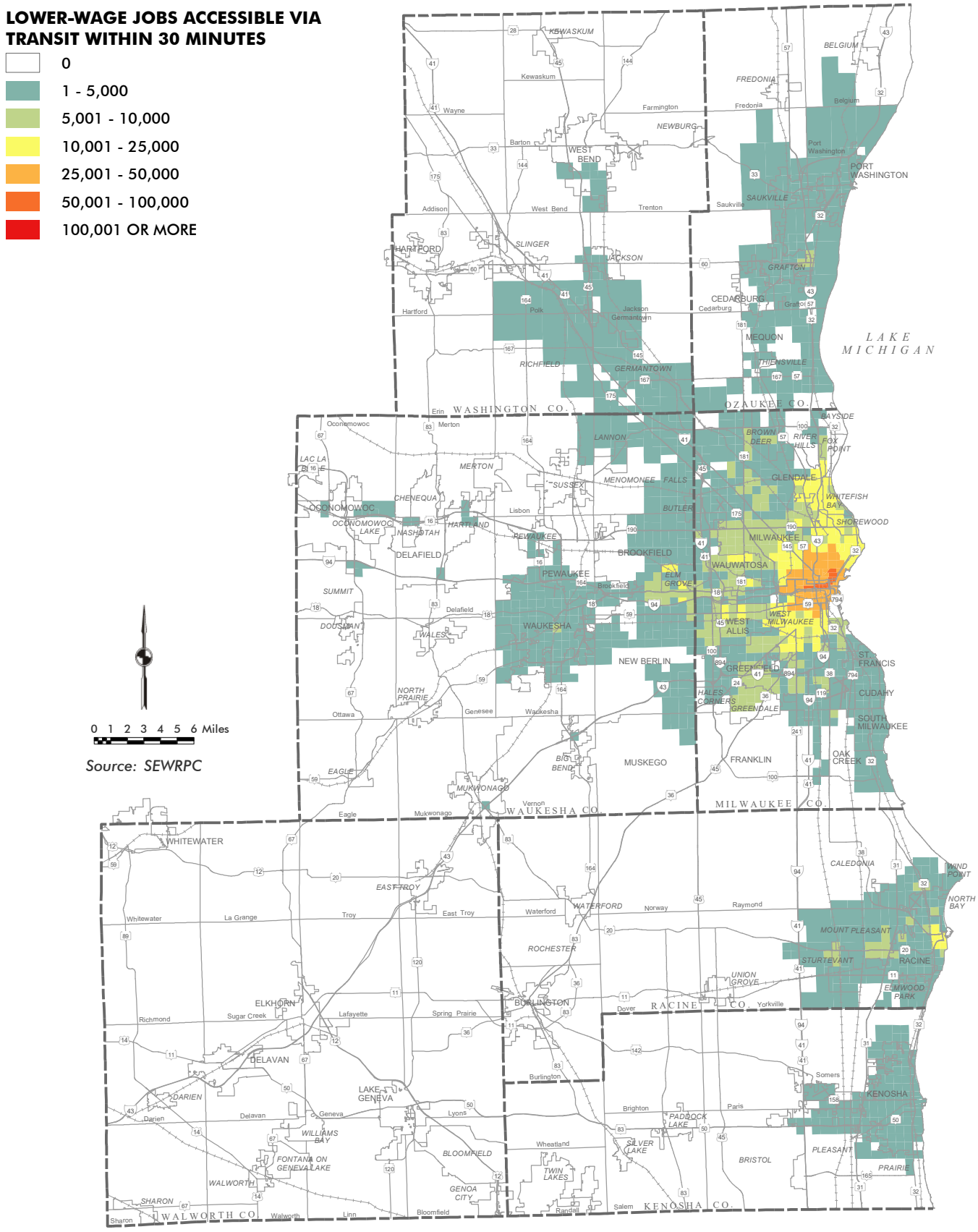
People with Disabilities[a]

Plan	People with Disabilities	People Without Disabilities
Plan - 2050	10	10

[a] *Minority population and non-minority population are based on the 2010 U.S. Census and families in poverty, families not in poverty, families with incomes less than twice the poverty level, families with incomes more than twice the poverty level, people with disabilities, and people without disabilities are based on the 2008-2012 American Community Survey.*

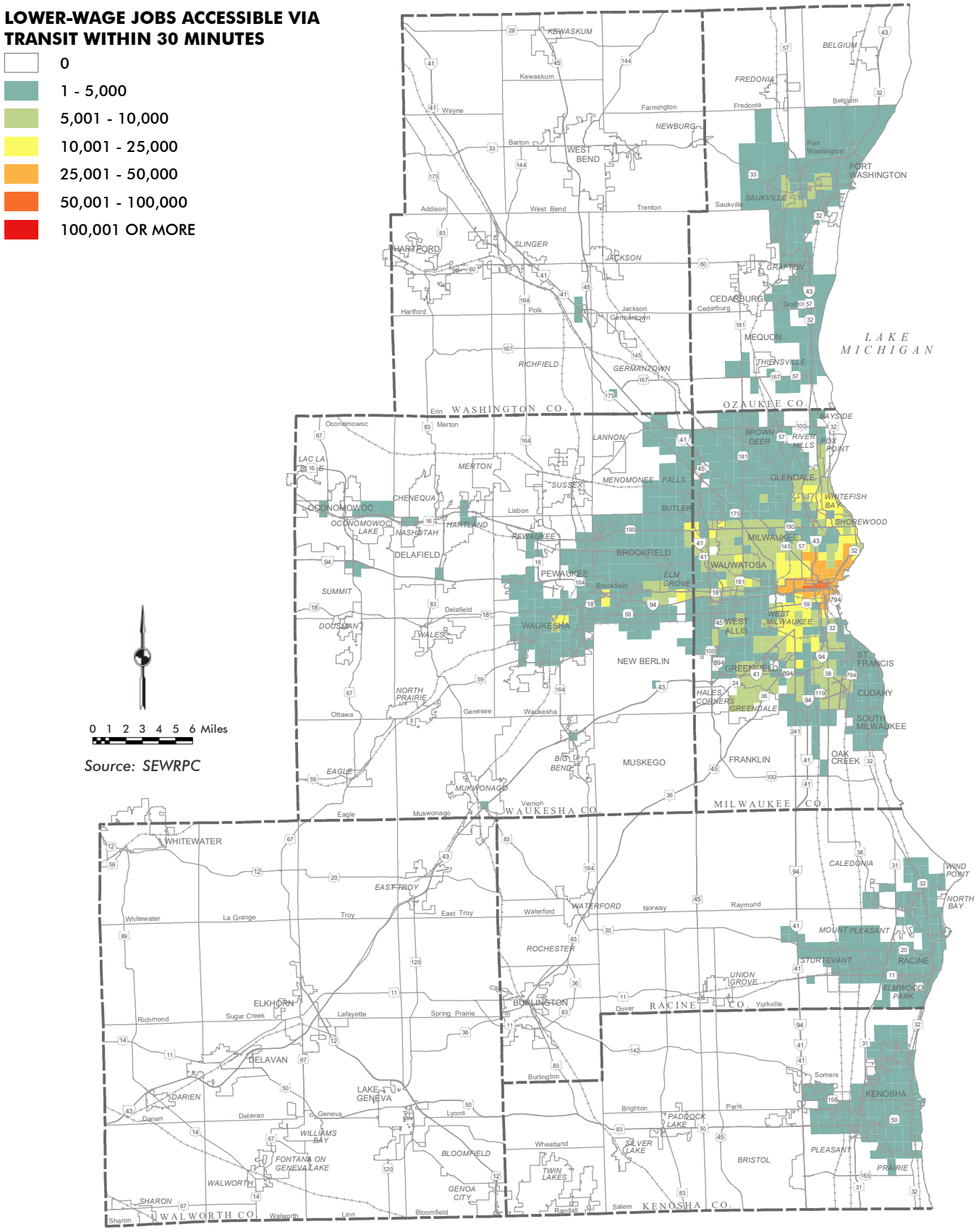
Source: U.S. Bureau of the Census, U.S. Census and American Community Survey; and SEWRPC

Map H.27
Lower-Wage Jobs Accessible Within 30 Minutes by Transit: Existing



Source: SEWRPC

Map H.28
Lower-Wage Jobs Accessible Within 30 Minutes by Transit: Trend



Map H.29
Lower-Wage Jobs Accessible Within 30 Minutes by Transit: Preliminary Recommended Plan

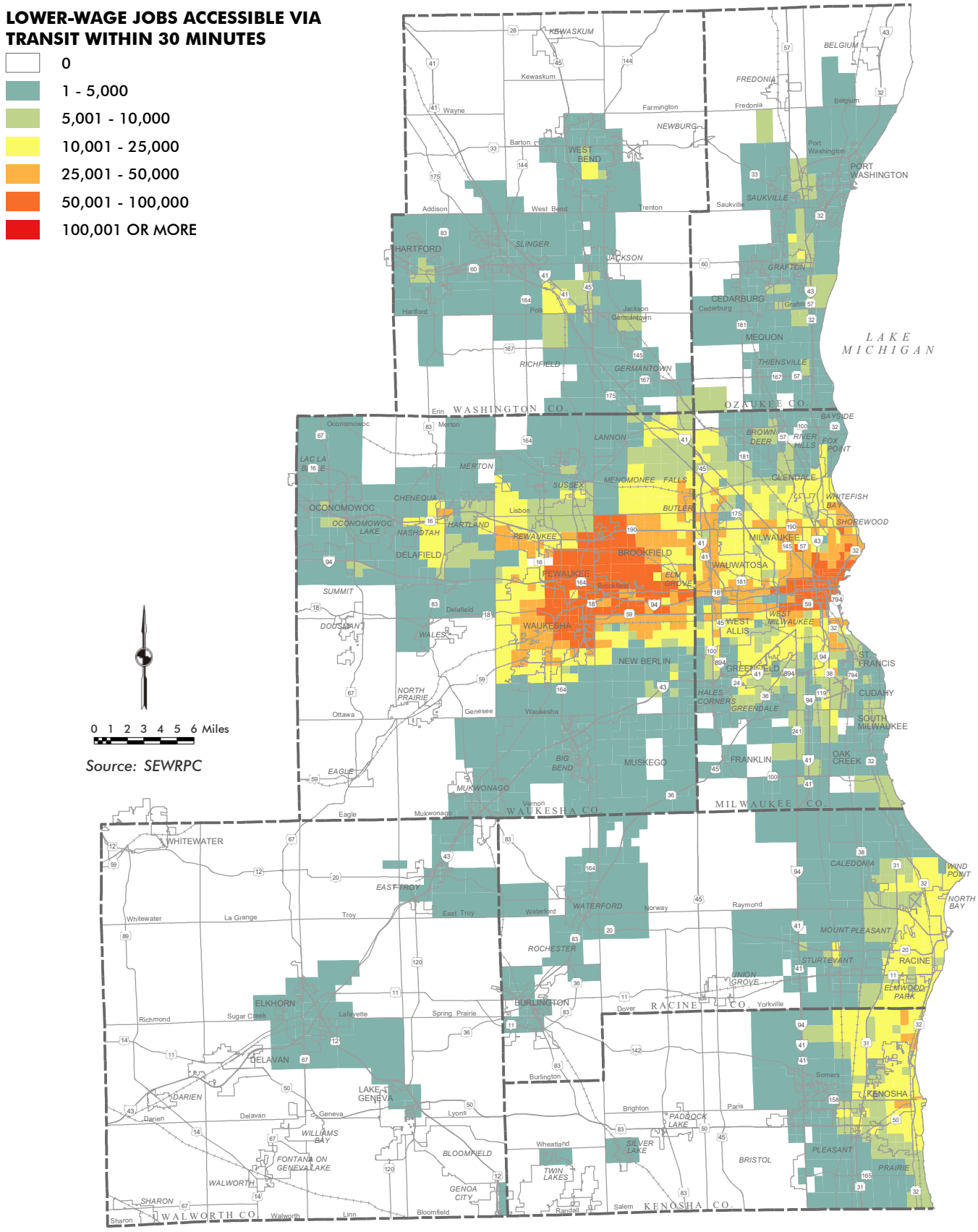


Table H.17
Access to Lower-Wage Jobs Within 30 Minutes by Transit

Minority Population[a]

Plan	25,000 or More Jobs		10,000 or More Jobs		5,000 or More Jobs		Total Minority Population
	People	Percent	People	Percent	People	Percent	
Existing - 2015	66,800	11.5	177,200	30.4	304,200	52.2	582,900
Trend - 2050	28,700	4.9	106,900	18.3	226,800	38.9	582,900
Plan - 2050	165,600	28.4	387,100	66.4	473,500	81.2	582,900

Families in Poverty[a]

Plan	25,000 or More Jobs		10,000 or More Jobs		5,000 or More Jobs		Total Families in Poverty
	Families	Percent	Families	Percent	Families	Percent	
Existing - 2015	6,000	11.5	16,200	31.0	26,000	49.7	52,300
Trend - 2050	2,600	5.0	9,700	18.5	19,800	37.9	52,300
Plan - 2050	14,800	28.3	33,300	63.7	40,700	77.8	52,300

Families with Incomes Less than Twice the Poverty Level[a]

Plan	25,000 or More Jobs		10,000 or More Jobs		5,000 or More Jobs		Total Families with Incomes Less Than Twice the Poverty Level
	Families	Percent	Families	Percent	Families	Percent	
Existing - 2015	9,700	8.0	28,800	23.8	50,700	41.9	121,000
Trend - 2050	4,200	3.5	17,100	14.1	38,400	31.7	121,000
Plan - 2050	28,200	23.3	68,500	56.6	86,300	71.3	121,000

People with Disabilities[a]

Plan	25,000 or More Jobs		10,000 or More Jobs		5,000 or More Jobs		Total Population with Disabilities
	People	Percent	People	Percent	People	Percent	
Existing - 2015	12,300	5.6	35,300	16.0	70,500	32.0	220,600
Trend - 2050	7,100	3.2	21,800	9.9	54,500	24.7	220,600
Plan - 2050	44,600	20.2	107,500	48.7	138,600	62.8	220,600

[a] *Minority population is based on the 2010 U.S. Census and families in poverty, families with incomes less than twice the poverty level, and people with disabilities are based on the 2008-2012 American Community Survey.*

Source: U.S. Bureau of the Census, U.S. Census and American Community Survey; and SEWRPC

health care facilities, grocery stores, MRMC, and GMIA. Table H.18 shows the existing minority populations and low-income populations that would have reasonable access (within 30 minutes) by transit to these activity centers. The significant expansion under the Preliminary Plan would greatly improve access for existing minority populations, lower-income populations, and people with disabilities to the activity centers analyzed, with the Preliminary Plan generally serving 10 to 30 percent more of these populations than the Trend.

As shown in Table H.19, the improvement and expansion of transit under the Preliminary Plan would result in increases from existing conditions of between 8 and 32 percent in total minority population that would have reasonable access to the various activity centers under the Preliminary Plan, compared to increases of 7 to 26 percent in total non-minority population. Similarly, the improvement and expansion of transit under the Preliminary Plan would result in increases from existing conditions of between 8 and 24 percent in total families in poverty and families with incomes less than twice the poverty level that would have reasonable access to the various activity centers under the Preliminary Plan, compared to increases of 6 to 24 percent in total families not in poverty and families with incomes higher than twice the poverty level. With respect to people with disabilities, the Preliminary Plan would result in increases from existing conditions of between 8 and 25 percent in total people with disabilities that would

Table H.18
Reasonable Access to Activity Centers by Transit[a]

Minority Population[b]

Activity Center	Existing		Trend (2050)		Plan (2050)		Total Minority Population
	People	Percent	People	Percent	People	Percent	
Retail Centers	104,000	17.8	68,900	11.8	229,000	39.3	582,900
Major Parks	46,300	7.9	33,400	5.7	125,100	21.5	582,900
Public Technical Colleges and Universities	157,700	27.1	116,600	20.0	210,100	36.0	582,900
Health Care Facilities	292,700	50.2	236,700	40.6	337,700	57.9	582,900
Grocery Stores	455,400	78.1	439,900	75.5	524,000	89.9	582,900
General Mitchell International Airport	72,900	12.5	59,300	10.2	121,100	20.8	582,900
Milwaukee Regional Medical Center	144,800	24.8	109,000	18.7	330,100	56.6	582,900

Families in Poverty[b]

Activity Center	Existing		Trend (2050)		Plan (2050)		Total Families in Poverty
	Families	Percent	Families	Percent	Families	Percent	
Retail Centers	9,000	17.2	5,900	11.3	18,900	36.1	52,300
Major Parks	4,400	8.4	3,300	6.3	10,800	20.7	52,300
Public Technical Colleges and Universities	14,800	28.3	11,100	21.2	20,000	38.2	52,300
Health Care Facilities	25,600	48.9	21,100	40.3	29,800	57.0	52,300
Grocery Stores	38,400	73.4	36,300	69.4	43,700	83.6	52,300
General Mitchell International Airport	5,900	11.3	5,000	9.6	10,200	19.5	52,300
Milwaukee Regional Medical Center	13,100	25.0	9,900	18.9	28,000	53.5	52,300

Families with Incomes Less Than Twice the Poverty Level[b]

Activity Center	Existing		Trend (2050)		Plan (2050)		Total Families with Incomes Less Than Twice the Poverty Level
	Families	Percent	Families	Percent	Families	Percent	
Retail Centers	17,600	14.5	11,800	9.8	42,300	35.0	121,000
Major Parks	8,400	6.9	6,000	5.0	23,900	19.8	121,000
Public Technical Colleges and Universities	28,000	23.1	20,400	16.9	41,300	34.1	121,000
Health Care Facilities	51,700	42.7	41,900	34.6	64,200	53.1	121,000
Grocery Stores	80,000	66.1	75,300	62.2	94,500	78.1	121,000
General Mitchell International Airport	12,600	10.4	11,000	9.1	22,200	18.3	121,000
Milwaukee Regional Medical Center	25,700	21.2	19,400	16.0	58,300	48.2	121,000

People with Disabilities[b]

Activity Center	Existing		Trend (2050)		Plan (2050)		Total Population with Disabilities
	People	Percent	People	Percent	People	Percent	
Retail Centers	31,700	14.4	23,800	10.8	83,600	37.9	220,600
Major Parks	16,600	7.5	11,600	5.3	49,200	22.3	220,600
Public Technical Colleges and Universities	42,300	19.2	30,900	14.0	72,600	32.9	220,600
Health Care Facilities	74,700	33.9	61,200	27.7	108,300	49.1	220,600
Grocery Stores	121,700	55.2	113,100	51.3	158,500	71.8	220,600
General Mitchell International Airport	16,100	7.3	15,600	7.1	33,800	15.3	220,600
Milwaukee Regional Medical Center	40,100	18.2	29,800	13.5	96,000	43.5	220,600

[a] *Reasonable access is defined as the ability to travel by automobile within 60 minutes to General Mitchell International Airport and the Milwaukee Regional Medical Center and within 30 minutes to all the other activity centers.*

[b] *Minority population is based on the 2010 U.S. Census and families in poverty, families with incomes less than twice the poverty level, and people with disabilities are based on the 2008-2012 American Community Survey.*

Source: U.S. Bureau of the Census, U.S. Census and American Community Survey; and SEWRPC

Table H.19
Additional Percent with Reasonable Access[a] to Activity Centers by Transit Under the Preliminary Recommended Plan

Minorities[b]

Activity Center	Minority Population	Non-Minority Population
Retail Centers	21	26
Major Parks	14	17
Public Technical Colleges and Universities	9	17
Health Care Facilities	8	20
Grocery Stores	12	23
General Mitchell International Airport	8	7
Milwaukee Regional Medical Center	32	22

Families in Poverty and Families with Incomes Less Than Twice the Poverty Level[b]

Activity Center	Families in Poverty	Families Not in Poverty	Families with Incomes Less Than Twice the Poverty Level	Families with Incomes More Than Twice the Poverty Level
Retail Centers	19	24	20	24
Major Parks	12	15	13	16
Public Technical Colleges and Universities	10	15	11	15
Health Care Facilities	8	18	10	19
Grocery Stores	10	20	12	21
General Mitchell International Airport	8	6	8	6
Milwaukee Regional Medical Center	29	22	27	21

People with Disabilities[b]

Activity Center	People with Disabilities	People Without Disabilities
Retail Centers	24	25
Major Parks	15	17
Public Technical Colleges and Universities	14	15
Health Care Facilities	15	17
Grocery Stores	17	20
General Mitchell International Airport	8	7
Milwaukee Regional Medical Center	25	25

[a] *Reasonable access is defined as the ability to travel by automobile within 60 minutes to General Mitchell International Airport and the Milwaukee Regional Medical Center and within 30 minutes to all the other activity centers.*

[b] *Minority population and non-minority population are based on the 2010 U.S. Census and families in poverty, families not in poverty, families with incomes less than twice the poverty level, families with incomes more than twice the poverty level, people with disabilities, and people without disabilities are based on the 2008-2012 American Community Survey.*

Source: U.S. Bureau of the Census, U.S. Census and American Community Survey; and SEWRPC

have reasonable access to the various activity centers, compared to increases of 7 to 25 percent of people without disabilities.

- **Comparing Improved Accessibility for Transit and Driving:** A comparison of the improvements in accessibility under the transit element of the Preliminary Plan to the highway element of the Preliminary Plan clearly indicates that the transit element would result in substantial increases in transit accessibility to jobs and other activities, and the highway element would result in only modest increases in highway accessibility to jobs and other activities. The modest increases in highway accessibility would benefit the majority of minority residents and low-income residents who travel by automobile. The substantial increases in transit accessibility would provide significant benefits to those who may not be able to afford a car and need public transit service to be able to reach jobs and other activities.

CRITERION 2.1.2: MINORITY POPULATIONS AND LOW-INCOME POPULATIONS SERVED BY TRANSIT

Minority populations and lower-income populations, along with people with disabilities, utilize public transit at a higher proportion relative to other modes of travel than the remaining population of the Region. To an extent, any improvement in transit within the Region would be expected to benefit minority populations, lower-income populations, and people with disabilities. For this criterion, an evaluation was conducted of the characteristics of the existing population located within the service area of the Trend and Preliminary Recommended Plan public transit systems to compare the existing minority populations, lower-income populations (families in poverty and families with incomes below twice the poverty level), and people with disabilities that would be served. Table H.20 and Maps H.30 through H.44 show information on the existing minority populations, lower-income populations, and people with disabilities within walking distance of transit under existing conditions, the Trend, and the Preliminary Plan.

- **Existing Transit Services:** While most of the base year 2015 routes and service areas for the public transit systems in the Region serve the principal concentrations of existing minority populations, lower-income populations, and people with disabilities—serving about 488,100 minority people (84 percent of total), 40,800 families in poverty (78 percent of total), 121,000 families with incomes less than twice the poverty level (71 percent of total), and 130,500 people with disabilities (59 percent of total)—transit service in the Region has declined by about 25 percent since the early 2000s and is expected to further decline based on expected existing and future available Federal and State funding.

- **The Trend:** Most of the transit routes and service areas under the Trend would continue to serve the principal concentrations of existing minority populations, lower-income populations, and people with disabilities. However, based on the expected decline in transit service of an additional 22 percent under the Trend, the existing populations served are expected to decline to about 469,600 minority people, 39,200 families in poverty, 81,400 families with incomes less than twice the poverty level, and 122,200 people with disabilities. The decline in transit service is primarily a result of current and expected transit revenues (farebox and local, State, and Federal assistance) not being sufficient to fund current and expected capital, operating, and maintenance costs for the Region's existing transit services. This future transit service decline would particularly affect existing local bus service, potentially resulting in entire routes being cut, lower service frequencies, reduced service hours, and/or weekend service being eliminated, depending on the transit system.

- **Preliminary Recommended Plan:** Under the Preliminary Recommended Plan, the existing populations served by transit would increase to 517,700 minority people (89 percent of total), 43,300 families in poverty (83 percent of total), 92,600 families with incomes less than twice the poverty level (77 percent of total), and 149,200 people with disabilities (67 percent of total). The existing minority populations, lower-income populations, and people with disabilities in this service area would benefit from a significant expansion of transit service under the Preliminary Plan, including a reversal of the recent decline in transit service levels and a significant investment in fixed-

Table H.20
Populations and Families Served by Transit

Minority Population[a]

Plan	Total Transit Service		Fixed-Guideway Transit Service[b]		Total Minority Population
	People	Percent	People	Percent	
Existing - 2015	488,100	83.7	3,200	0.5	582,900
Trend - 2050	469,600	80.6	3,200	0.5	582,900
Plan - 2050	517,700	88.8	240,100	41.2	582,900

Families in Poverty[a]

Plan	Total Transit Service		Fixed-Guideway Transit Service[b]		Total Families in Poverty
	Families	Percent	Families	Percent	
Existing - 2015	40,800	78.0	300	0.6	52,300
Trend - 2050	39,200	75.0	300	0.6	52,300
Plan - 2050	43,300	82.8	20,800	39.8	52,300

Families with Incomes Less Than Twice the Poverty Level[a]

Plan	Total Transit Service		Fixed-Guideway Transit Service[b]		Total Families with Incomes Less Than Twice the Poverty Level
	Families	Percent	Families	Percent	
Existing - 2015	85,300	70.5	500	0.4	121,000
Trend - 2050	81,400	67.3	500	0.4	121,000
Plan - 2050	92,600	76.5	40,500	33.5	121,000

People with Disabilities[a]

Plan	Total Transit Service		Fixed-Guideway Transit Service[b]		Total Population with Disabilities
	People	Percent	People	Percent	
Existing - 2015	130,500	59.2	700	0.3	220,600
Trend - 2050	122,200	55.4	700	0.3	220,600
Plan - 2050	149,200	67.6	59,200	26.8	220,600

[a] *Minority population is based on the 2010 U.S. Census and families in poverty, families with incomes less than twice the poverty level, and people with disabilities are based on the 2008-2012 American Community Survey.*

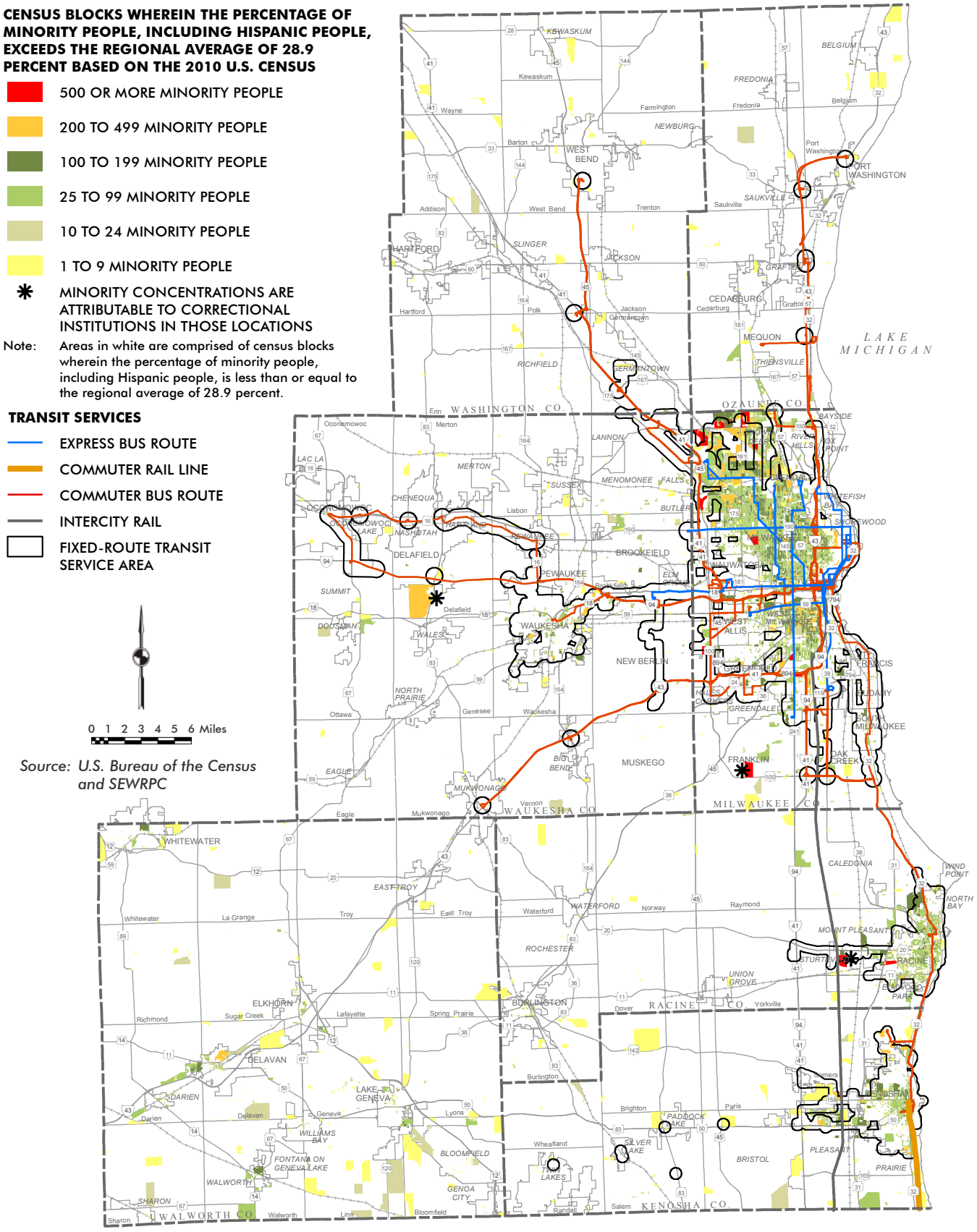
[b] *Includes rapid transit and commuter rail services.*

Source: U.S. Bureau of the Census, U.S. Census and American Community Survey; and SEWRPC

guideway transit corridors, including rapid transit and commuter rail. Specifically, existing minority populations, lower-income populations, and people with disabilities would likely receive a benefit from the increased service area and frequency of local bus routes, the eight rapid transit corridors, increased frequency on existing express bus routes, and additional express and commuter bus routes. The Preliminary Plan would provide significant benefits over the Trend for the existing minority populations, lower-income populations, and people with disabilities in terms of service provided by fixed-guideway transit—rapid transit or commuter rail—with an expected 240,100 minority people, 20,800 families in poverty, 40,500 families with incomes less than twice the poverty level, and 59,200 people with disabilities served.

This criterion calculates how many and what percentage of the Region's existing minority populations, lower-income populations, and people with disabilities are within walking distance of transit service under the Trend and Preliminary Plan, and does not attempt to determine the quality—speed, frequency, or usefulness—of that service to reach destinations for these populations. Criterion 2.1.3 (Transit Service Quality for Minority Populations and Low-Income Populations)

Map H.30
Comparison of Existing Concentrations of Total Minority Population in the Region to Public Transit Services: Existing



Map H.31
Comparison of Existing Concentrations of Total Minority Population in the Region to Public Transit Element: Trend

CENSUS BLOCKS WHEREIN THE PERCENTAGE OF MINORITY PEOPLE, INCLUDING HISPANIC PEOPLE, EXCEEDS THE REGIONAL AVERAGE OF 28.9 PERCENT BASED ON THE 2010 U.S. CENSUS

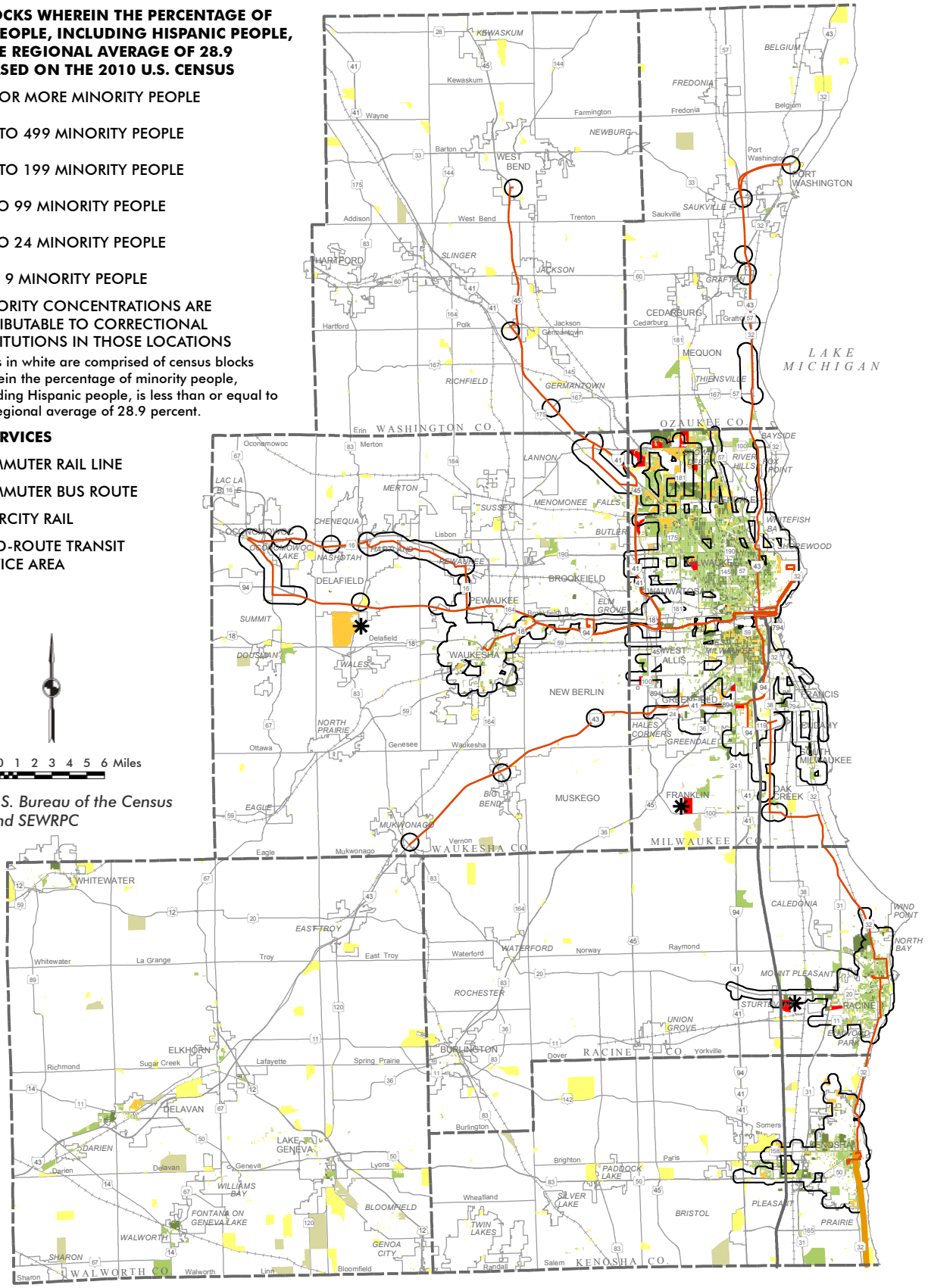
- 500 OR MORE MINORITY PEOPLE
- 200 TO 499 MINORITY PEOPLE
- 100 TO 199 MINORITY PEOPLE
- 25 TO 99 MINORITY PEOPLE
- 10 TO 24 MINORITY PEOPLE
- 1 TO 9 MINORITY PEOPLE
- * MINORITY CONCENTRATIONS ARE ATTRIBUTABLE TO CORRECTIONAL INSTITUTIONS IN THOSE LOCATIONS

Note: Areas in white are comprised of census blocks wherein the percentage of minority people, including Hispanic people, is less than or equal to the regional average of 28.9 percent.

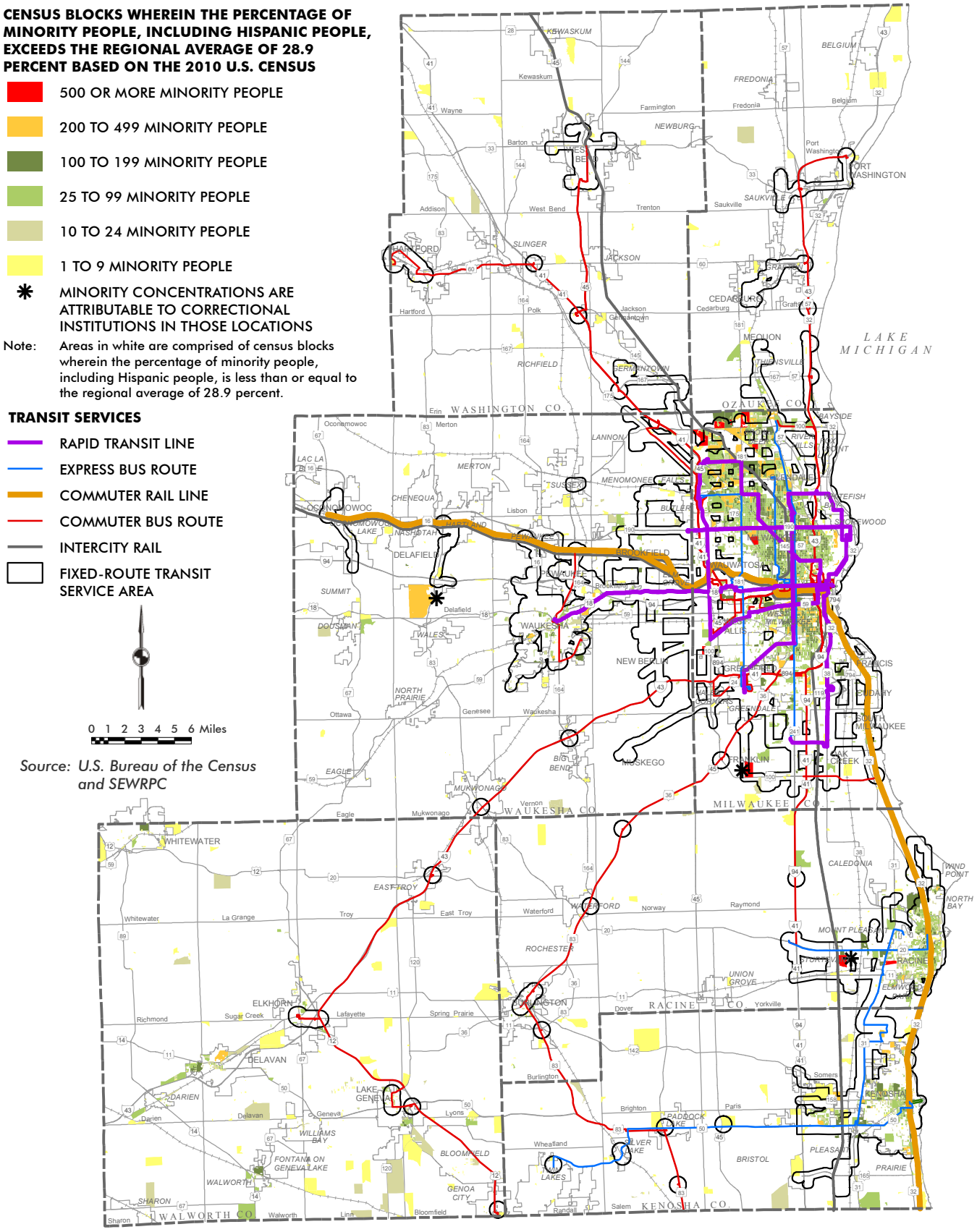
TRANSIT SERVICES

- COMMUTER RAIL LINE
- COMMUTER BUS ROUTE
- INTERCITY RAIL
- FIXED-ROUTE TRANSIT SERVICE AREA

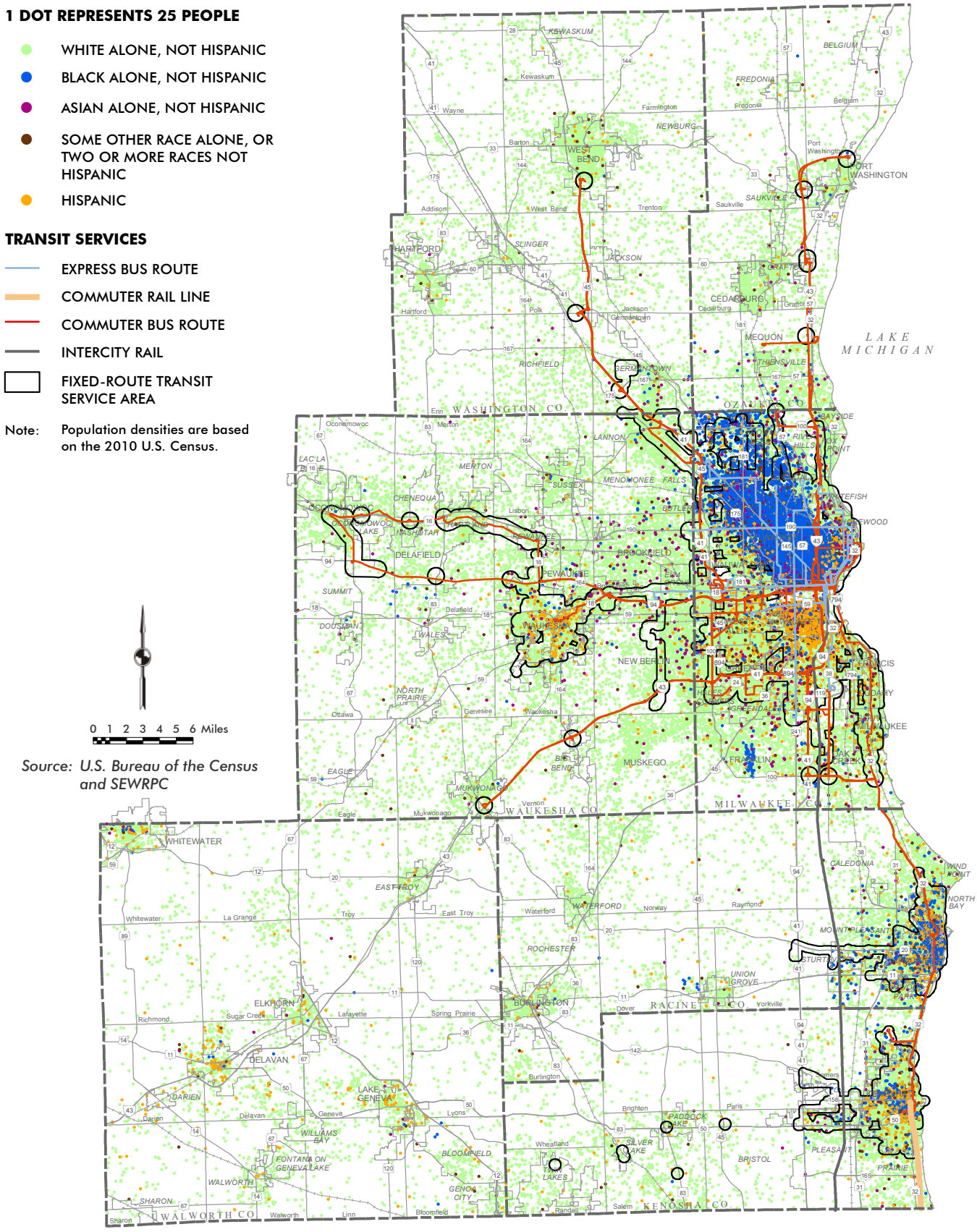
Source: U.S. Bureau of the Census and SEWRPC



Map H.32
Comparison of Existing Concentrations of Total Minority Population in the Region to Public Transit Element: Preliminary Recommended Plan



Map H.33
Comparison of Concentrations of Year 2010 Races/Ethnicities in the Region to Public Transit Services: Existing



Map H.34
Comparison of Concentrations of Year 2010 Races/Ethnicities in the Region to Public Transit Element: Trend

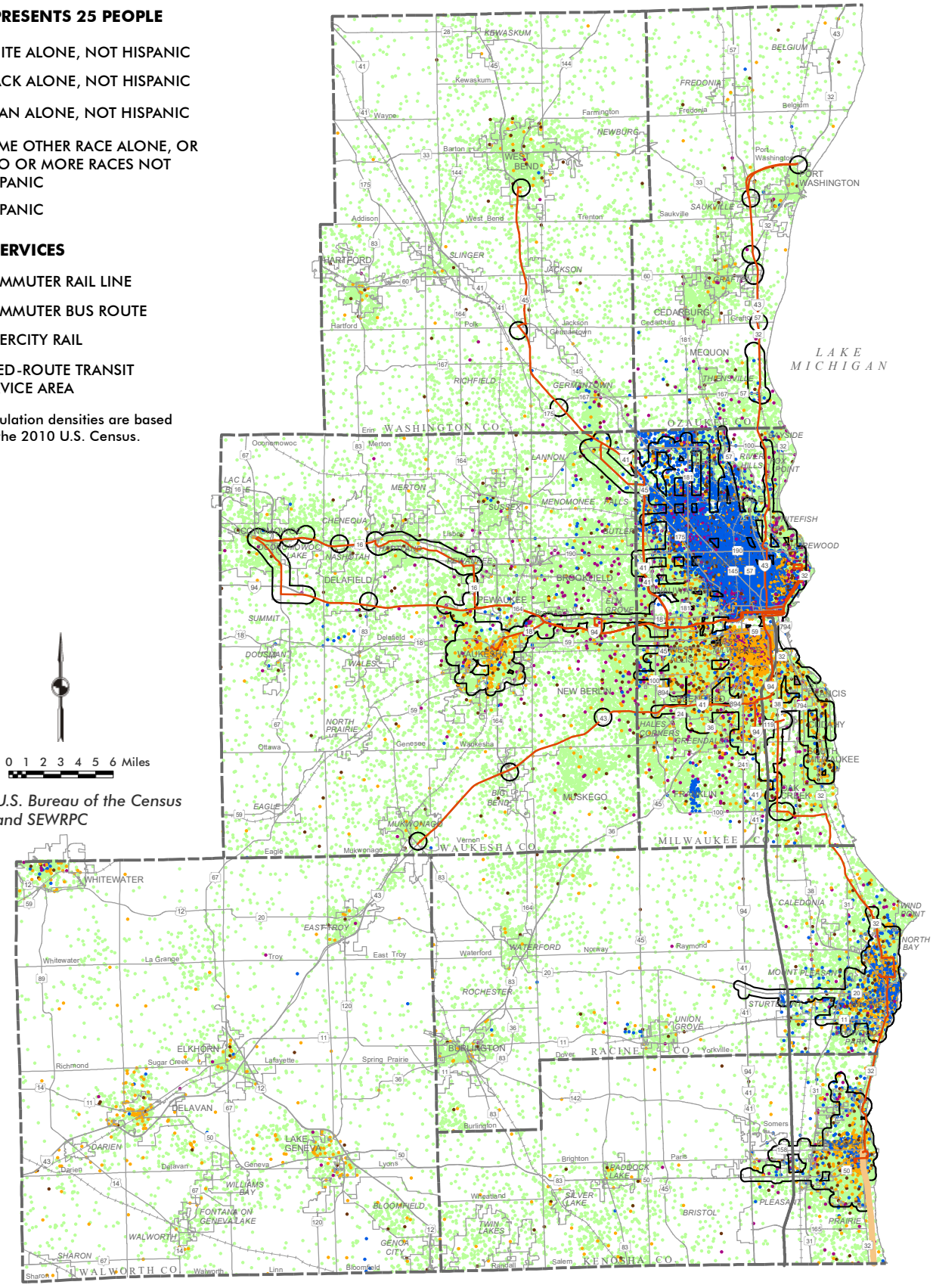
1 DOT REPRESENTS 25 PEOPLE

- WHITE ALONE, NOT HISPANIC
- BLACK ALONE, NOT HISPANIC
- ASIAN ALONE, NOT HISPANIC
- SOME OTHER RACE ALONE, OR TWO OR MORE RACES NOT HISPANIC
- HISPANIC

TRANSIT SERVICES

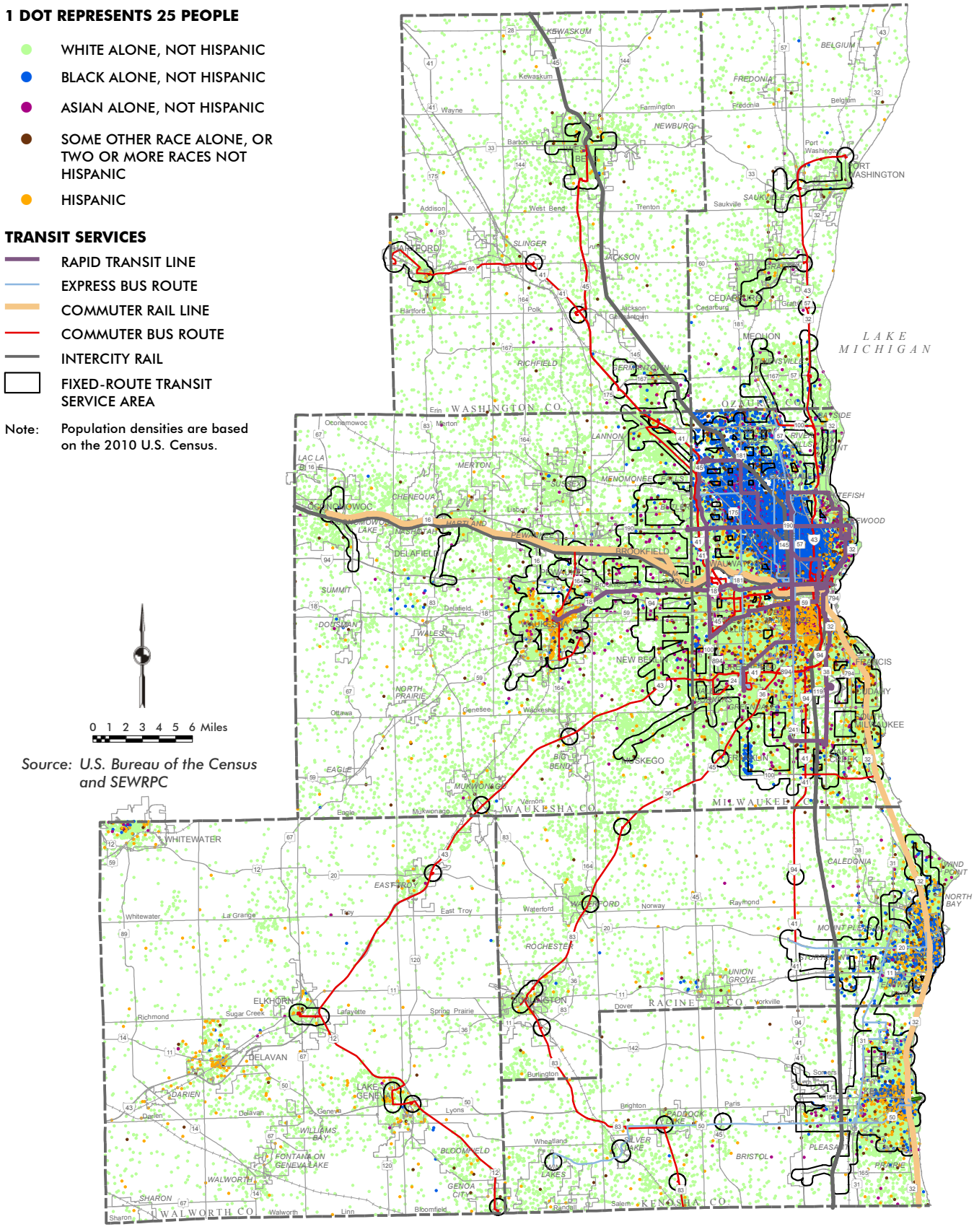
- COMMUTER RAIL LINE
- COMMUTER BUS ROUTE
- INTERCITY RAIL
- FIXED-ROUTE TRANSIT SERVICE AREA

Note: Population densities are based on the 2010 U.S. Census.



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

Map H.35
Comparison of Concentrations of Year 2010 Races/Ethnicities in the Region to Public Transit Element: Preliminary Recommended Plan



Map H.36
Comparison of Existing Concentrations of Families in Poverty in the Region to Public Transit Services: Existing

CENSUS TRACTS WHEREIN THE PERCENTAGE OF FAMILIES IN POVERTY EXCEEDS THE REGIONAL AVERAGE OF 10.3 PERCENT BASED ON THE 2008-2012 U.S. CENSUS AMERICAN COMMUNITY SURVEY

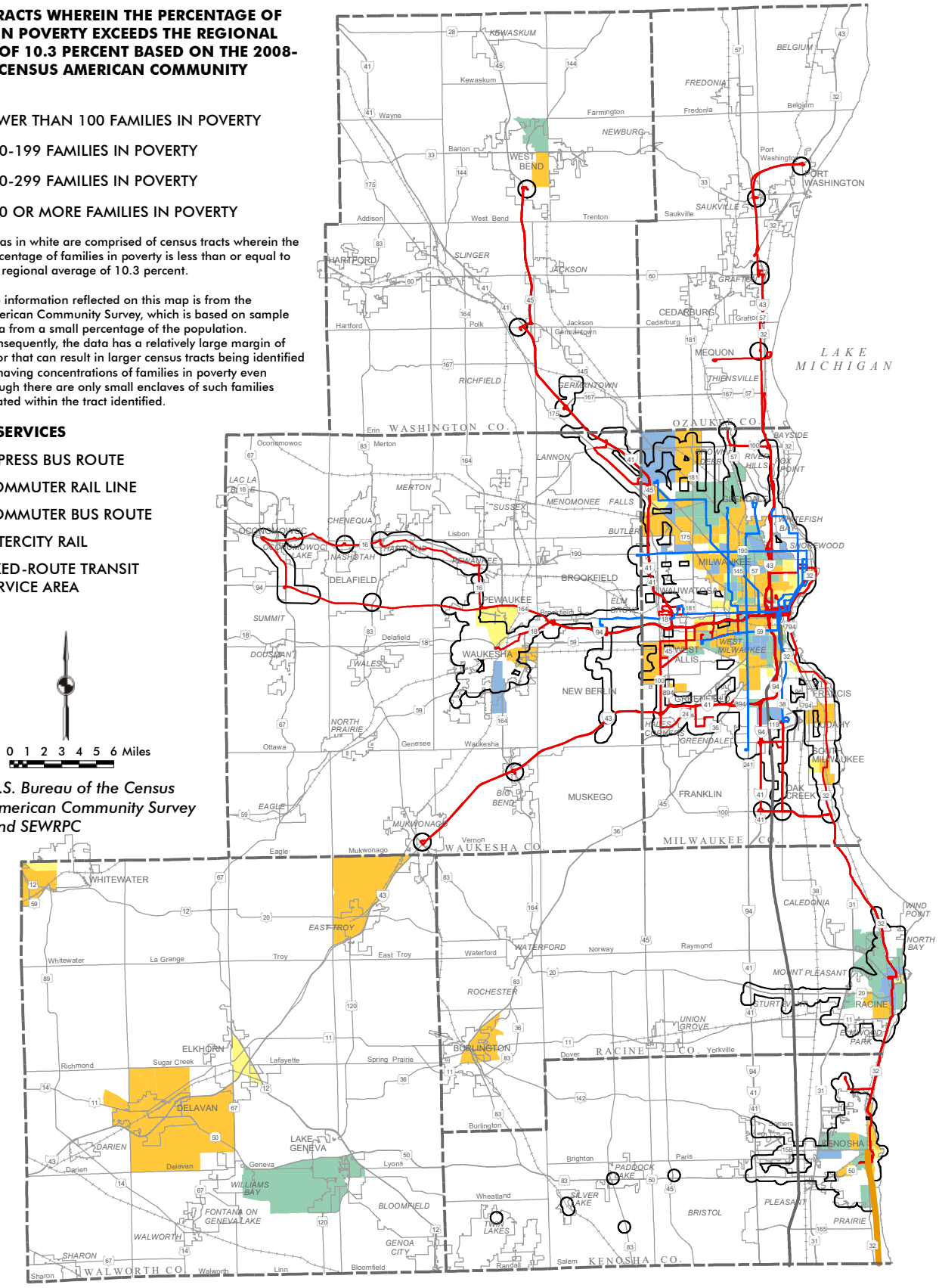
- FEWER THAN 100 FAMILIES IN POVERTY
- 100-199 FAMILIES IN POVERTY
- 200-299 FAMILIES IN POVERTY
- 300 OR MORE FAMILIES IN POVERTY

Notes: Areas in white are comprised of census tracts wherein the percentage of families in poverty is less than or equal to the regional average of 10.3 percent.

The information reflected on this map is from the American Community Survey, which is based on sample data from a small percentage of the population. Consequently, the data has a relatively large margin of error that can result in larger census tracts being identified as having concentrations of families in poverty even though there are only small enclaves of such families located within the tract identified.

TRANSIT SERVICES

- EXPRESS BUS ROUTE
- COMMUTER RAIL LINE
- COMMUTER BUS ROUTE
- INTERCITY RAIL
- FIXED-ROUTE TRANSIT SERVICE AREA



Source: U.S. Bureau of the Census American Community Survey and SEWRPC

Map H.37
Comparison of Existing Concentrations of Families in Poverty in the Region to Public Transit Element: Trend

CENSUS TRACTS WHEREIN THE PERCENTAGE OF FAMILIES IN POVERTY EXCEEDS THE REGIONAL AVERAGE OF 10.3 PERCENT BASED ON THE 2008-2012 U.S. CENSUS AMERICAN COMMUNITY SURVEY

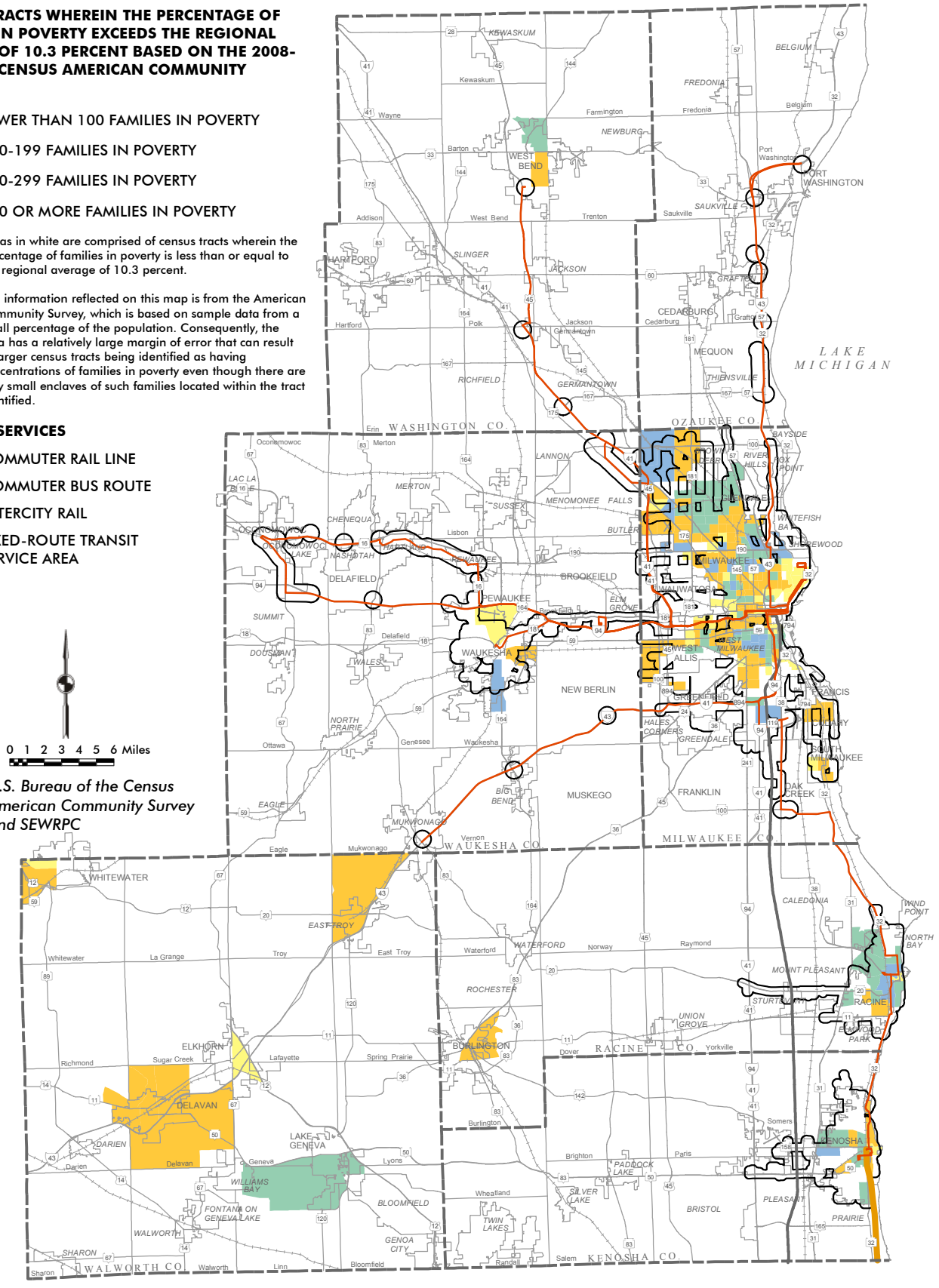
- FEWER THAN 100 FAMILIES IN POVERTY
- 100-199 FAMILIES IN POVERTY
- 200-299 FAMILIES IN POVERTY
- 300 OR MORE FAMILIES IN POVERTY

Notes: Areas in white are comprised of census tracts wherein the percentage of families in poverty is less than or equal to the regional average of 10.3 percent.

The information reflected on this map is from the American Community Survey, which is based on sample data from a small percentage of the population. Consequently, the data has a relatively large margin of error that can result in larger census tracts being identified as having concentrations of families in poverty even though there are only small enclaves of such families located within the tract identified.

TRANSIT SERVICES

- COMMUTER RAIL LINE
- COMMUTER BUS ROUTE
- INTERCITY RAIL
- FIXED-ROUTE TRANSIT SERVICE AREA



Source: U.S. Bureau of the Census American Community Survey and SEWRPC

Map H.38
Comparison of Existing Concentrations of Families in Poverty in the Region to Public Transit Element: Preliminary Recommended Plan

CENSUS TRACTS WHEREIN THE PERCENTAGE OF FAMILIES IN POVERTY EXCEEDS THE REGIONAL AVERAGE OF 10.3 PERCENT BASED ON THE 2008-2012 U.S. CENSUS AMERICAN COMMUNITY SURVEY

- FEWER THAN 100 FAMILIES IN POVERTY
- 100-199 FAMILIES IN POVERTY
- 200-299 FAMILIES IN POVERTY
- 300 OR MORE FAMILIES IN POVERTY

Notes: Areas in white are comprised of census tracts wherein the percentage of families in poverty is less than or equal to the regional average of 10.3 percent.

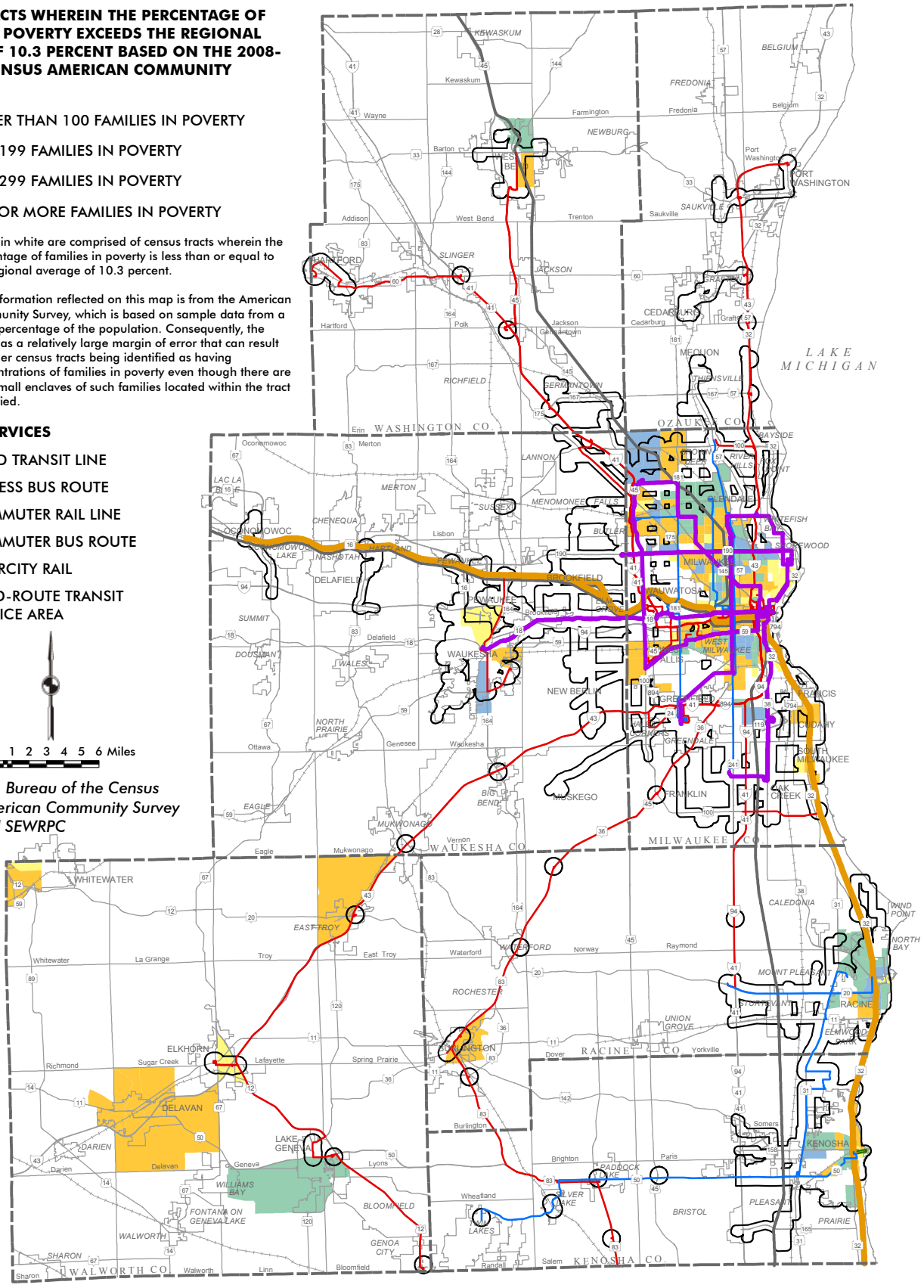
The information reflected on this map is from the American Community Survey, which is based on sample data from a small percentage of the population. Consequently, the data has a relatively large margin of error that can result in larger census tracts being identified as having concentrations of families in poverty even though there are only small enclaves of such families located within the tract identified.

TRANSIT SERVICES

- RAPID TRANSIT LINE
- EXPRESS BUS ROUTE
- COMMUTER RAIL LINE
- COMMUTER BUS ROUTE
- INTERCITY RAIL
- FIXED-ROUTE TRANSIT SERVICE AREA

0 1 2 3 4 5 6 Miles

Source: U.S. Bureau of the Census American Community Survey and SEWRPC



Map H.39
Comparison of Existing Concentrations of Families with Incomes Less Than Twice the Poverty Level in the Region to Public Transit Services: Existing

CENSUS TRACTS WHEREIN THE PERCENTAGE OF FAMILIES WITH INCOMES LESS THAN TWICE THE POVERTY LEVEL EXCEEDS THE REGIONAL AVERAGE OF 23.8 PERCENT BASED ON THE 2008-2012 U.S. CENSUS AMERICAN COMMUNITY SURVEY

- FEWER THAN 100 FAMILIES
- 100-199 FAMILIES
- 200-299 FAMILIES
- 300 OR MORE FAMILIES

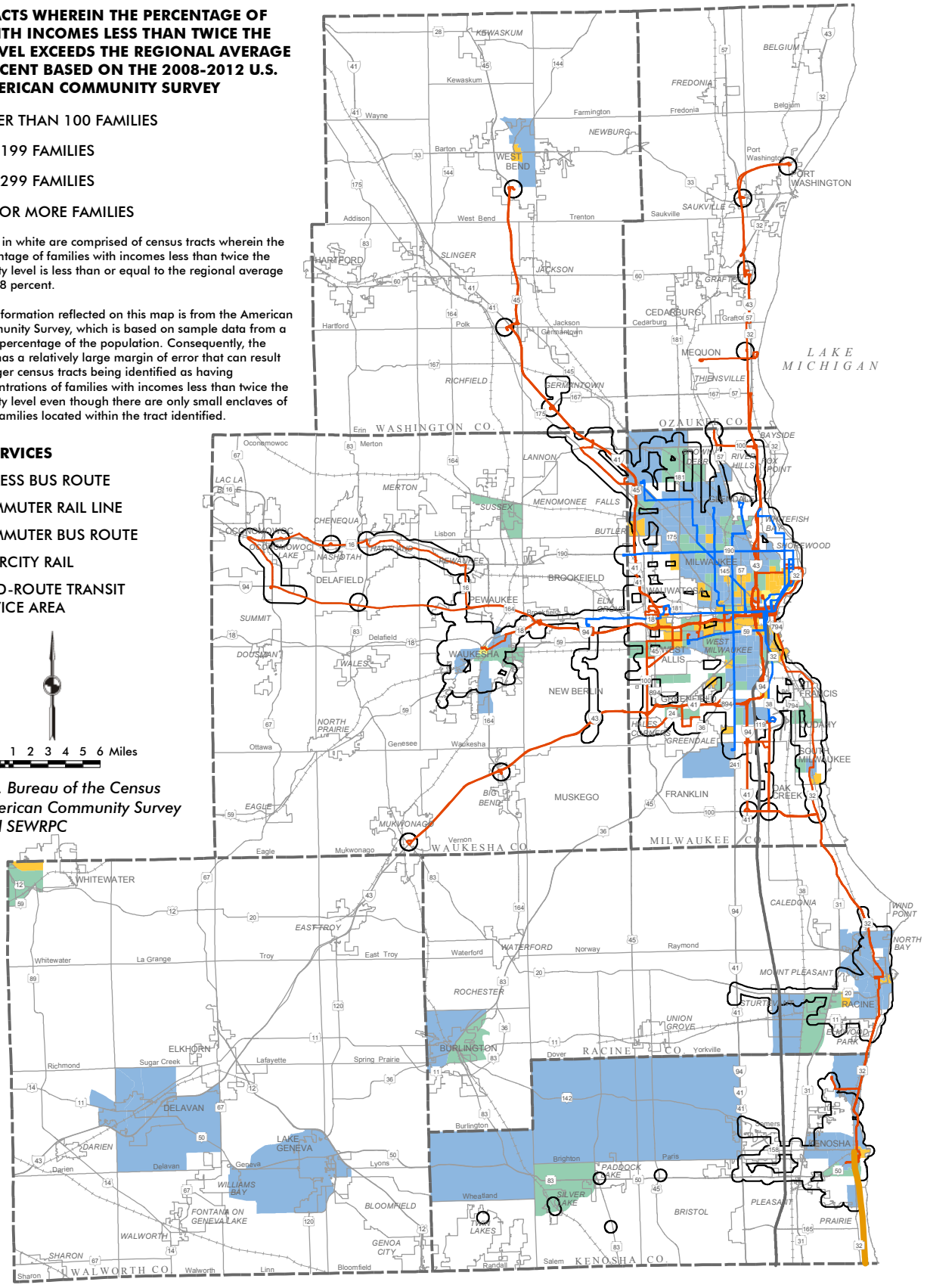
Notes: Areas in white are comprised of census tracts wherein the percentage of families with incomes less than twice the poverty level is less than or equal to the regional average of 23.8 percent.

The information reflected on this map is from the American Community Survey, which is based on sample data from a small percentage of the population. Consequently, the data has a relatively large margin of error that can result in larger census tracts being identified as having concentrations of families with incomes less than twice the poverty level even though there are only small enclaves of such families located within the tract identified.

TRANSIT SERVICES

- EXPRESS BUS ROUTE
- COMMUTER RAIL LINE
- COMMUTER BUS ROUTE
- INTERCITY RAIL
- FIXED-ROUTE TRANSIT SERVICE AREA

Source: U.S. Bureau of the Census American Community Survey and SEWRPC



Map H.40
Comparison of Existing Concentrations of Families with Incomes Less Than Twice the Poverty Level in the Region to Public Transit Element: Trend

CENSUS TRACTS WHEREIN THE PERCENTAGE OF FAMILIES WITH INCOMES LESS THAN TWICE THE POVERTY LEVEL EXCEEDS THE REGIONAL AVERAGE OF 23.8 PERCENT BASED ON THE 2008-2012 U.S. CENSUS AMERICAN COMMUNITY SURVEY

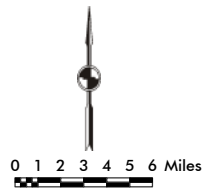
- FEWER THAN 100 FAMILIES
- 100-199 FAMILIES
- 200-299 FAMILIES
- 300 OR MORE FAMILIES

Notes: Areas in white are comprised of census tracts wherein the percentage of families with incomes less than twice the poverty level is less than or equal to the regional average of 23.8 percent.

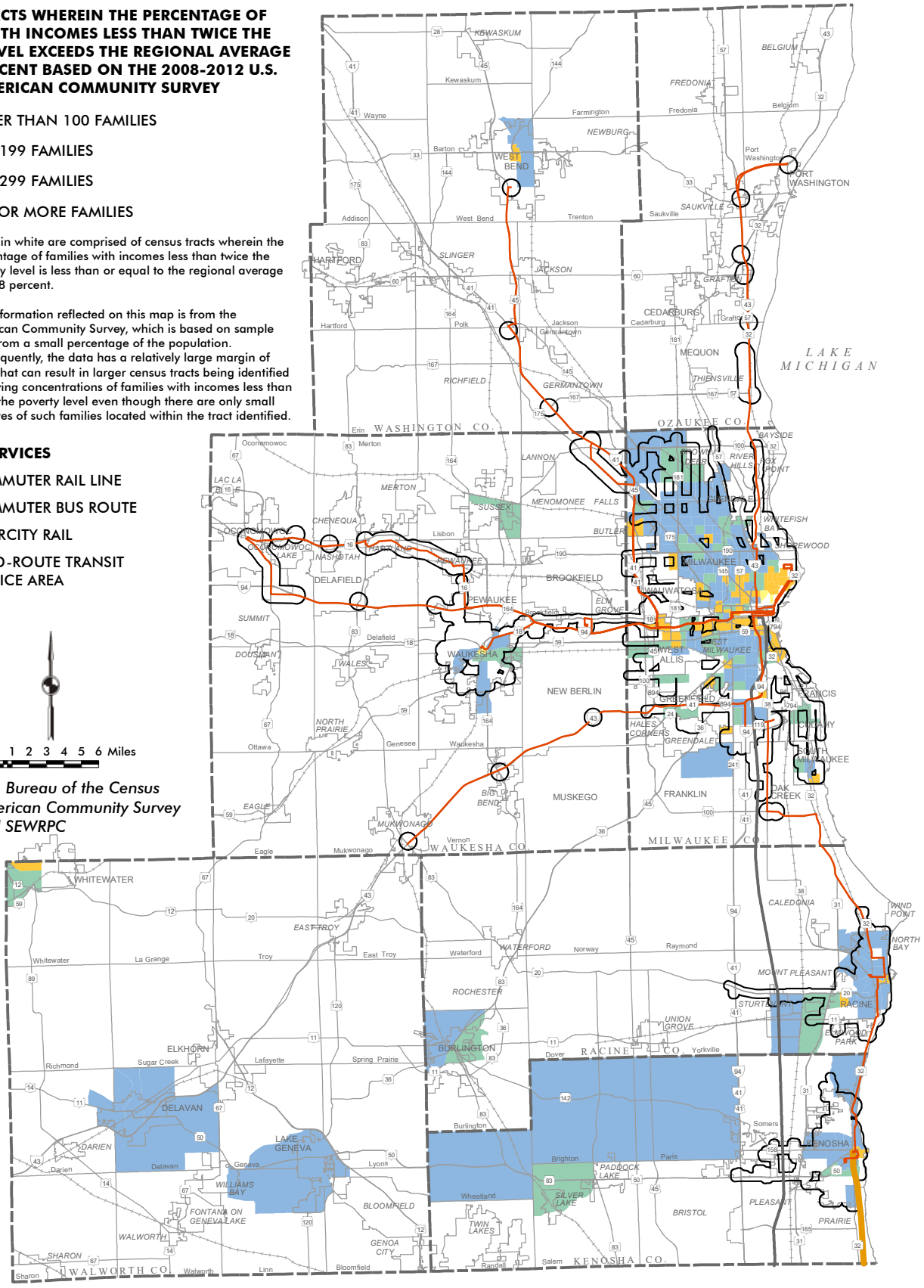
The information reflected on this map is from the American Community Survey, which is based on sample data from a small percentage of the population. Consequently, the data has a relatively large margin of error that can result in larger census tracts being identified as having concentrations of families with incomes less than twice the poverty level even though there are only small enclaves of such families located within the tract identified.

TRANSIT SERVICES

- COMMUTER RAIL LINE
- COMMUTER BUS ROUTE
- INTERCITY RAIL
- FIXED-ROUTE TRANSIT SERVICE AREA



Source: U.S. Bureau of the Census American Community Survey and SEWRPC



Map H.41
Comparison of Existing Concentrations of Families with Incomes Less Than Twice the Poverty Level in the Region to Public Transit Element: Preliminary Recommended Plan

CENSUS TRACTS WHEREIN THE PERCENTAGE OF FAMILIES WITH INCOMES LESS THAN TWICE THE POVERTY LEVEL EXCEEDS THE REGIONAL AVERAGE OF 23.8 PERCENT BASED ON THE 2008-2012 U.S. CENSUS AMERICAN COMMUNITY SURVEY

- FEWER THAN 100 FAMILIES
- 100-199 FAMILIES
- 200-299 FAMILIES
- 300 OR MORE FAMILIES

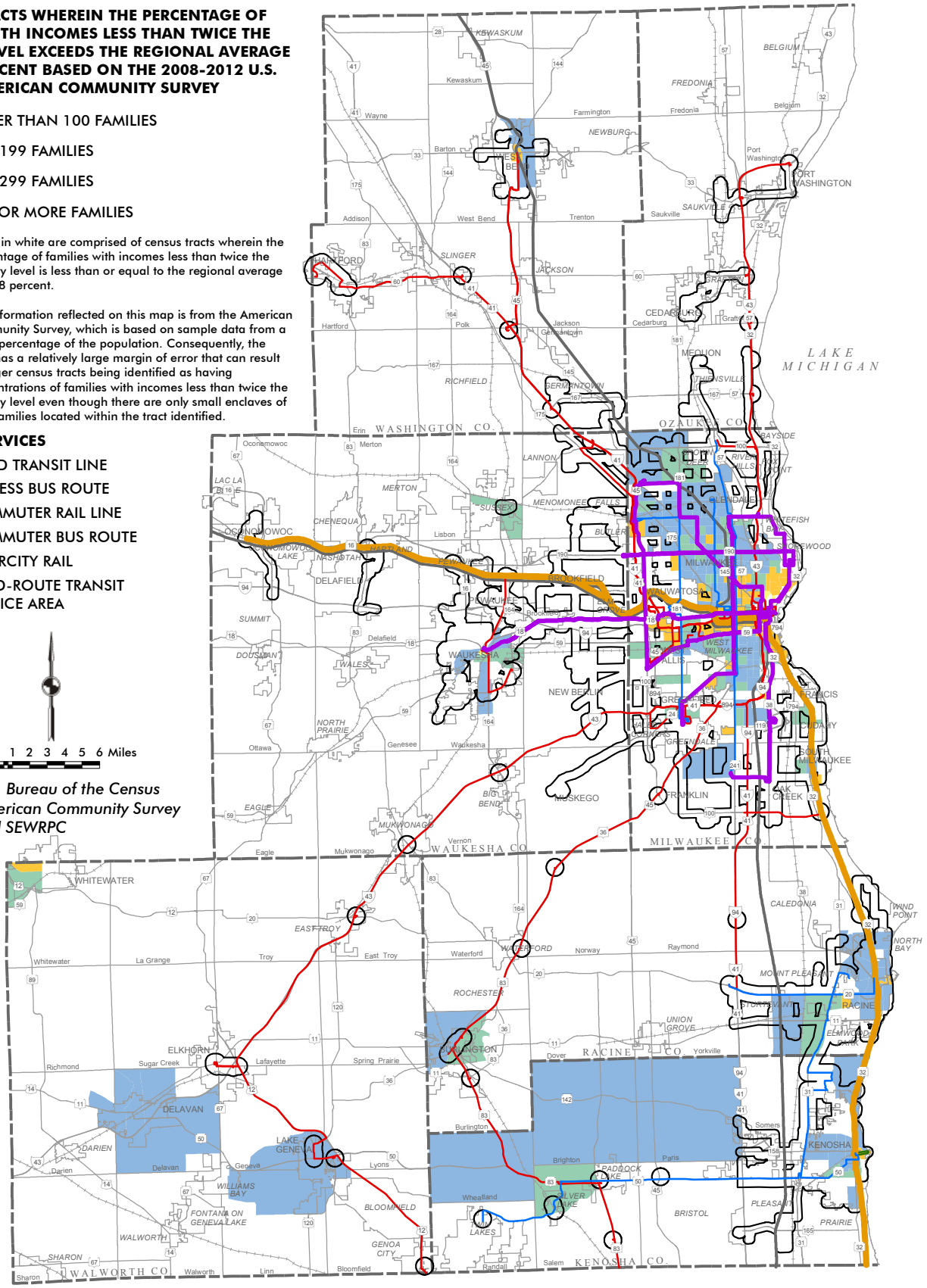
Notes: Areas in white are comprised of census tracts wherein the percentage of families with incomes less than twice the poverty level is less than or equal to the regional average of 23.8 percent.

The information reflected on this map is from the American Community Survey, which is based on sample data from a small percentage of the population. Consequently, the data has a relatively large margin of error that can result in larger census tracts being identified as having concentrations of families with incomes less than twice the poverty level even though there are only small enclaves of such families located within the tract identified.

TRANSIT SERVICES

- RAPID TRANSIT LINE
- EXPRESS BUS ROUTE
- COMMUTER RAIL LINE
- COMMUTER BUS ROUTE
- INTERCITY RAIL
- FIXED-ROUTE TRANSIT SERVICE AREA

Source: U.S. Bureau of the Census American Community Survey and SEWRPC



Map H.42
Comparison of Existing Concentrations of People with Disabilities in the Region to Public Transit Services: Existing

CENSUS TRACTS WHEREIN THE PERCENTAGE OF PEOPLE WITH DISABILITIES EXCEEDS THE REGIONAL AVERAGE OF 11 PERCENT BASED ON THE 2008-2012 U.S. CENSUS AMERICAN COMMUNITY SURVEY

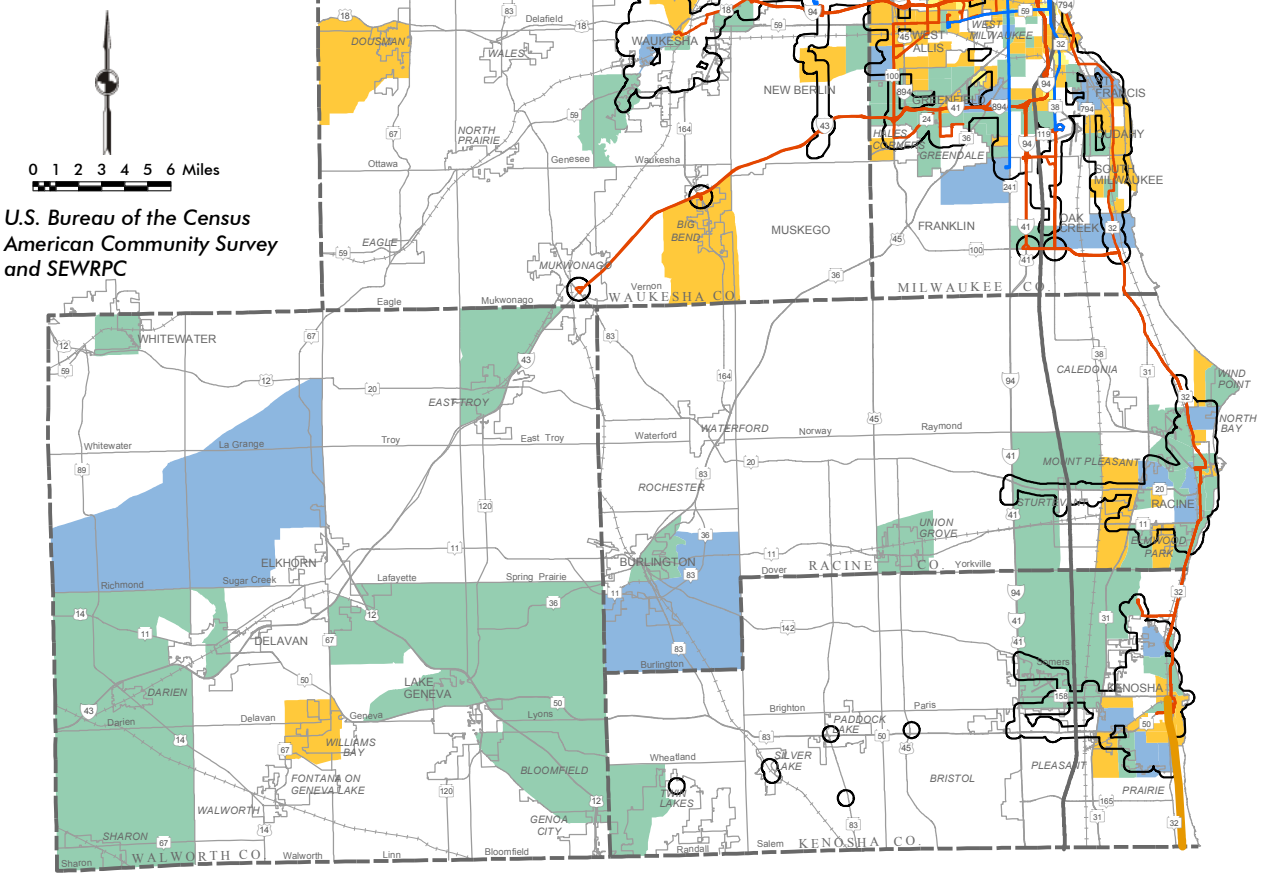
- FEWER THAN 250 PEOPLE WITH DISABILITIES
- 250 - 499 PEOPLE WITH DISABILITIES
- 500 - 749 PEOPLE WITH DISABILITIES
- 750 OR MORE PEOPLE WITH DISABILITIES

Notes: Areas in white are comprised of census tracts wherein the percentage of people with disabilities is less than or equal to the regional average of 11 percent.

The information reflected on this map is from the American Community Survey, which is based on sample data from a small percentage of the population. Consequently, the data has a relatively large margin of error that can result in larger census tracts being identified as having concentrations of people with disabilities even though there are only small enclaves located within the tract identified.

TRANSIT SERVICES

- EXPRESS BUS ROUTE
- COMMUTER RAIL LINE
- COMMUTER BUS ROUTE
- INTERCITY RAIL
- FIXED-ROUTE TRANSIT SERVICE AREA



Source: U.S. Bureau of the Census American Community Survey and SEWRPC

Map H.43
Comparison of Existing Concentrations of People with Disabilities in the Region to Public Transit Element: Trend

CENSUS TRACTS WHEREIN THE PERCENTAGE OF PEOPLE WITH DISABILITIES EXCEEDS THE REGIONAL AVERAGE OF 11 PERCENT BASED ON THE 2008-2012 U.S. CENSUS AMERICAN COMMUNITY SURVEY

- FEWER THAN 250 PEOPLE WITH DISABILITIES
- 250 - 499 PEOPLE WITH DISABILITIES
- 500 - 749 PEOPLE WITH DISABILITIES
- 750 OR MORE PEOPLE WITH DISABILITIES

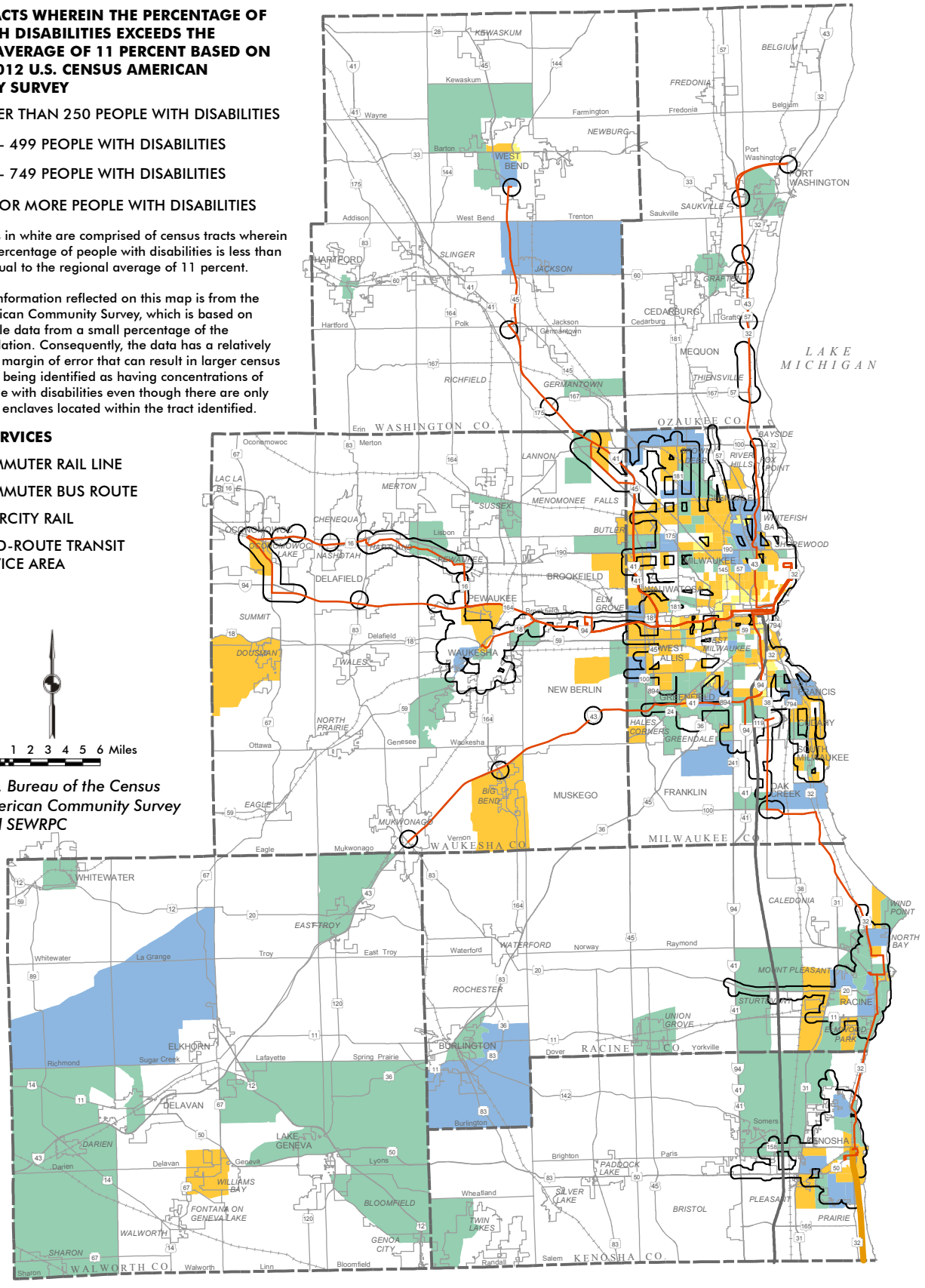
Notes: Areas in white are comprised of census tracts wherein the percentage of people with disabilities is less than or equal to the regional average of 11 percent.

The information reflected on this map is from the American Community Survey, which is based on sample data from a small percentage of the population. Consequently, the data has a relatively large margin of error that can result in larger census tracts being identified as having concentrations of people with disabilities even though there are only small enclaves located within the tract identified.

TRANSIT SERVICES

- COMMUTER RAIL LINE
- COMMUTER BUS ROUTE
- INTERCITY RAIL
- FIXED-ROUTE TRANSIT SERVICE AREA

Source: U.S. Bureau of the Census American Community Survey and SEWRPC



Map H.44
Comparison of Existing Concentrations of People with Disabilities in the Region to Public Transit Element: Preliminary Recommended Plan

CENSUS TRACTS WHEREIN THE PERCENTAGE OF PEOPLE WITH DISABILITIES EXCEEDS THE REGIONAL AVERAGE OF 11 PERCENT BASED ON THE 2008-2012 U.S. CENSUS AMERICAN COMMUNITY SURVEY

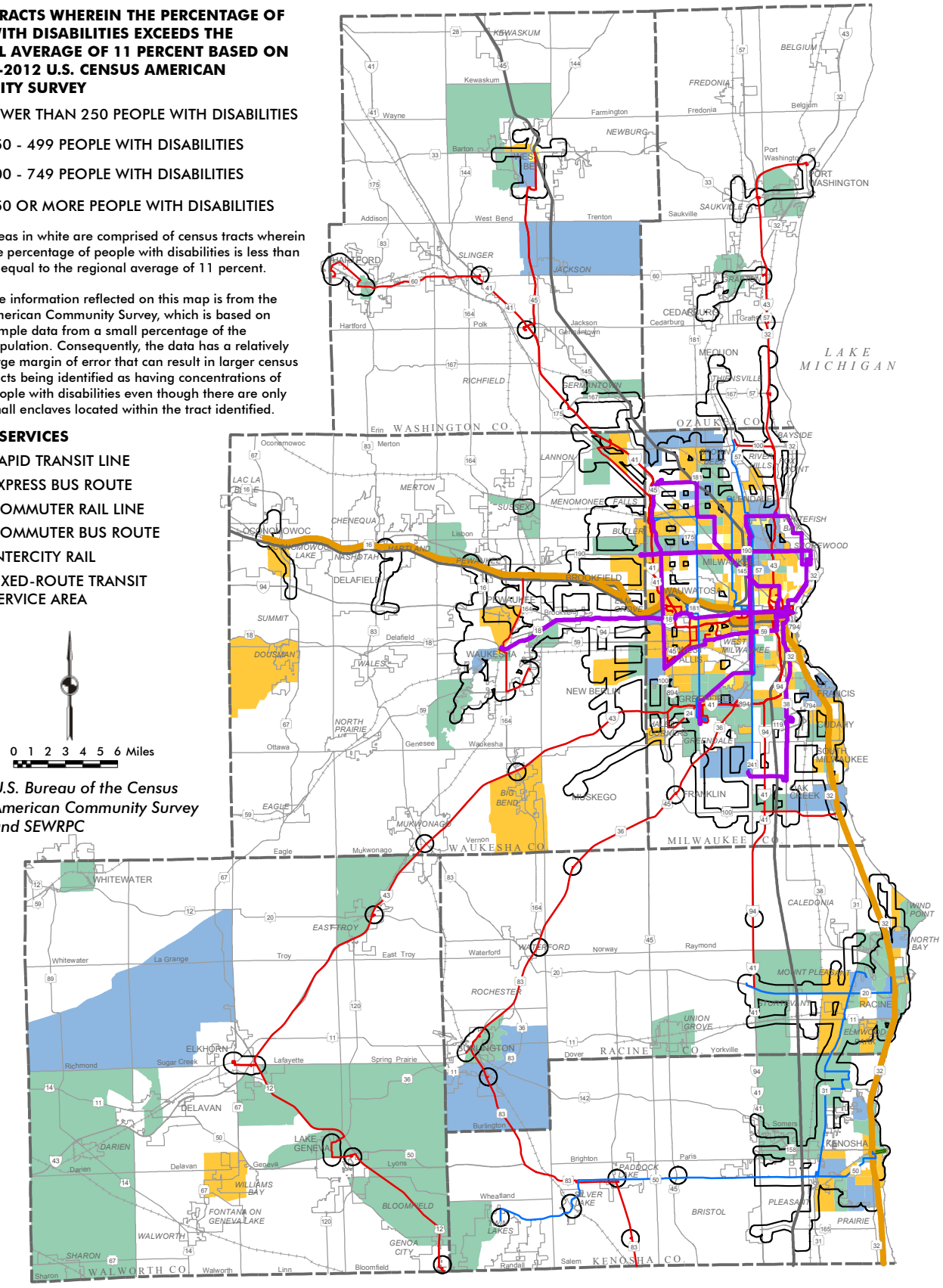
- FEWER THAN 250 PEOPLE WITH DISABILITIES
- 250 - 499 PEOPLE WITH DISABILITIES
- 500 - 749 PEOPLE WITH DISABILITIES
- 750 OR MORE PEOPLE WITH DISABILITIES

Notes: Areas in white are comprised of census tracts wherein the percentage of people with disabilities is less than or equal to the regional average of 11 percent.

The information reflected on this map is from the American Community Survey, which is based on sample data from a small percentage of the population. Consequently, the data has a relatively large margin of error that can result in larger census tracts being identified as having concentrations of people with disabilities even though there are only small enclaves located within the tract identified.

TRANSIT SERVICES

- RAPID TRANSIT LINE
- EXPRESS BUS ROUTE
- COMMUTER RAIL LINE
- COMMUTER BUS ROUTE
- INTERCITY RAIL
- FIXED-ROUTE TRANSIT SERVICE AREA



Source: U.S. Bureau of the Census American Community Survey and SEWRPC

compares the quality of transit service that would be provided to existing minority populations, lower-income populations, and people with disabilities under the Trend and Preliminary Plan. Criterion 2.1.1 (Level of Accessibility of Jobs and Activity Centers for Minority Populations and Low-Income Populations) includes comparisons of how many jobs, hospitals, parks, colleges, major retail centers, grocery stores, and regional destinations could be reached within 30 minutes via transit by existing minority populations, lower-income populations, and people with disabilities under the Trend and Preliminary Plan.

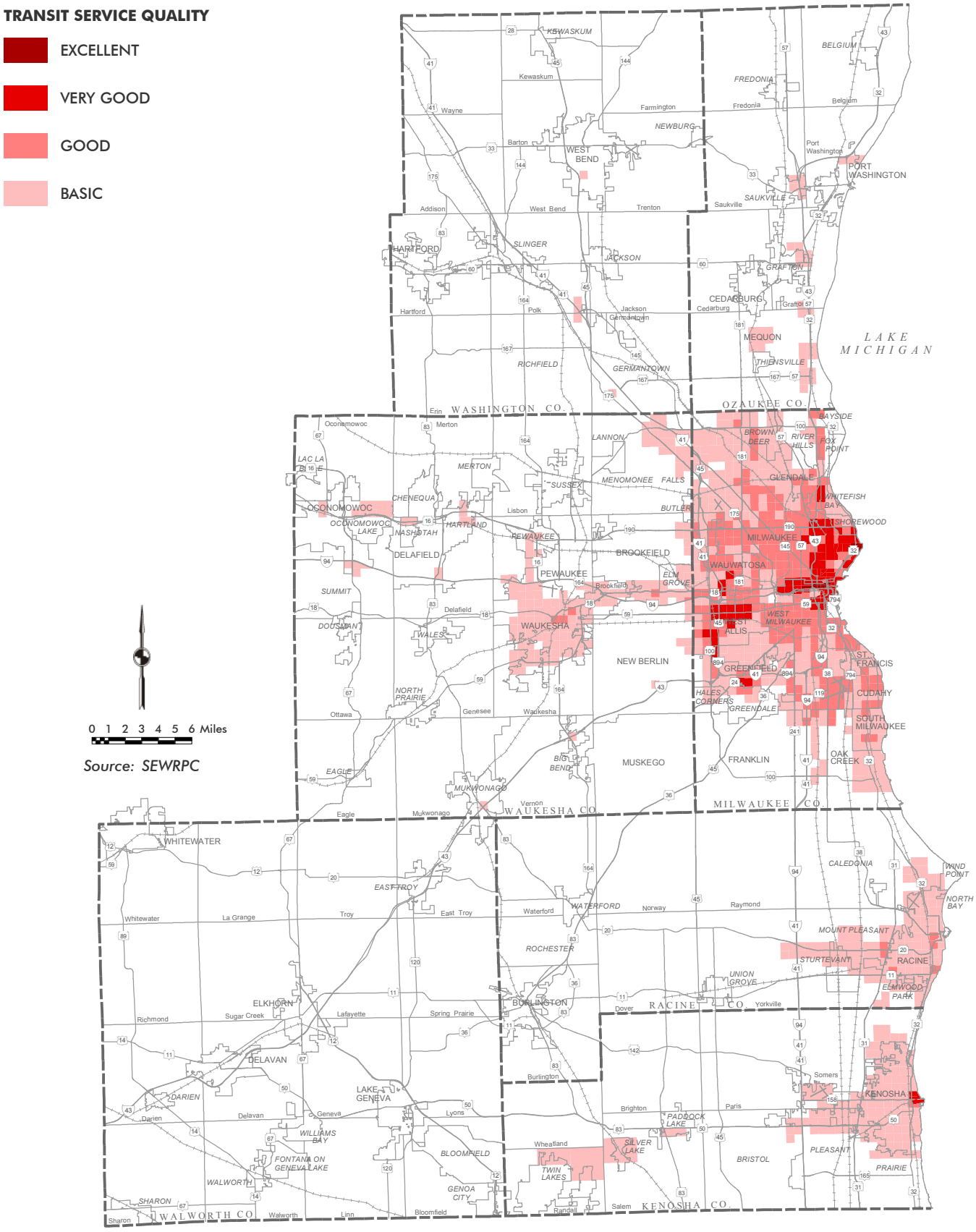
CRITERION 2.1.3: TRANSIT SERVICE QUALITY FOR MINORITY POPULATIONS AND LOW-INCOME POPULATIONS

While Criterion 2.1.2 measured the access that existing minority populations, lower-income populations, and people with disabilities would have to transit service under the Trend and Preliminary Recommended Plan, this criterion measures the quality of transit service that would be provided to these populations. The quality of transit service that would be provided to the Region's residents is evaluated under Criterion 4.5.3 (Transit Service Quality). Based on the amount and speed of transit service, levels of transit quality—Excellent, Very Good, Good, and Basic—were determined under existing conditions, the Trend, and the Preliminary Plan. Based on this analysis, the Preliminary Plan would provide high-quality—"Excellent" or "Very Good"—transit service to a significantly higher number of residents than the Trend. This methodology was used to compare the level of service quality provided under existing conditions, the Trend, and the Preliminary Plan (as shown on Maps H.45 through Map H.47) for existing minority populations, lower-income populations, and people with disabilities. The locations of existing minority populations, lower-income populations (families in poverty and families with incomes less than twice the poverty level), and people with disabilities in the Region are shown on Maps H.48 through H.51. The results of this analysis are presented in Table H.21.

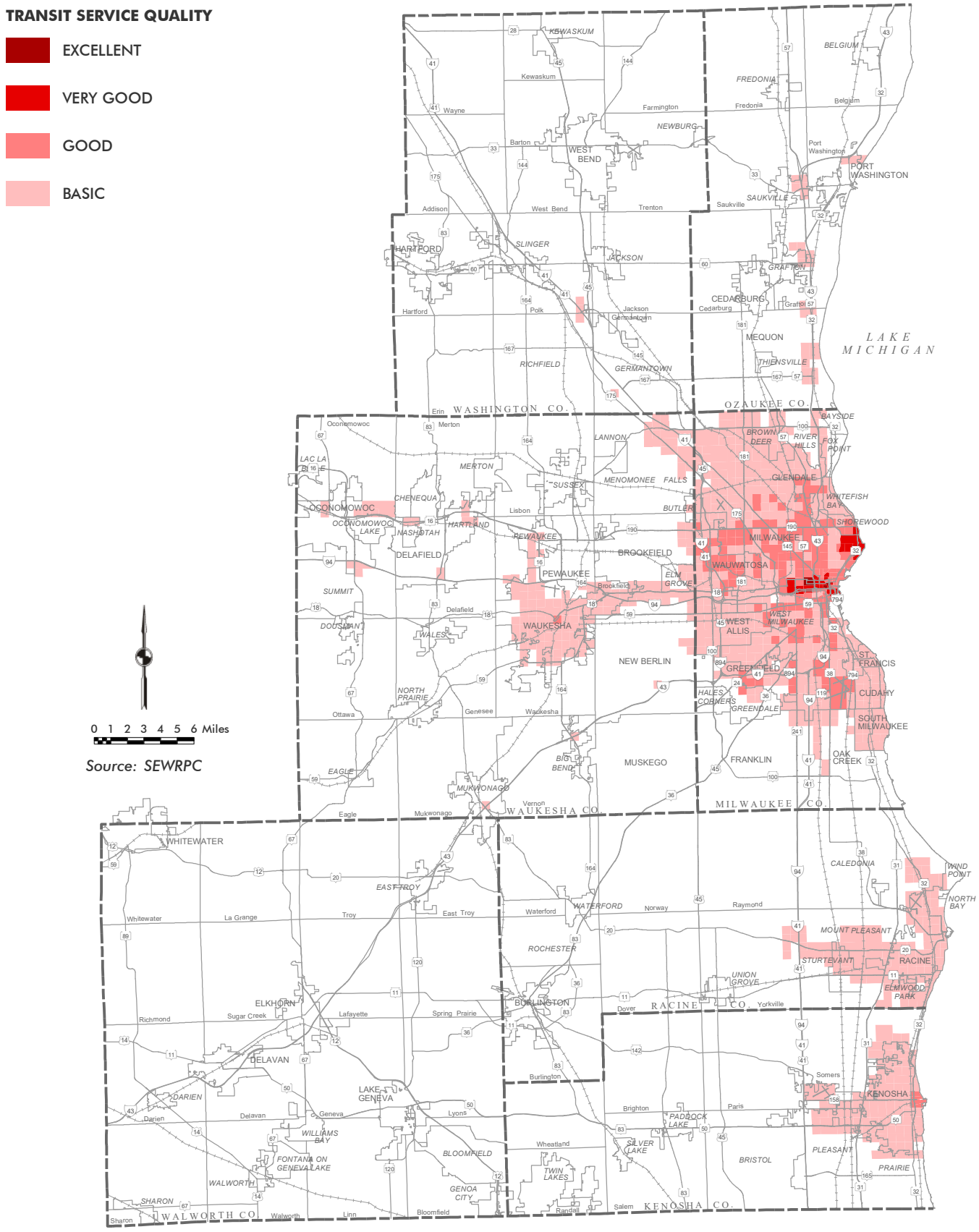
The Preliminary Plan would substantially increase the amount of the existing minority populations, lower-income populations, and people with disabilities that would have access to high-quality transit service compared to existing transit services—47 percent compared to 9 percent for minority population, 44 percent compared to 10 percent for families in poverty, 37 percent compared to 8 percent for families with incomes less than twice the poverty level, and 30 percent compared to 7 percent for people with disabilities. With the further decline in transit under the Trend, it is expected that only about 1 to 2 percent of these existing populations would be served by high-quality transit service under the Trend.

The Preliminary Plan would improve transit service over existing conditions particularly for existing minority populations, lower-income populations, and people with disabilities. As shown in Table H.22, the Preliminary Plan would result in approximately an additional 38 percent of the existing minority population with access to high-quality transit service, compared to approximately an additional 12 percent of the non-minority population. Similarly, the Preliminary Plan would result in approximately an additional 34 percent of the existing families in poverty and 29 percent of families with incomes less than twice the poverty level with access to high-quality transit service, compared to approximately an additional 16 and 14 percent of families with higher incomes, respectively. With respect to people with disabilities, the Preliminary Plan would result in approximately an additional 23 percent of people with disabilities receiving high-quality transit service, compared to approximately an additional 19 percent of people without disabilities.

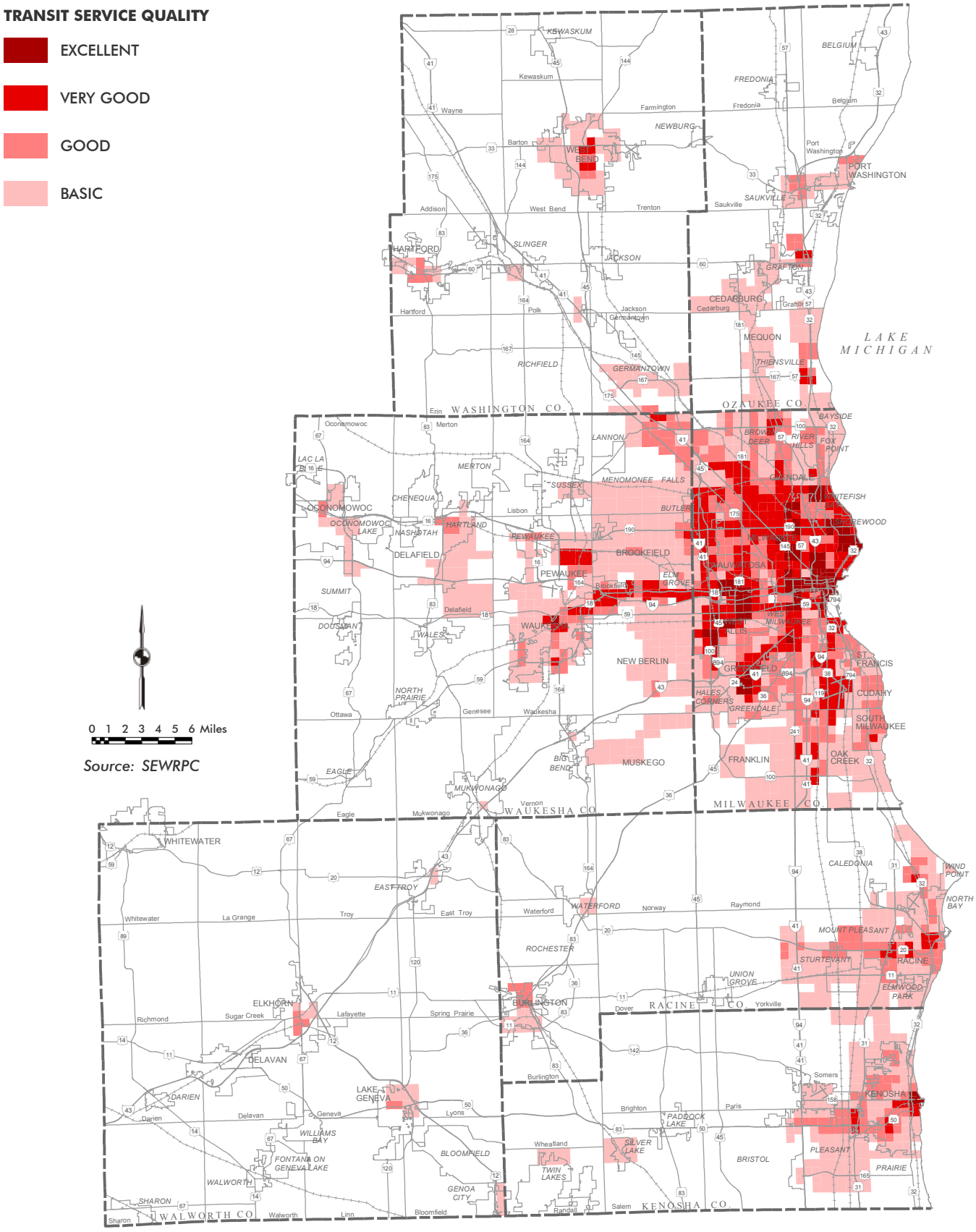
Map H.45
Transit Service Quality: Existing



Map H.46
Transit Service Quality: Trend



Map H.47
Transit Service Quality: Preliminary Recommended Plan

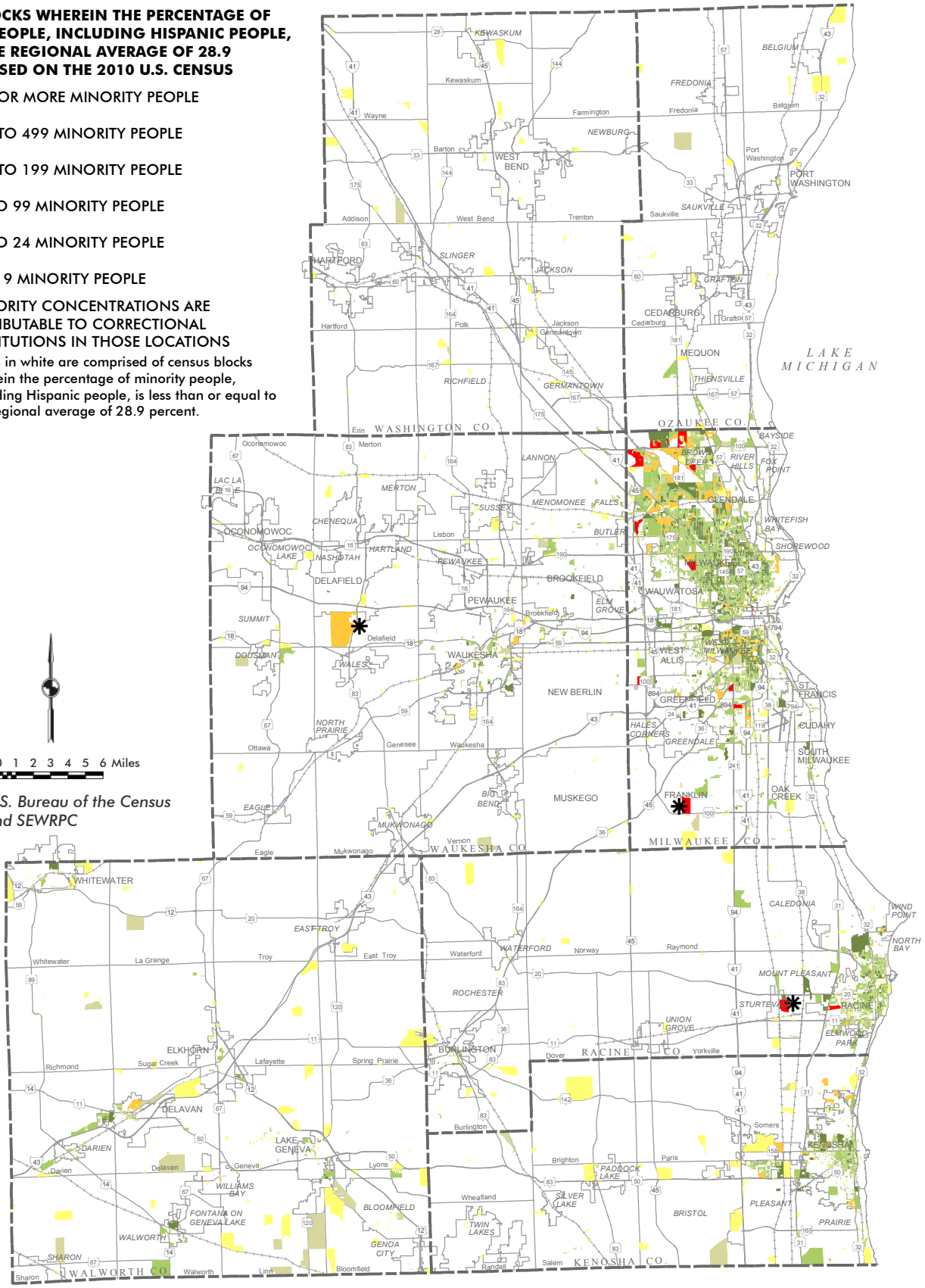


Map H.48
Concentrations of Total Minority Population in the Region: 2010

CENSUS BLOCKS WHEREIN THE PERCENTAGE OF MINORITY PEOPLE, INCLUDING HISPANIC PEOPLE, EXCEEDS THE REGIONAL AVERAGE OF 28.9 PERCENT BASED ON THE 2010 U.S. CENSUS

- 500 OR MORE MINORITY PEOPLE
- 200 TO 499 MINORITY PEOPLE
- 100 TO 199 MINORITY PEOPLE
- 25 TO 99 MINORITY PEOPLE
- 10 TO 24 MINORITY PEOPLE
- 1 TO 9 MINORITY PEOPLE
- * MINORITY CONCENTRATIONS ARE ATTRIBUTABLE TO CORRECTIONAL INSTITUTIONS IN THOSE LOCATIONS

Note: Areas in white are comprised of census blocks wherein the percentage of minority people, including Hispanic people, is less than or equal to the regional average of 28.9 percent.



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

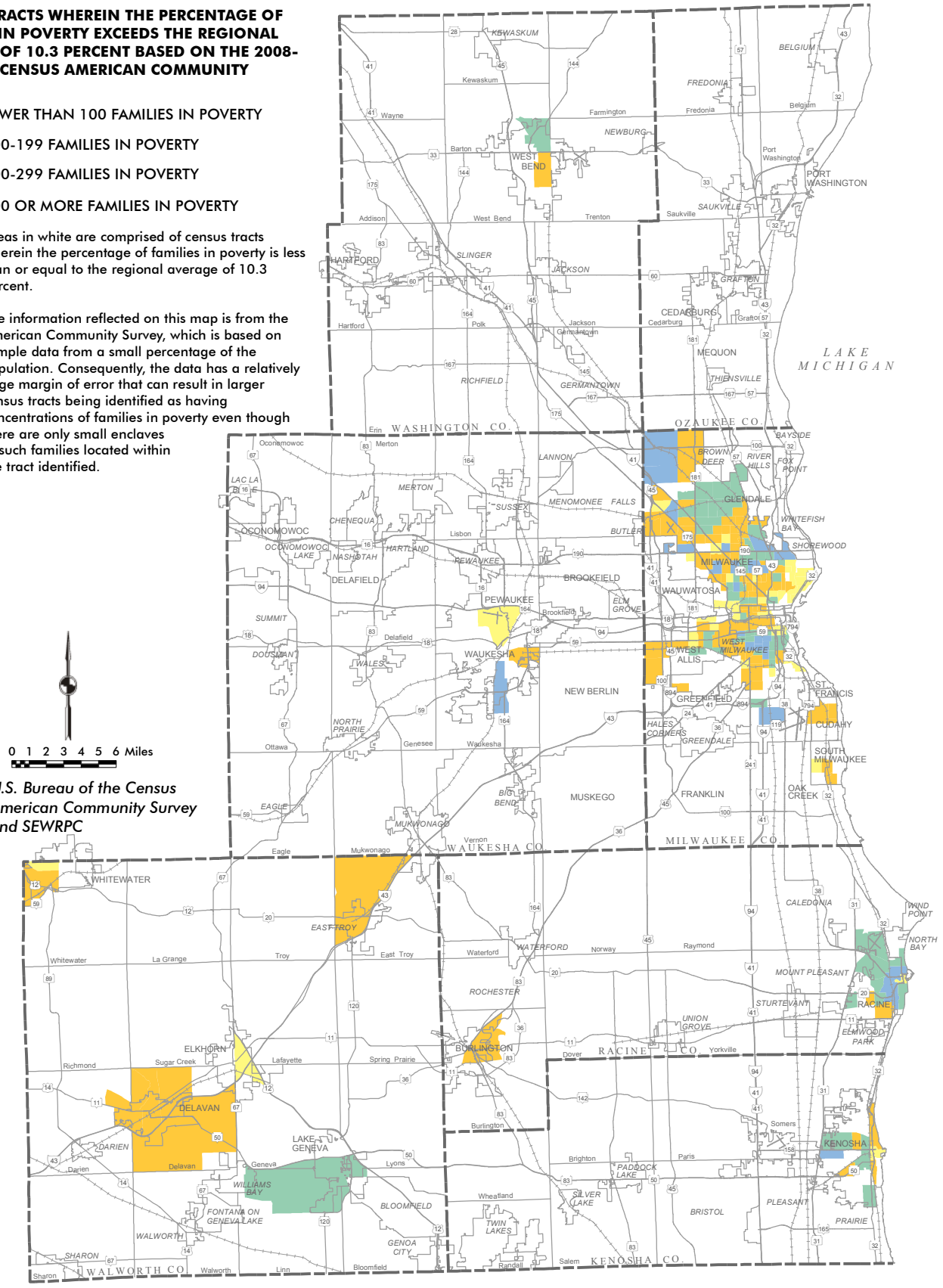
Map H.49
Concentrations of Families in Poverty in the Region: 2008-2012

CENSUS TRACTS WHEREIN THE PERCENTAGE OF FAMILIES IN POVERTY EXCEEDS THE REGIONAL AVERAGE OF 10.3 PERCENT BASED ON THE 2008-2012 U.S. CENSUS AMERICAN COMMUNITY SURVEY

- FEWER THAN 100 FAMILIES IN POVERTY
- 100-199 FAMILIES IN POVERTY
- 200-299 FAMILIES IN POVERTY
- 300 OR MORE FAMILIES IN POVERTY

Notes: Areas in white are comprised of census tracts wherein the percentage of families in poverty is less than or equal to the regional average of 10.3 percent.

The information reflected on this map is from the American Community Survey, which is based on sample data from a small percentage of the population. Consequently, the data has a relatively large margin of error that can result in larger census tracts being identified as having concentrations of families in poverty even though there are only small enclaves of such families located within the tract identified.



Source: U.S. Bureau of the Census American Community Survey and SEWRPC

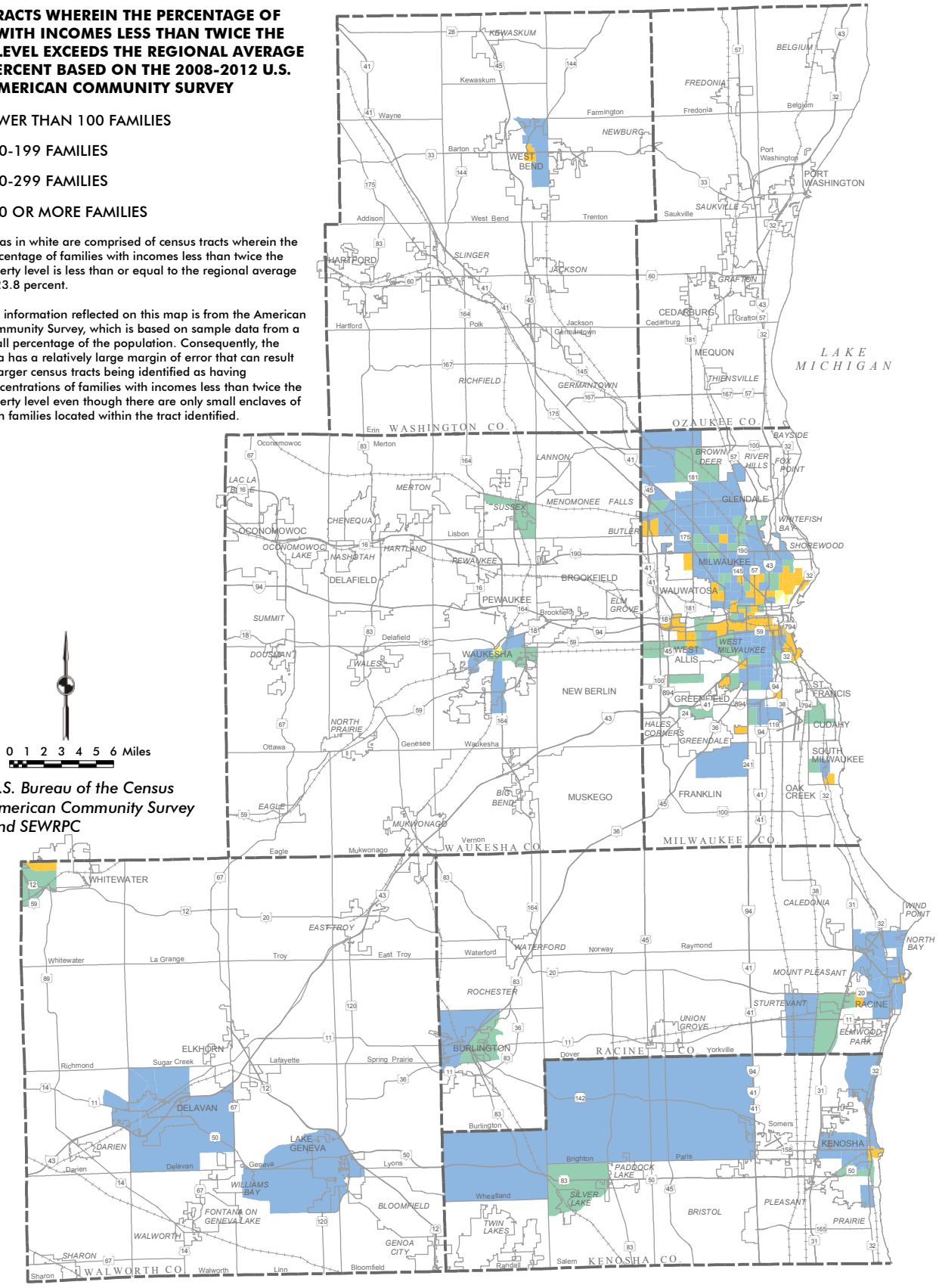
Map H.50
Concentrations of Families with Incomes Less Than Twice the Poverty Level in the Region: 2008-2012

CENSUS TRACTS WHEREIN THE PERCENTAGE OF FAMILIES WITH INCOMES LESS THAN TWICE THE POVERTY LEVEL EXCEEDS THE REGIONAL AVERAGE OF 23.8 PERCENT BASED ON THE 2008-2012 U.S. CENSUS AMERICAN COMMUNITY SURVEY

- FEWER THAN 100 FAMILIES
- 100-199 FAMILIES
- 200-299 FAMILIES
- 300 OR MORE FAMILIES

Notes: Areas in white are comprised of census tracts wherein the percentage of families with incomes less than twice the poverty level is less than or equal to the regional average of 23.8 percent.

The information reflected on this map is from the American Community Survey, which is based on sample data from a small percentage of the population. Consequently, the data has a relatively large margin of error that can result in larger census tracts being identified as having concentrations of families with incomes less than twice the poverty level even though there are only small enclaves of such families located within the tract identified.



Source: U.S. Bureau of the Census American Community Survey and SEWRPC

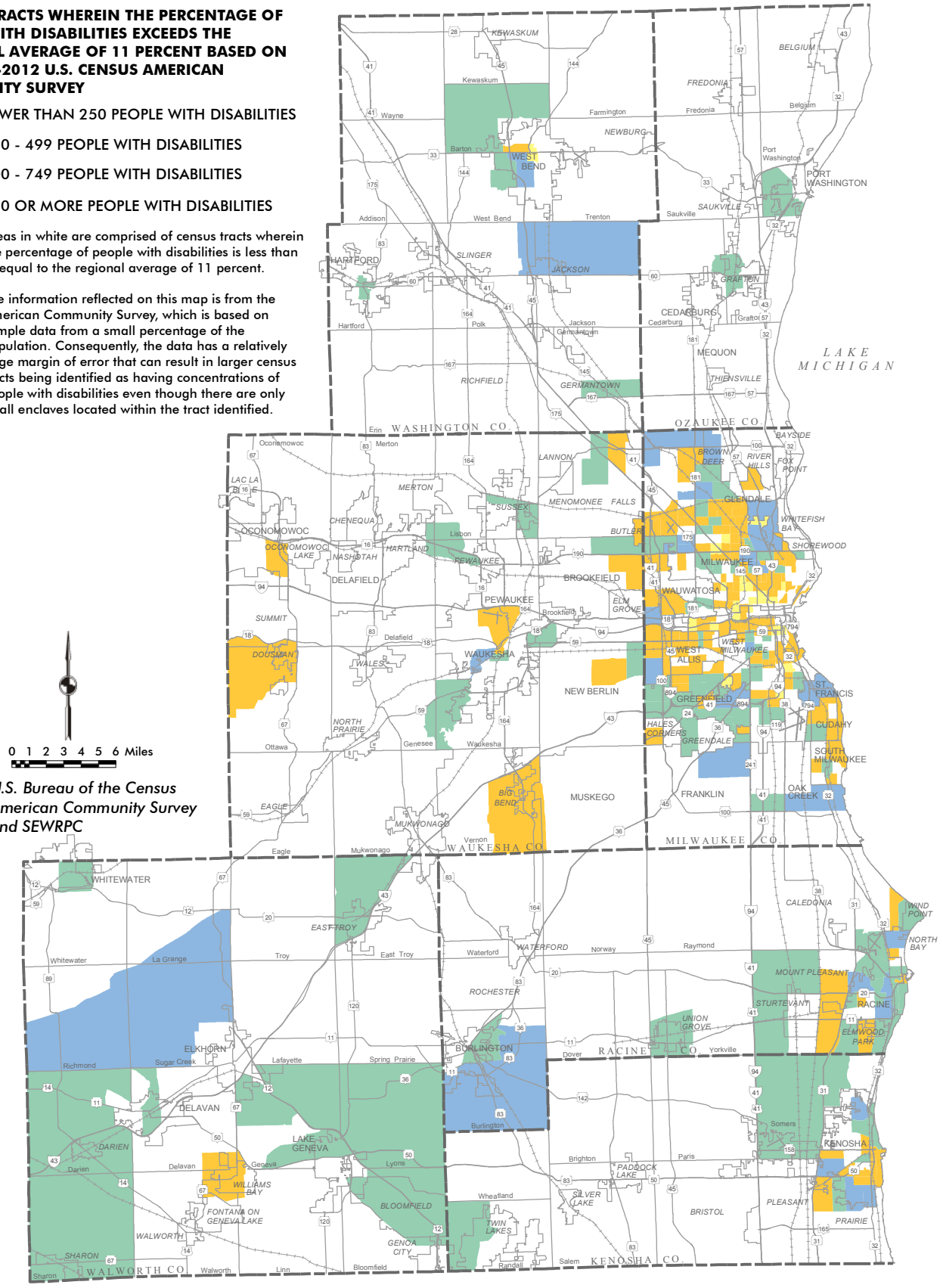
Map H.51
Concentrations of People with Disabilities: 2008-2012

CENSUS TRACTS WHEREIN THE PERCENTAGE OF PEOPLE WITH DISABILITIES EXCEEDS THE REGIONAL AVERAGE OF 11 PERCENT BASED ON THE 2008-2012 U.S. CENSUS AMERICAN COMMUNITY SURVEY

- FEWER THAN 250 PEOPLE WITH DISABILITIES
- 250 - 499 PEOPLE WITH DISABILITIES
- 500 - 749 PEOPLE WITH DISABILITIES
- 750 OR MORE PEOPLE WITH DISABILITIES

Notes: Areas in white are comprised of census tracts wherein the percentage of people with disabilities is less than or equal to the regional average of 11 percent.

The information reflected on this map is from the American Community Survey, which is based on sample data from a small percentage of the population. Consequently, the data has a relatively large margin of error that can result in larger census tracts being identified as having concentrations of people with disabilities even though there are only small enclaves located within the tract identified.



Source: U.S. Bureau of the Census American Community Survey and SEWRPC

Table H.21
Transit Service Quality

Minority Population[a]

Plan	Excellent		Very Good		Good		Basic		Total Minority Population
	People	Percent	People	Percent	People	Percent	People	Percent	
Existing - 2015	700	0.1	53,100	9.1	237,900	40.8	216,900	37.2	582,900
Trend - 2050	2,700	0.5	10,600	1.8	161,300	27.7	332,000	57.0	582,900
Plan - 2050	68,300	11.7	206,700	35.5	142,500	24.4	123,200	21.1	582,900

Families in Poverty[a]

Plan	Excellent		Very Good		Good		Basic		Total Families in Poverty
	Families	Percent	Families	Percent	Families	Percent	Families	Percent	
Existing - 2015	0	0.0	5,200	9.9	20,000	38.2	17,300	33.1	52,300
Trend - 2050	300	0.6	900	1.7	14,100	27.0	26,900	51.4	52,300
Plan - 2050	6,300	12.0	16,900	32.3	12,000	22.9	10,300	19.7	52,300

Families with Incomes Less Than Twice the Poverty Level[a]

Plan	Excellent		Very Good		Good		Basic		Total Families with Incomes Less Than Twice the Poverty Level
	Families	Percent	Families	Percent	Families	Percent	Families	Percent	
Existing - 2015	0	0.0	9,300	7.7	39,700	32.8	40,800	33.7	121,000
Trend - 2050	400	0.3	1,500	1.2	26,600	22.0	60,300	49.8	121,000
Plan - 2050	10,800	8.9	34,100	28.2	27,300	22.6	26,900	22.2	121,000

People with Disabilities[a]

Plan	Excellent		Very Good		Good		Basic		Total Population with Disabilities
	People	Percent	People	Percent	People	Percent	People	Percent	
Existing - 2015	200	0.1	15,200	6.9	51,500	23.3	73,500	33.3	220,600
Trend - 2050	300	0.1	2,300	1.0	35,900	16.3	99,300	45.0	220,600
Plan - 2050	17,000	7.7	48,300	21.9	44,000	19.9	58,500	26.5	220,600

[a] *Minority population is based on the 2010 U.S. Census and families in poverty, families with incomes less than twice the poverty level, and people with disabilities are based on the 2008-2012 American Community Survey.*

Source: U.S. Bureau of the Census, U.S. Census and American Community Survey; and SEWRPC

Table H.22
Additional Percent Receiving Excellent or Very Good Transit Service Quality Under the Preliminary Recommended Plan

Minority Population[a]

Plan	Minority Population	Non-Minority Population
Plan - 2050	38	12

Families in Poverty and with Incomes Less Than Twice the Poverty Level[a]

Plan	Families in Poverty	Families Not in Poverty	Families with Incomes Less Than Twice the Poverty Level	Families with Incomes More Than Twice the Poverty Level
Plan - 2050	34	16	29	14

People with Disabilities[a]

Plan	People with Disabilities	People Without Disabilities
Plan - 2050	23	19

[a] *Minority population and non-minority population are based on the 2010 U.S. Census and families in poverty, families not in poverty, families with incomes less than twice the poverty level, families with incomes more than twice the poverty level, people with disabilities, and people without disabilities are based on the 2008-2012 American Community Survey.*

Source: U.S. Bureau of the Census, U.S. Census and American Community Survey; and SEWRPC

CRITERION 2.1.4: MINORITY POPULATIONS AND LOW-INCOME POPULATIONS BENEFITED AND IMPACTED BY NEW AND WIDENED ARTERIAL STREET AND HIGHWAY FACILITIES

This criterion provides an evaluation as to whether the existing minority populations and low-income[43] populations within the Region would receive a disproportionate share of the impacts—both costs and benefits—of the highway improvements under the Trend and Preliminary Recommended Plan. Specifically, an analysis was conducted to determine the extent to which the existing minority populations and low-income populations living in impacted areas would receive benefits—such as improved accessibility and improved safety—from the proposed new and widened arterials under the Preliminary Plan. As part of this analysis, a select link analysis was conducted to determine whether existing minority populations and low-income populations would be expected to utilize the segments of arterial streets and highways that would be improved under the Preliminary Plan. An analysis was also conducted to determine whether the existing minority populations and low-income populations would disproportionately bear any potential impacts from the new and widened facilities.

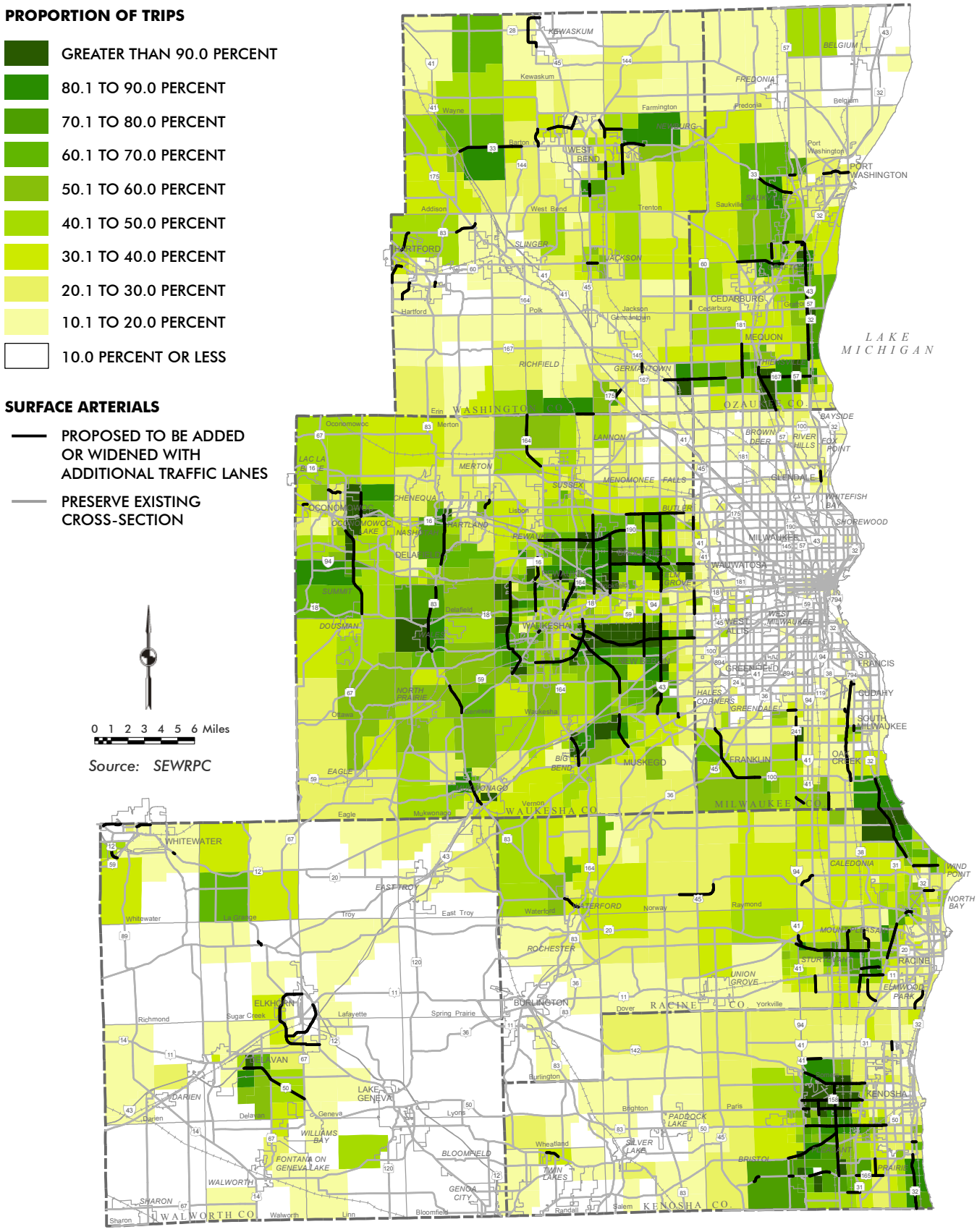
- **Benefits from Arterial Improvements:** While minority populations and low-income populations utilize public transit at a higher proportion relative to other modes of travel than white and higher-income populations in the Region, the automobile is by far the dominant mode of travel for minority populations and low-income populations. In Milwaukee County, about 81 to 88 percent of travel by minority populations to and from work is by automobile (depending on the race or ethnicity), compared to 88 percent of the white population. Similarly, in Milwaukee County about 70 percent of travel by low-income populations to and from work is by automobile, compared to 89 percent for populations of higher income.

  Maps H.52 through H.55 show the percentage of the automobile trips within each TAZ that would utilize the new or widened surface arterial and freeway segments under the Preliminary Recommended Plan. These maps were compared to locations of current concentrations of minority populations and low-income populations (as shown on Maps H.56 and H.57). With respect to surface arterials, the areas that would have the greatest use of these proposed improved arterials are largely adjacent, or near, the proposed new or widened surface arterials. The proposed new and widened surface arterials are largely located outside existing areas of minority populations and low-income populations. With respect to freeways, the segments of freeway proposed to be widened under the Preliminary Plan would directly serve areas of minority population and low-income population, particularly in Milwaukee County. As a result, it is expected that minority populations and low-income populations, particularly those residing adjacent to the freeway widenings, would be utilizing and experiencing benefit from the expected improvement in accessibility associated with the proposed widenings.

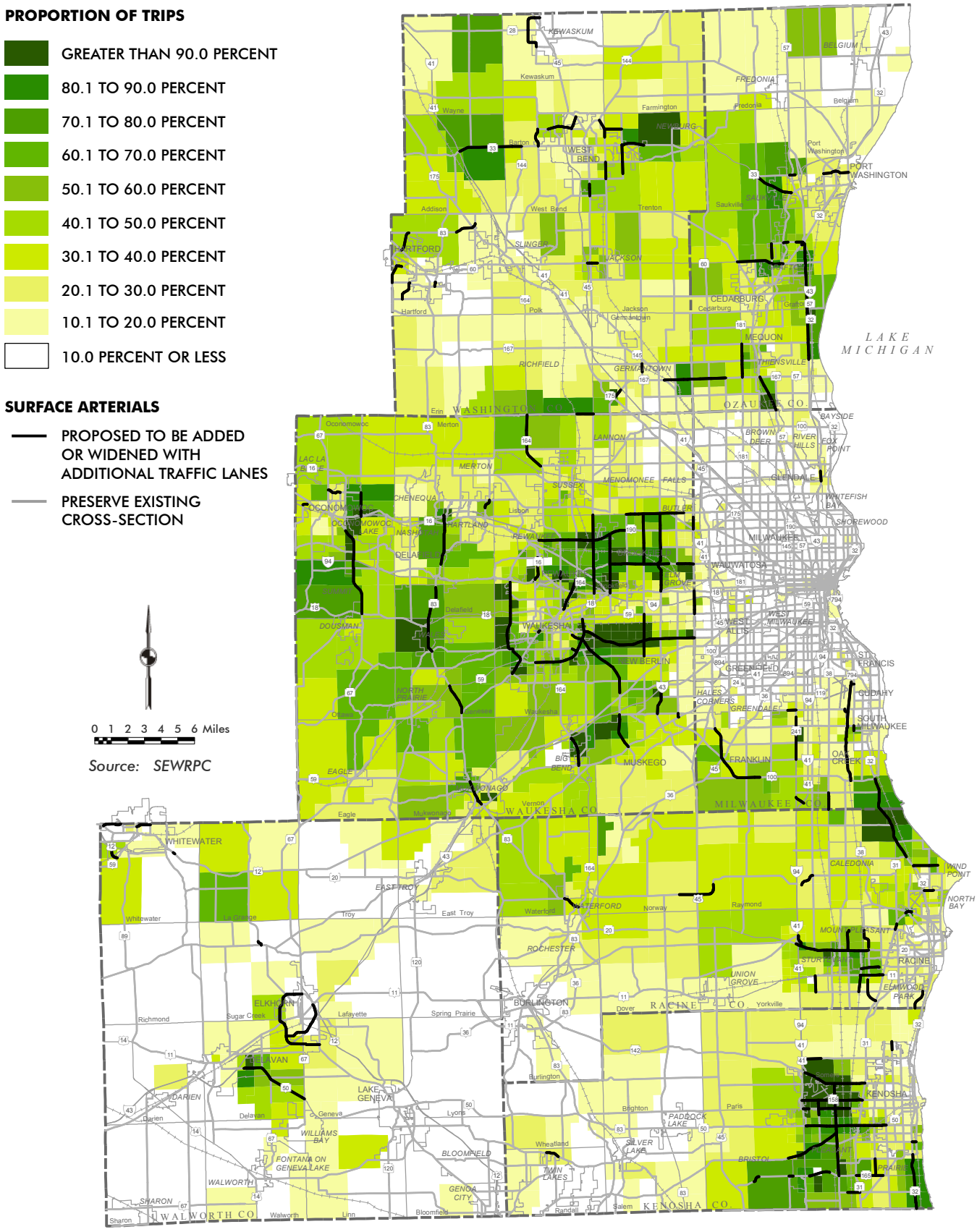
  Improvements in accessibility to jobs and other activity areas for existing minority populations and low-income populations were analyzed

[43] *For the purposes of this criterion, a low-income person is defined as a person residing in a household with an income level at or below the poverty level (about $22,113 for a family of four in 2010).*

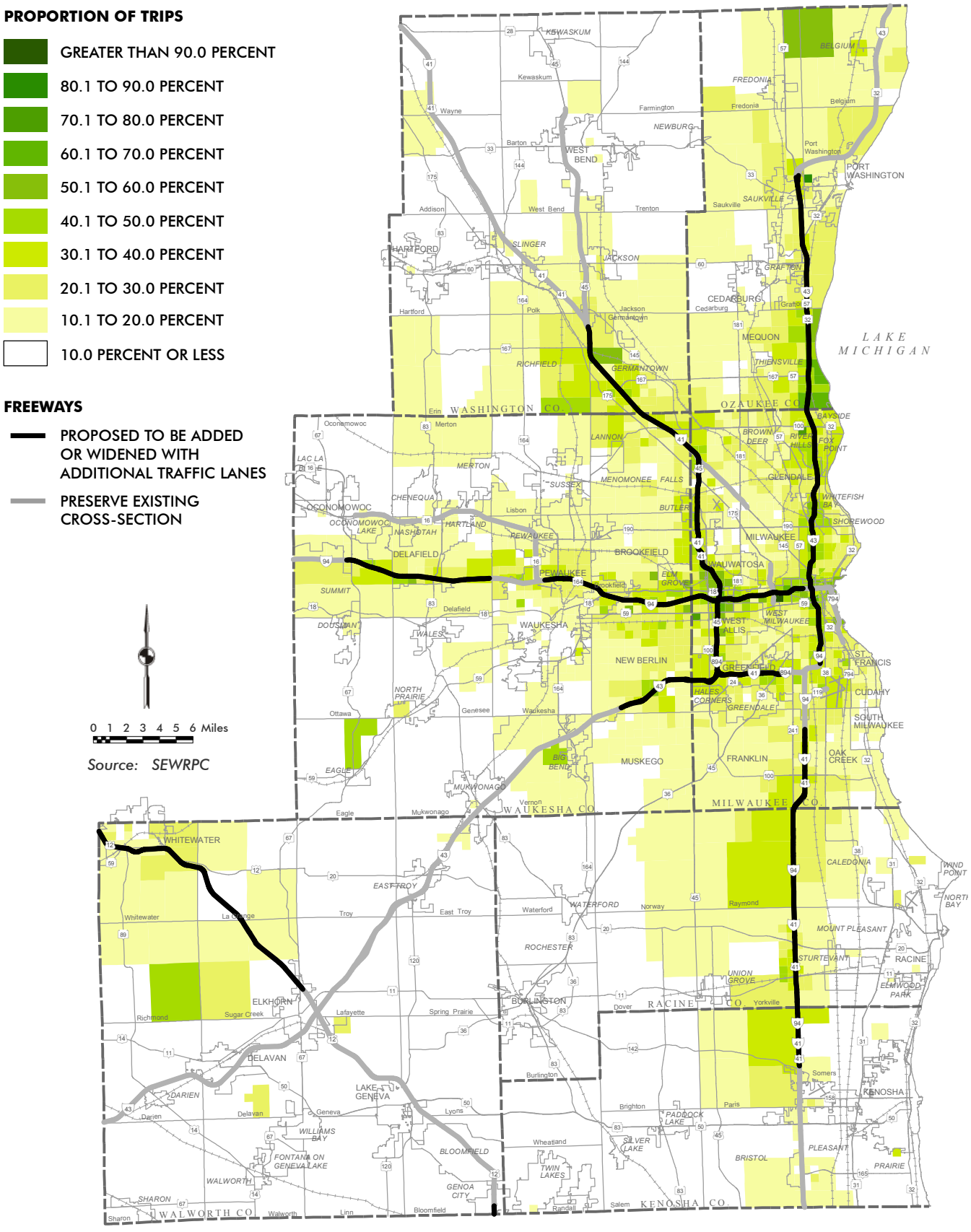
Map H.52
Proportion of Automobile Trips Using the New or Widened Surface Arterial Segments Within Each Traffic Analysis Zone: Trend



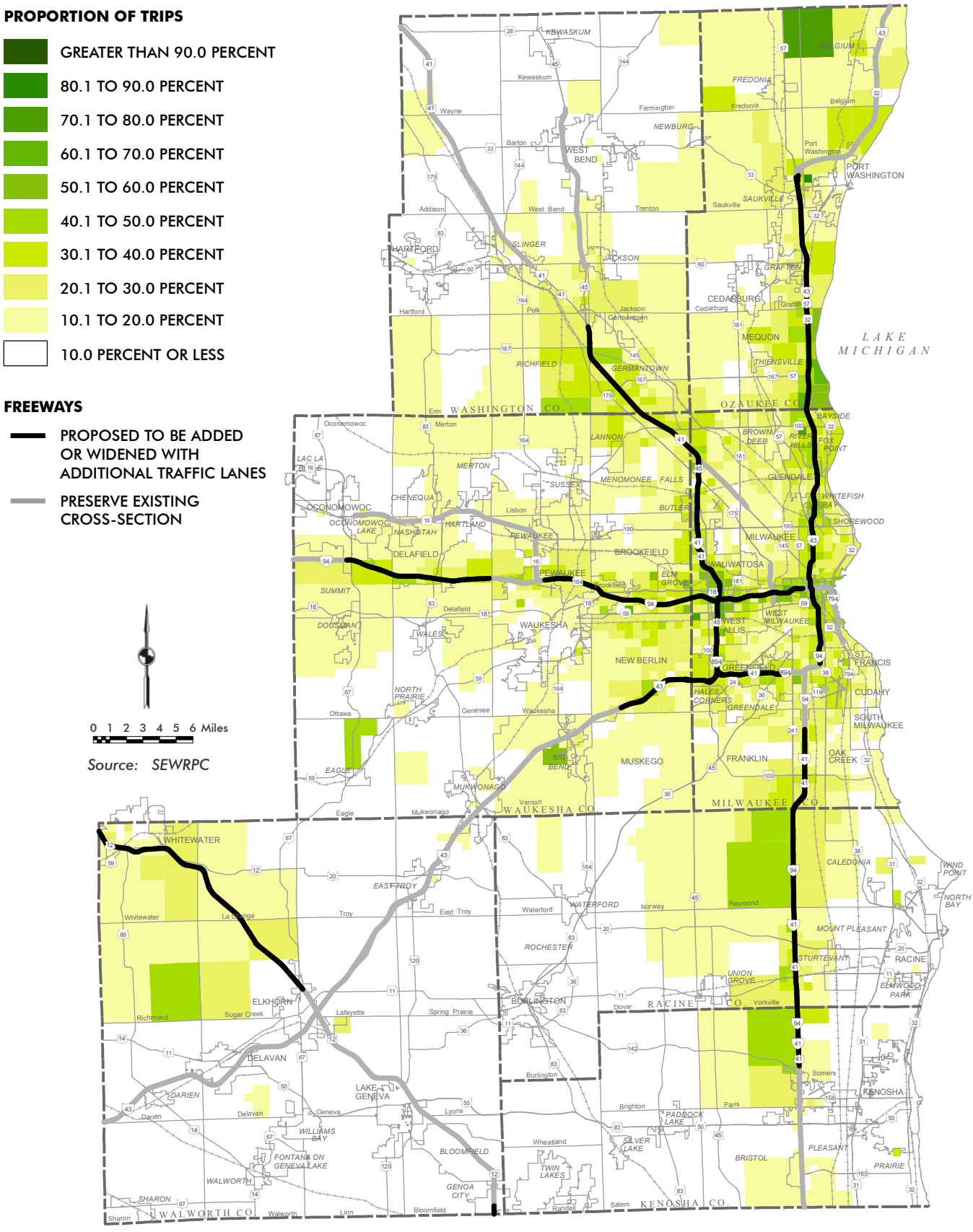
Map H.53
Proportion of Automobile Trips Using the New or Widened Surface Arterial Segments Within Each Traffic Analysis Zone: Preliminary Recommended Plan



Map H.54
Proportion of Automobile Trips Using the New or Widened Freeway Segments Within Each Traffic Analysis Zone: Trend



Map H.55
Proportion of Automobile Trips Using the New or Widened Freeway Segments Within Each Traffic Analysis Zone: Preliminary Recommended Plan

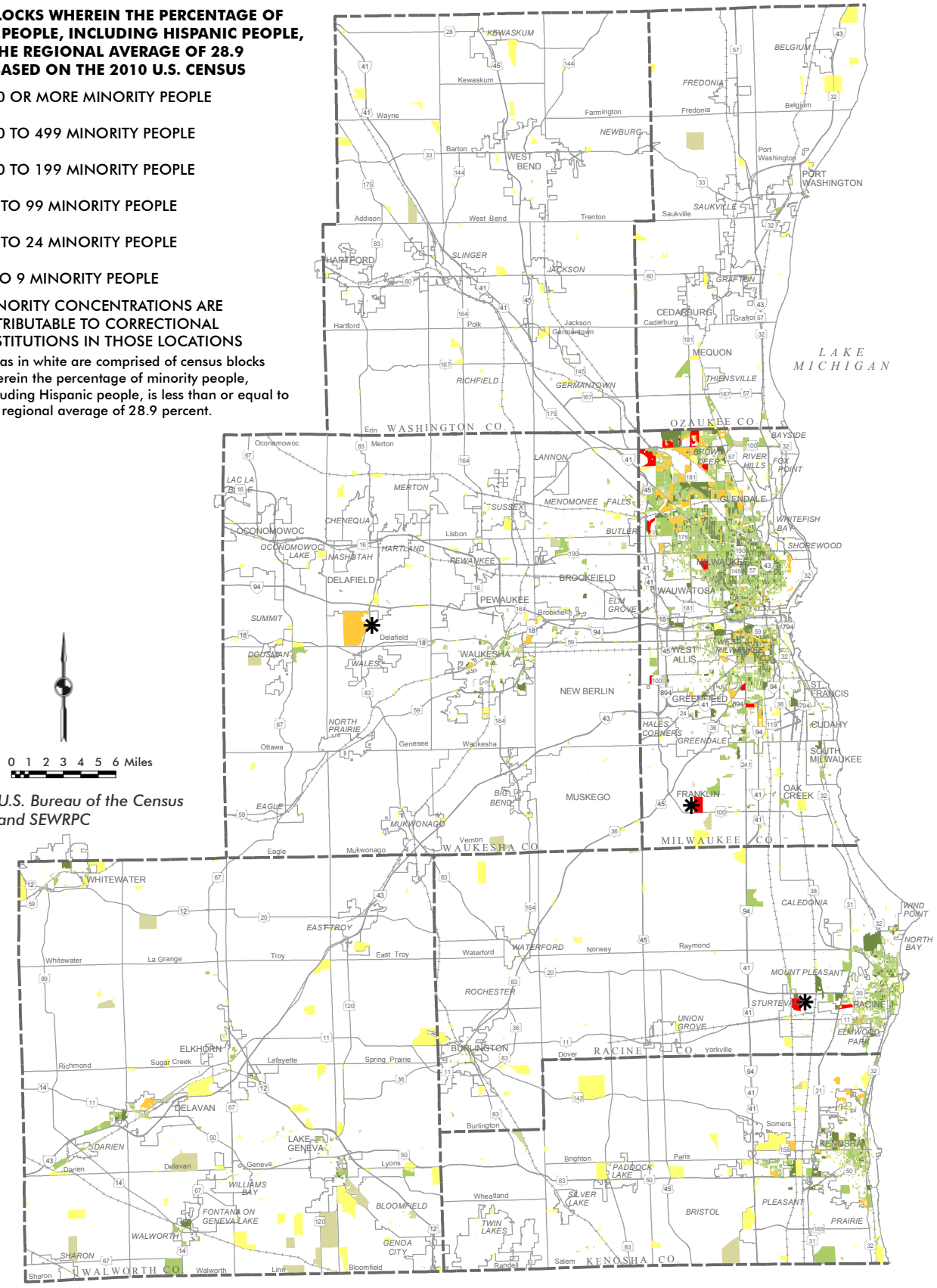


Map H.56
Concentrations of Total Minority Population in the Region: 2010

CENSUS BLOCKS WHEREIN THE PERCENTAGE OF MINORITY PEOPLE, INCLUDING HISPANIC PEOPLE, EXCEEDS THE REGIONAL AVERAGE OF 28.9 PERCENT BASED ON THE 2010 U.S. CENSUS

- 500 OR MORE MINORITY PEOPLE
- 200 TO 499 MINORITY PEOPLE
- 100 TO 199 MINORITY PEOPLE
- 25 TO 99 MINORITY PEOPLE
- 10 TO 24 MINORITY PEOPLE
- 1 TO 9 MINORITY PEOPLE
- * MINORITY CONCENTRATIONS ARE ATTRIBUTABLE TO CORRECTIONAL INSTITUTIONS IN THOSE LOCATIONS

Note: Areas in white are comprised of census blocks wherein the percentage of minority people, including Hispanic people, is less than or equal to the regional average of 28.9 percent.



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

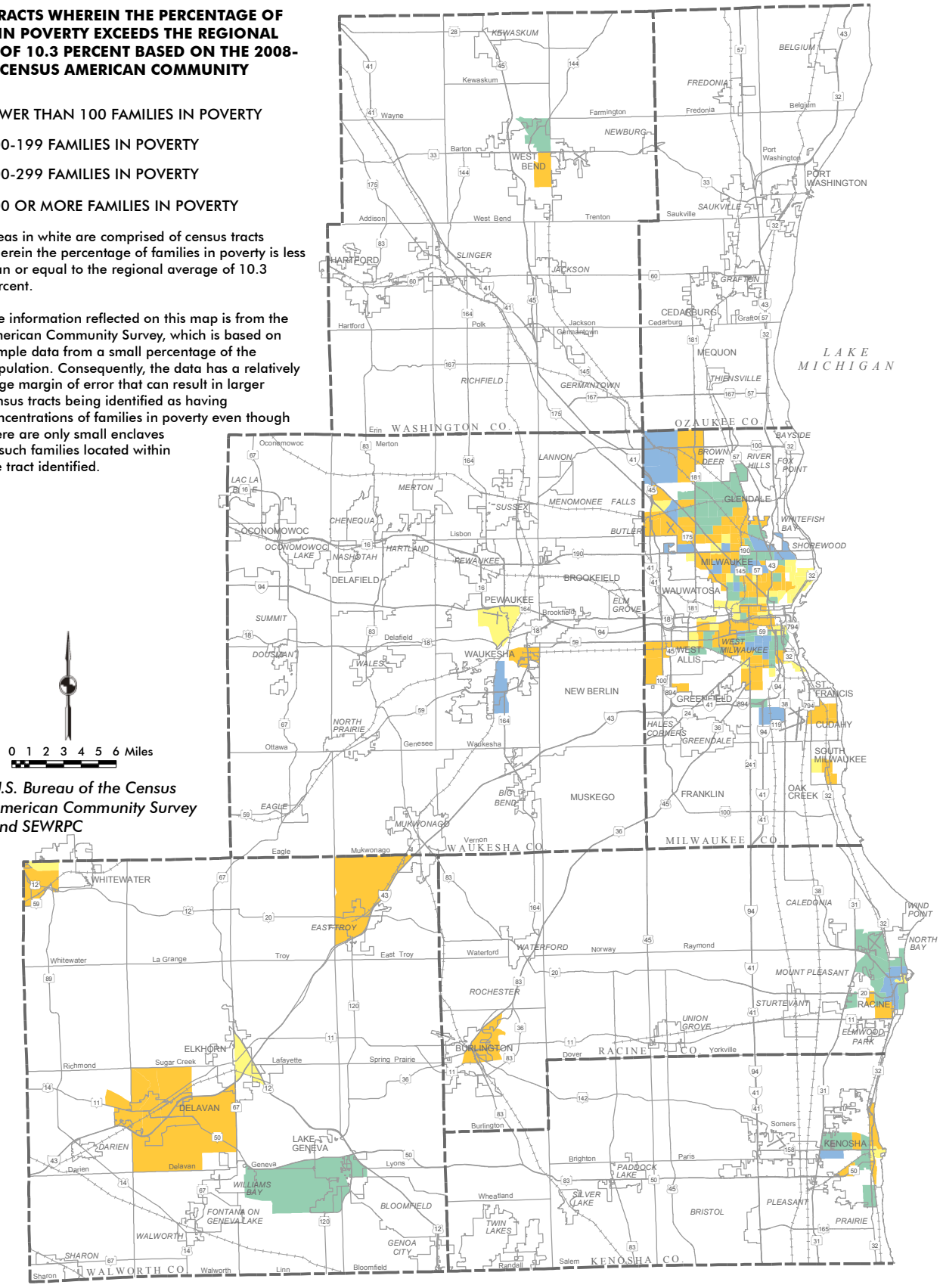
Map H.57
Concentrations of Families in Poverty in the Region: 2008-2012

CENSUS TRACTS WHEREIN THE PERCENTAGE OF FAMILIES IN POVERTY EXCEEDS THE REGIONAL AVERAGE OF 10.3 PERCENT BASED ON THE 2008-2012 U.S. CENSUS AMERICAN COMMUNITY SURVEY

- FEWER THAN 100 FAMILIES IN POVERTY
- 100-199 FAMILIES IN POVERTY
- 200-299 FAMILIES IN POVERTY
- 300 OR MORE FAMILIES IN POVERTY

Notes: Areas in white are comprised of census tracts wherein the percentage of families in poverty is less than or equal to the regional average of 10.3 percent.

The information reflected on this map is from the American Community Survey, which is based on sample data from a small percentage of the population. Consequently, the data has a relatively large margin of error that can result in larger census tracts being identified as having concentrations of families in poverty even though there are only small enclaves of such families located within the tract identified.



Source: U.S. Bureau of the Census American Community Survey and SEWRPC

in Criterion 2.1.1 (Level of Accessibility to Jobs and Activity Centers for Minority Populations and Low-Income Populations by Mode). The results of this criterion indicated that, even as traffic volumes increase through the year 2050, the additional arterial street and highway system capacity under the Preliminary Plan would modestly improve accessibility to jobs and other activity centers for minority populations and low-income populations. The Preliminary Plan was found to provide similar benefit in terms of accessibility to jobs and other activity areas by automobile for existing minority populations and low-income populations to the Trend.

With respect to safety, rear-end collision rates have historically been 5 to 20 times higher on congested freeways (with the highest rear-end crash rates on the most extremely congested freeways). By improving safety through the reduction in congestion along the freeway segments that would be widened, there would also be direct benefits to the existing minority populations and low-income populations that would use the widened freeway segments under the Preliminary Plan.

- **Impacts of Widenings and New Facilities:** Maps H.58 through H.63 compare the locations of the highway capacity improvements under the Preliminary Plan to the areas with current concentrations of minority populations and low-income populations. In general, no area of the Region, or minority or low-income community, would be expected to disproportionately bear the impact of these highway improvements. Proposed surface arterial improvements are largely located outside areas of existing minority populations and low-income populations, and therefore their widening, new construction, and subsequent operation would be expected to have minimal negative impacts on minority populations and low-income populations. With respect to the proposed freeway widenings and new construction, some segments are located adjacent to existing minority populations, but most segments are not.

- **Impacts from Freeway Widenings:** Maps H.64 and H.65 show the locations of freeways that would be widened under the Trend and Preliminary Plan compared to the existing locations of areas with concentrations of minority populations and low-income populations. Table H.23 shows the estimated existing minority populations and low-income populations residing in proximity (one-quarter mile to one-half mile) to freeway widenings. Under the Trend and Preliminary Plan, about 81,800 minority people and 7,500 families in poverty would reside within one-half mile of a freeway widening, while 38,300 minorities and 3,600 families in poverty would reside within one-quarter mile. The proportion of the minority population (about 40 percent) and families in poverty (about 15 percent) residing within one-half mile or one-quarter mile would exceed the regional averages of 28.9 percent and 10.3 percent, respectively. This result should be expected, as about 95 percent of the minority populations and low-income populations residing adjacent to the proposed freeway widenings under the Trend and Preliminary Plan are in Milwaukee County, where about 46 percent of the population is minority and about 17 percent of families are in poverty.

  Another way of examining the relative impact of freeway widenings is to compare the proportion of the minority population and families in poverty to the non-minority population and families not in poverty

Map H.58
Comparison of Existing Concentrations of Total Minority Population in the Region to Highway Element: Trend

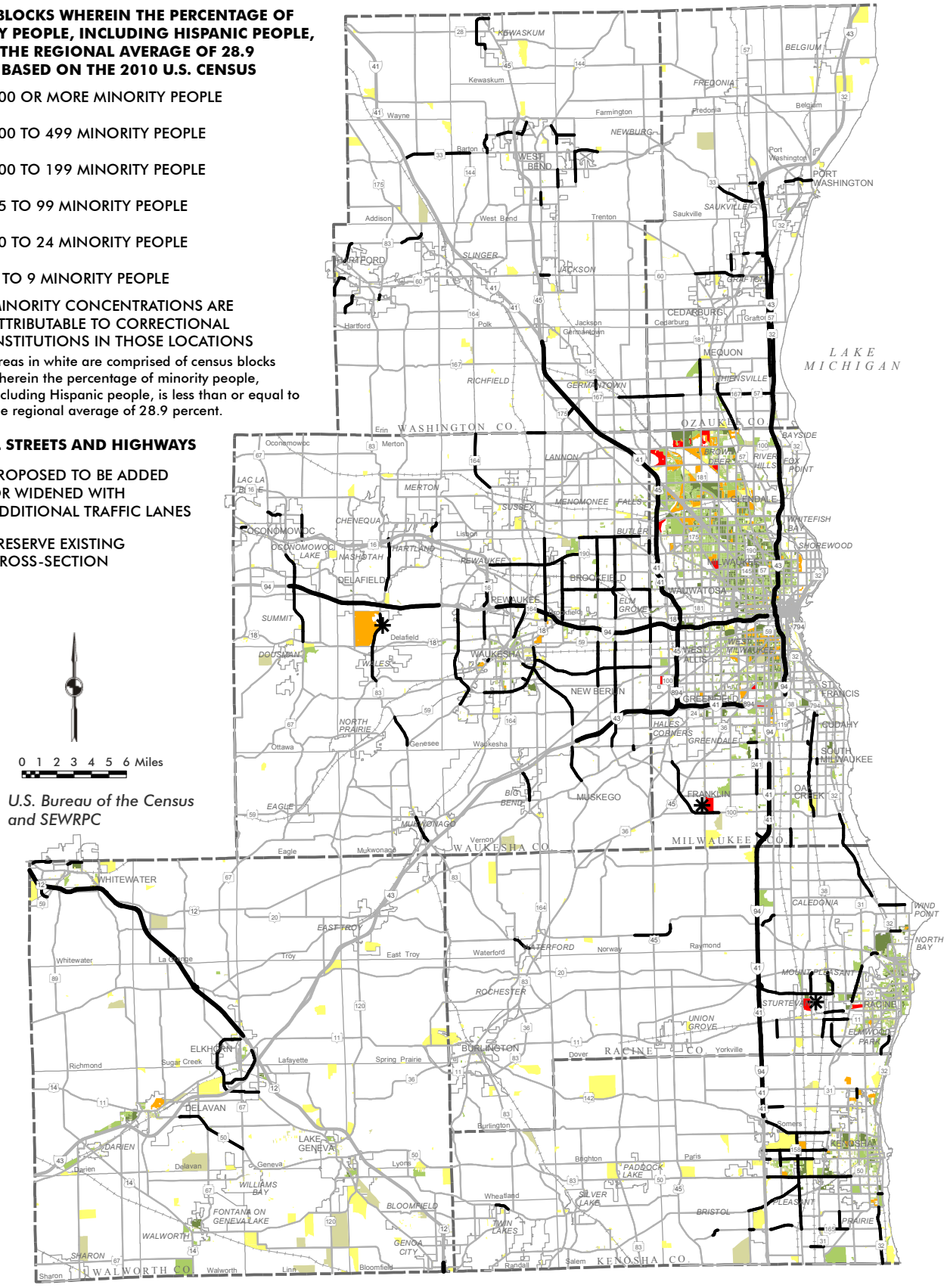
CENSUS BLOCKS WHEREIN THE PERCENTAGE OF MINORITY PEOPLE, INCLUDING HISPANIC PEOPLE, EXCEEDS THE REGIONAL AVERAGE OF 28.9 PERCENT BASED ON THE 2010 U.S. CENSUS

- 500 OR MORE MINORITY PEOPLE
- 200 TO 499 MINORITY PEOPLE
- 100 TO 199 MINORITY PEOPLE
- 25 TO 99 MINORITY PEOPLE
- 10 TO 24 MINORITY PEOPLE
- 1 TO 9 MINORITY PEOPLE
- * MINORITY CONCENTRATIONS ARE ATTRIBUTABLE TO CORRECTIONAL INSTITUTIONS IN THOSE LOCATIONS

Note: Areas in white are comprised of census blocks wherein the percentage of minority people, including Hispanic people, is less than or equal to the regional average of 28.9 percent.

ARTERIAL STREETS AND HIGHWAYS

- PROPOSED TO BE ADDED OR WIDENED WITH ADDITIONAL TRAFFIC LANES
- PRESERVE EXISTING CROSS-SECTION



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

Map H.59
Comparison of Existing Concentrations of Families in Poverty in the Region to Highway Element: Trend

CENSUS TRACTS WHEREIN THE PERCENTAGE OF FAMILIES IN POVERTY EXCEEDS THE REGIONAL AVERAGE OF 10.3 PERCENT BASED ON THE 2008-2012 U.S. CENSUS AMERICAN COMMUNITY SURVEY

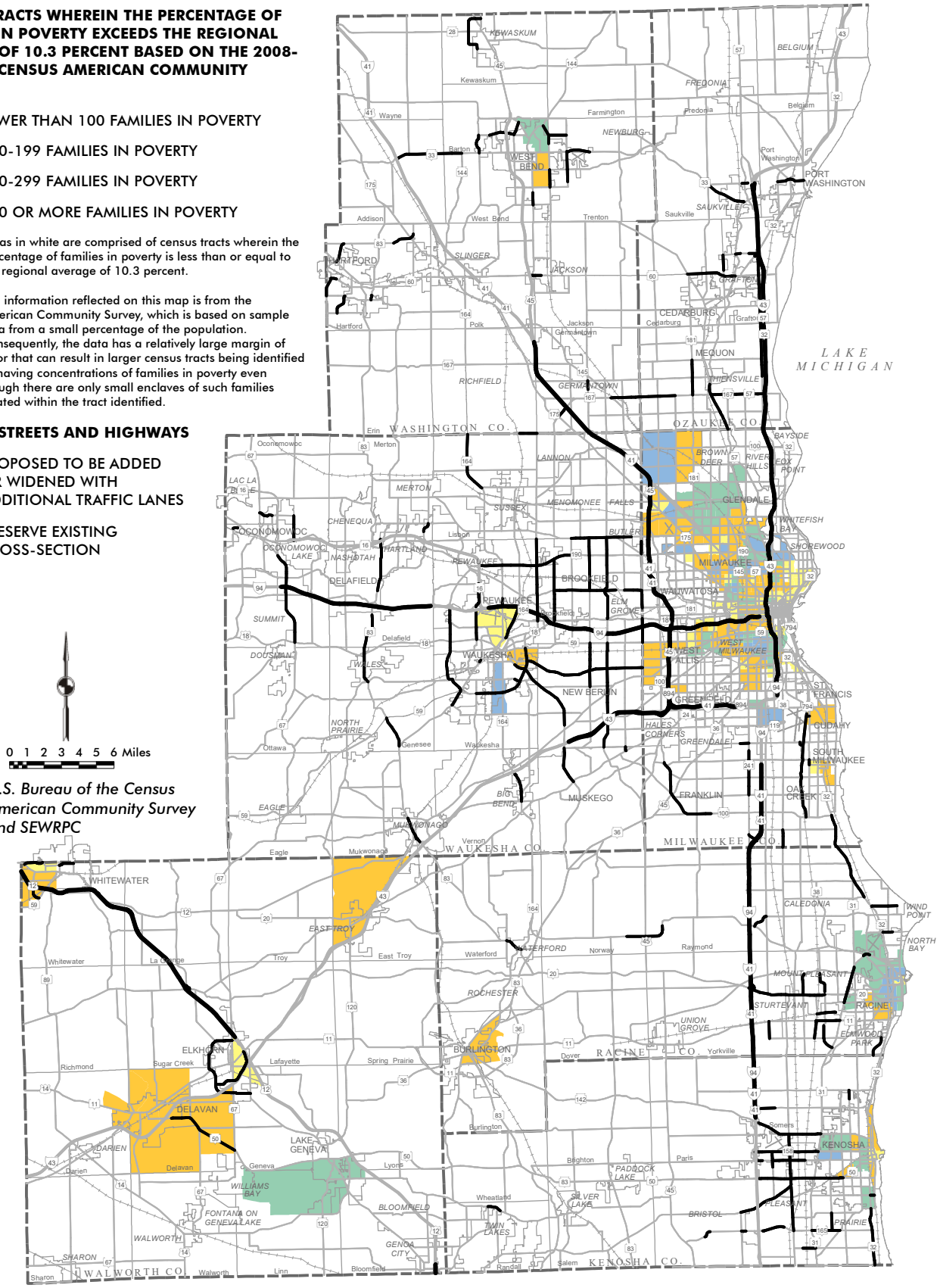
- FEWER THAN 100 FAMILIES IN POVERTY
- 100-199 FAMILIES IN POVERTY
- 200-299 FAMILIES IN POVERTY
- 300 OR MORE FAMILIES IN POVERTY

Notes: Areas in white are comprised of census tracts wherein the percentage of families in poverty is less than or equal to the regional average of 10.3 percent.

The information reflected on this map is from the American Community Survey, which is based on sample data from a small percentage of the population. Consequently, the data has a relatively large margin of error that can result in larger census tracts being identified as having concentrations of families in poverty even though there are only small enclaves of such families located within the tract identified.

ARTERIAL STREETS AND HIGHWAYS

- PROPOSED TO BE ADDED OR WIDENED WITH ADDITIONAL TRAFFIC LANES
- PRESERVE EXISTING CROSS-SECTION



Source: U.S. Bureau of the Census American Community Survey and SEWRPC

Map H.60
Comparison of Existing Concentrations of Total Minority Population in the Region to Highway Element: Preliminary Recommended Plan

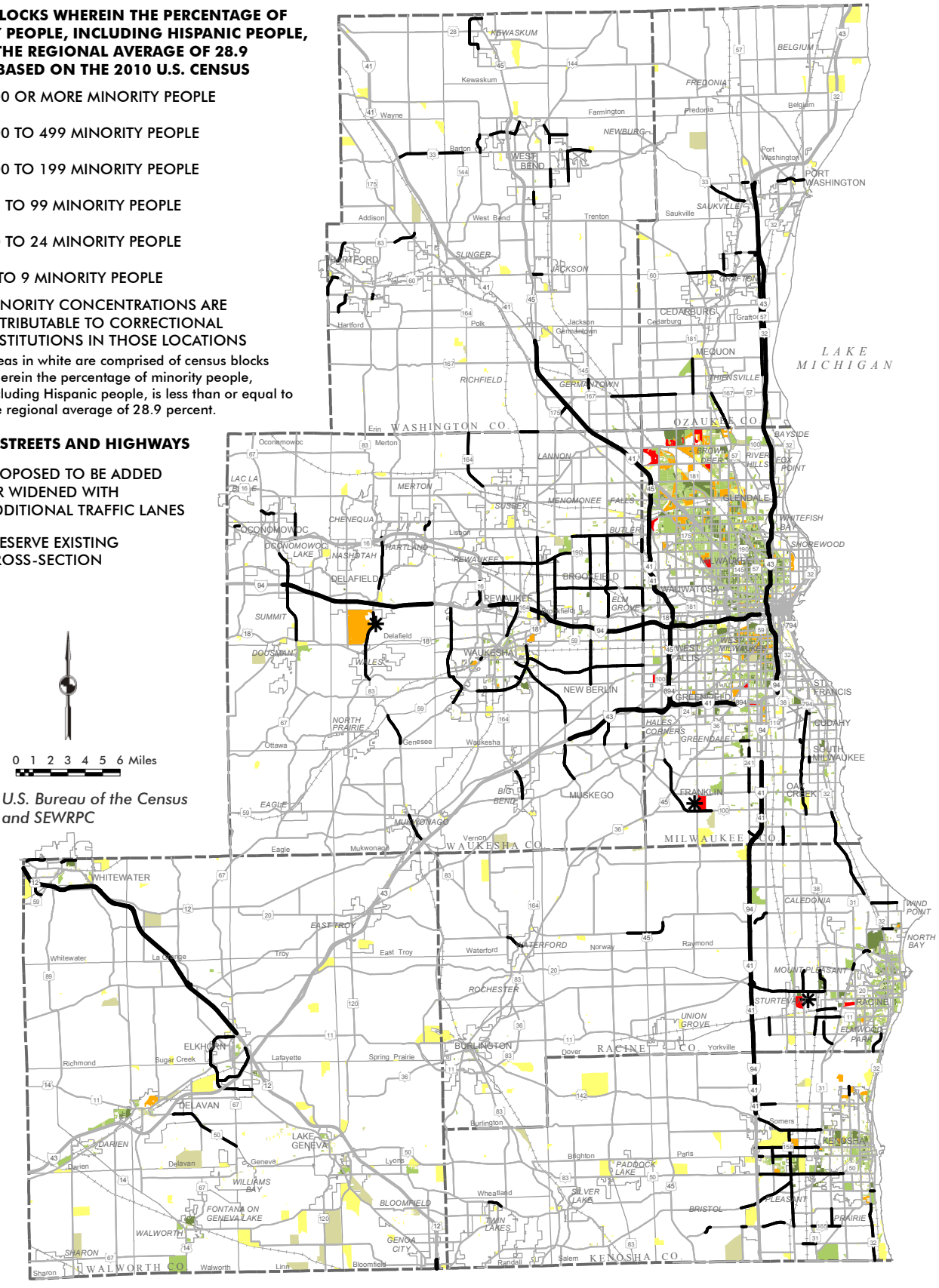
CENSUS BLOCKS WHEREIN THE PERCENTAGE OF MINORITY PEOPLE, INCLUDING HISPANIC PEOPLE, EXCEEDS THE REGIONAL AVERAGE OF 28.9 PERCENT BASED ON THE 2010 U.S. CENSUS

- 500 OR MORE MINORITY PEOPLE
- 200 TO 499 MINORITY PEOPLE
- 100 TO 199 MINORITY PEOPLE
- 25 TO 99 MINORITY PEOPLE
- 10 TO 24 MINORITY PEOPLE
- 1 TO 9 MINORITY PEOPLE
- * MINORITY CONCENTRATIONS ARE ATTRIBUTABLE TO CORRECTIONAL INSTITUTIONS IN THOSE LOCATIONS

Note: Areas in white are comprised of census blocks wherein the percentage of minority people, including Hispanic people, is less than or equal to the regional average of 28.9 percent.

ARTERIAL STREETS AND HIGHWAYS

- PROPOSED TO BE ADDED OR WIDENED WITH ADDITIONAL TRAFFIC LANES
- PRESERVE EXISTING CROSS-SECTION



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

Map H.61
Comparison of Existing Concentrations of Families in Poverty in the Region to Highway Element: Preliminary Recommended Plan

CENSUS TRACTS WHEREIN THE PERCENTAGE OF FAMILIES IN POVERTY EXCEEDS THE REGIONAL AVERAGE OF 10.3 PERCENT BASED ON THE 2008-2012 U.S. CENSUS AMERICAN COMMUNITY SURVEY

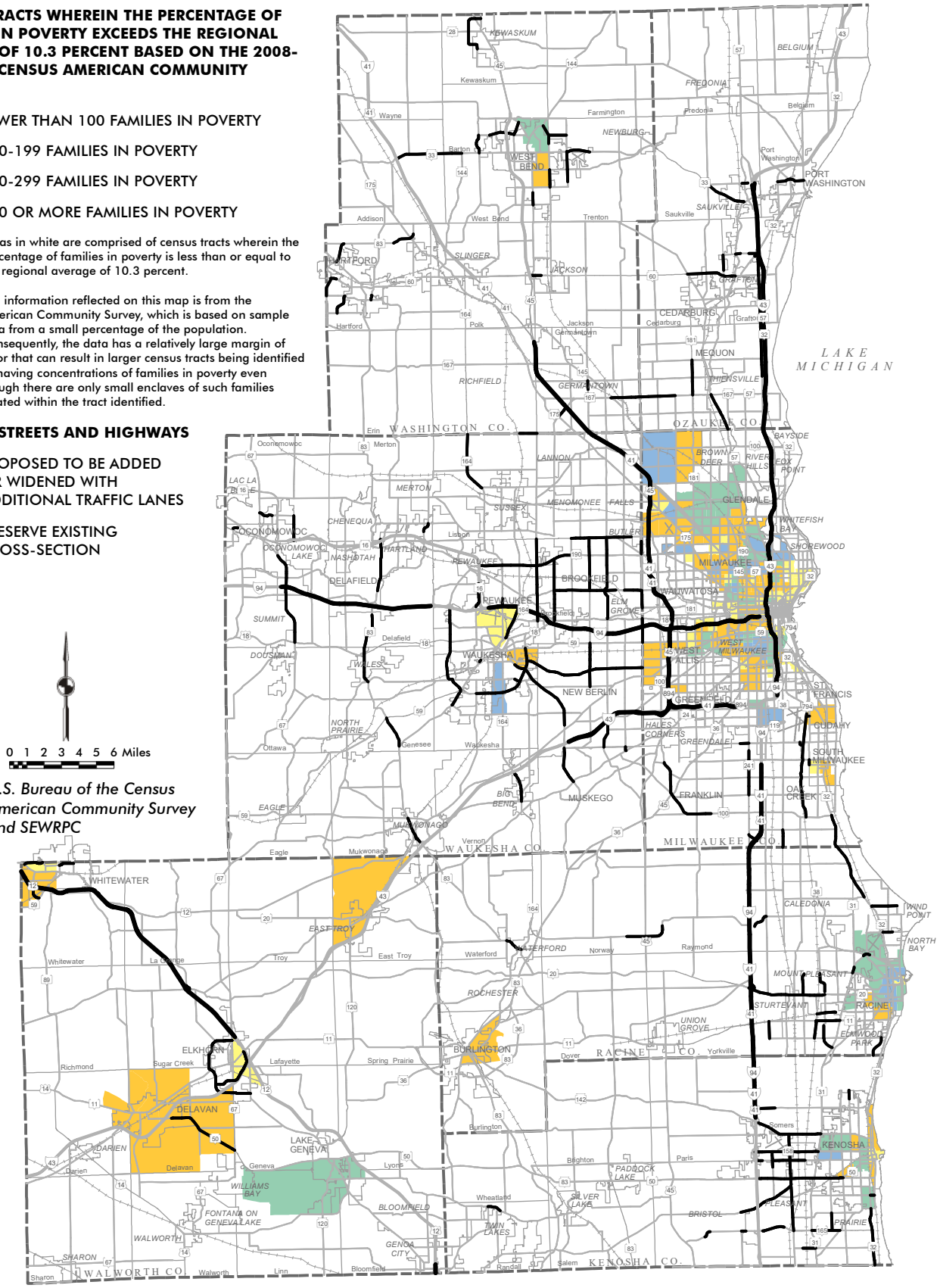
- FEWER THAN 100 FAMILIES IN POVERTY
- 100-199 FAMILIES IN POVERTY
- 200-299 FAMILIES IN POVERTY
- 300 OR MORE FAMILIES IN POVERTY

Notes: Areas in white are comprised of census tracts wherein the percentage of families in poverty is less than or equal to the regional average of 10.3 percent.

The information reflected on this map is from the American Community Survey, which is based on sample data from a small percentage of the population. Consequently, the data has a relatively large margin of error that can result in larger census tracts being identified as having concentrations of families in poverty even though there are only small enclaves of such families located within the tract identified.

ARTERIAL STREETS AND HIGHWAYS

- PROPOSED TO BE ADDED OR WIDENED WITH ADDITIONAL TRAFFIC LANES
- PRESERVE EXISTING CROSS-SECTION



Source: U.S. Bureau of the Census American Community Survey and SEWRPC

Map H.62
Comparison of Concentrations of Year 2010 Races/Ethnicities in the Region to Highway Element: Trend

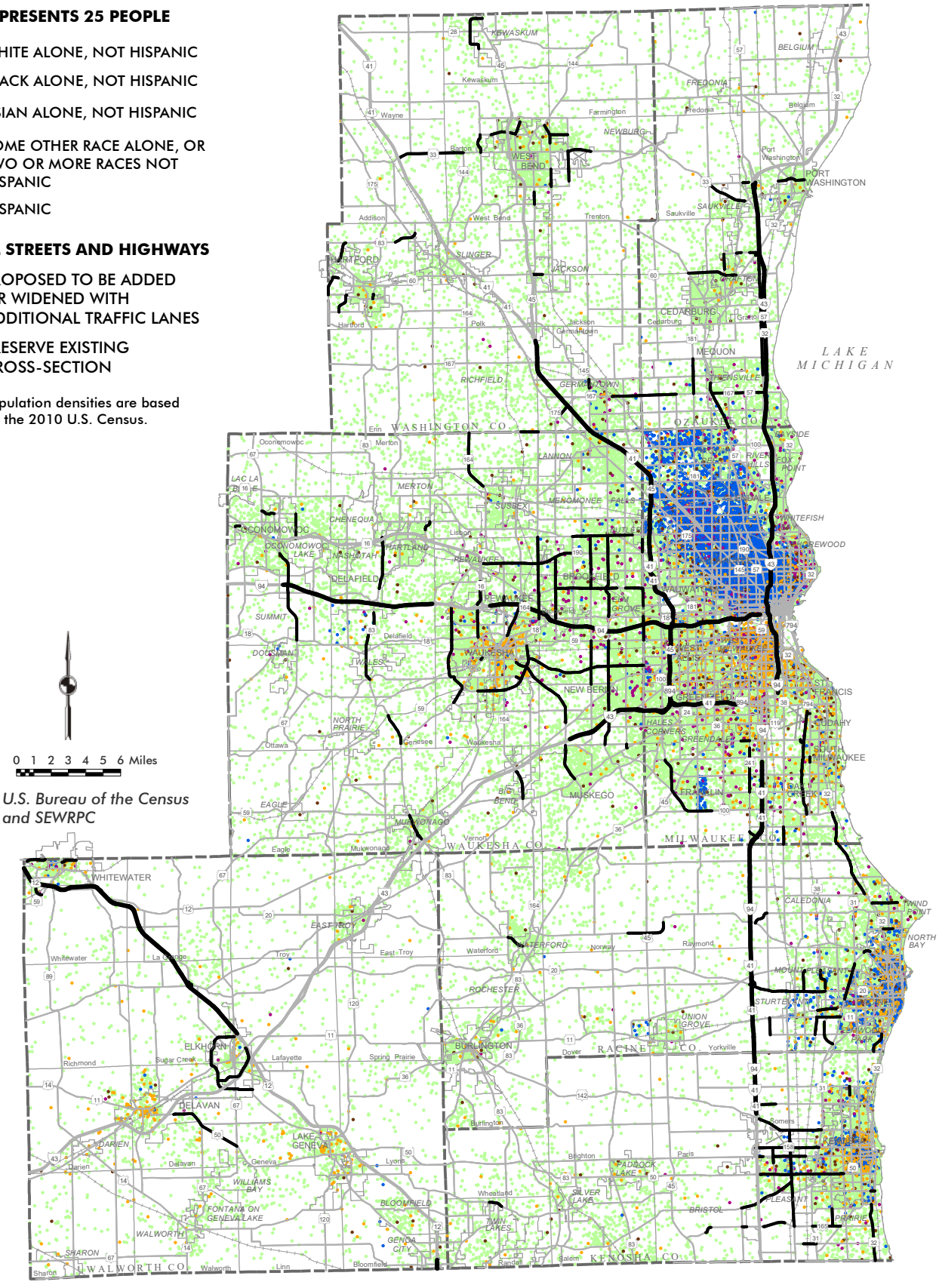
1 DOT REPRESENTS 25 PEOPLE

- WHITE ALONE, NOT HISPANIC
- BLACK ALONE, NOT HISPANIC
- ASIAN ALONE, NOT HISPANIC
- SOME OTHER RACE ALONE, OR TWO OR MORE RACES NOT HISPANIC
- HISPANIC

ARTERIAL STREETS AND HIGHWAYS

- PROPOSED TO BE ADDED OR WIDENED WITH ADDITIONAL TRAFFIC LANES
- PRESERVE EXISTING CROSS-SECTION

Note: Population densities are based on the 2010 U.S. Census.



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

Map H.63
Comparison of Concentrations of Year 2010 Races/Ethnicities in the Region to Highway Element: Preliminary Recommended Plan

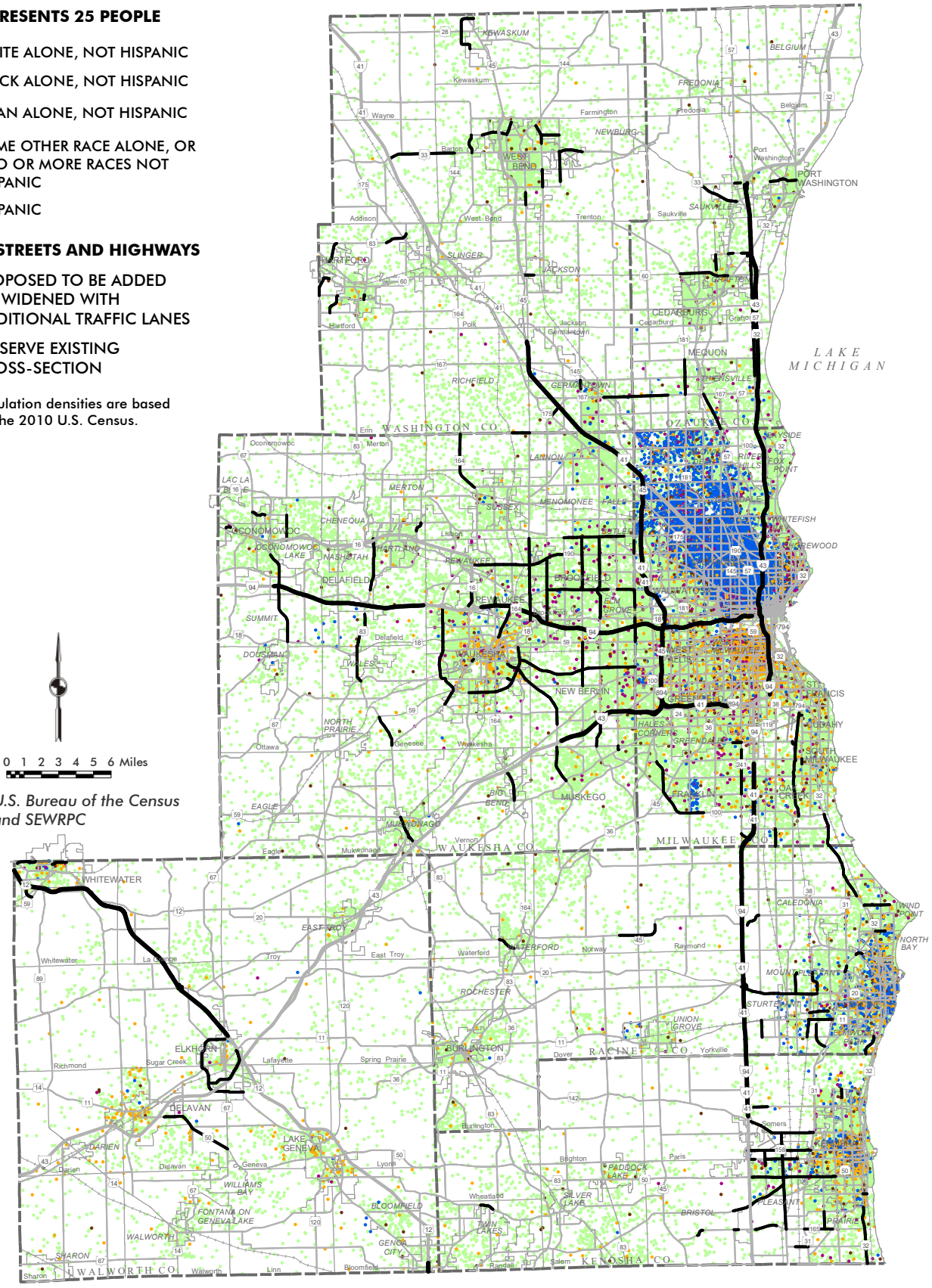
1 DOT REPRESENTS 25 PEOPLE

- WHITE ALONE, NOT HISPANIC
- BLACK ALONE, NOT HISPANIC
- ASIAN ALONE, NOT HISPANIC
- SOME OTHER RACE ALONE, OR TWO OR MORE RACES NOT HISPANIC
- HISPANIC

ARTERIAL STREETS AND HIGHWAYS

- PROPOSED TO BE ADDED OR WIDENED WITH ADDITIONAL TRAFFIC LANES
- PRESERVE EXISTING CROSS-SECTION

Note: Population densities are based on the 2010 U.S. Census.



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

Map H.64
Comparison of Existing Concentrations of Total Minority Population in the Region to Freeways: Trend and Preliminary Recommended Plan

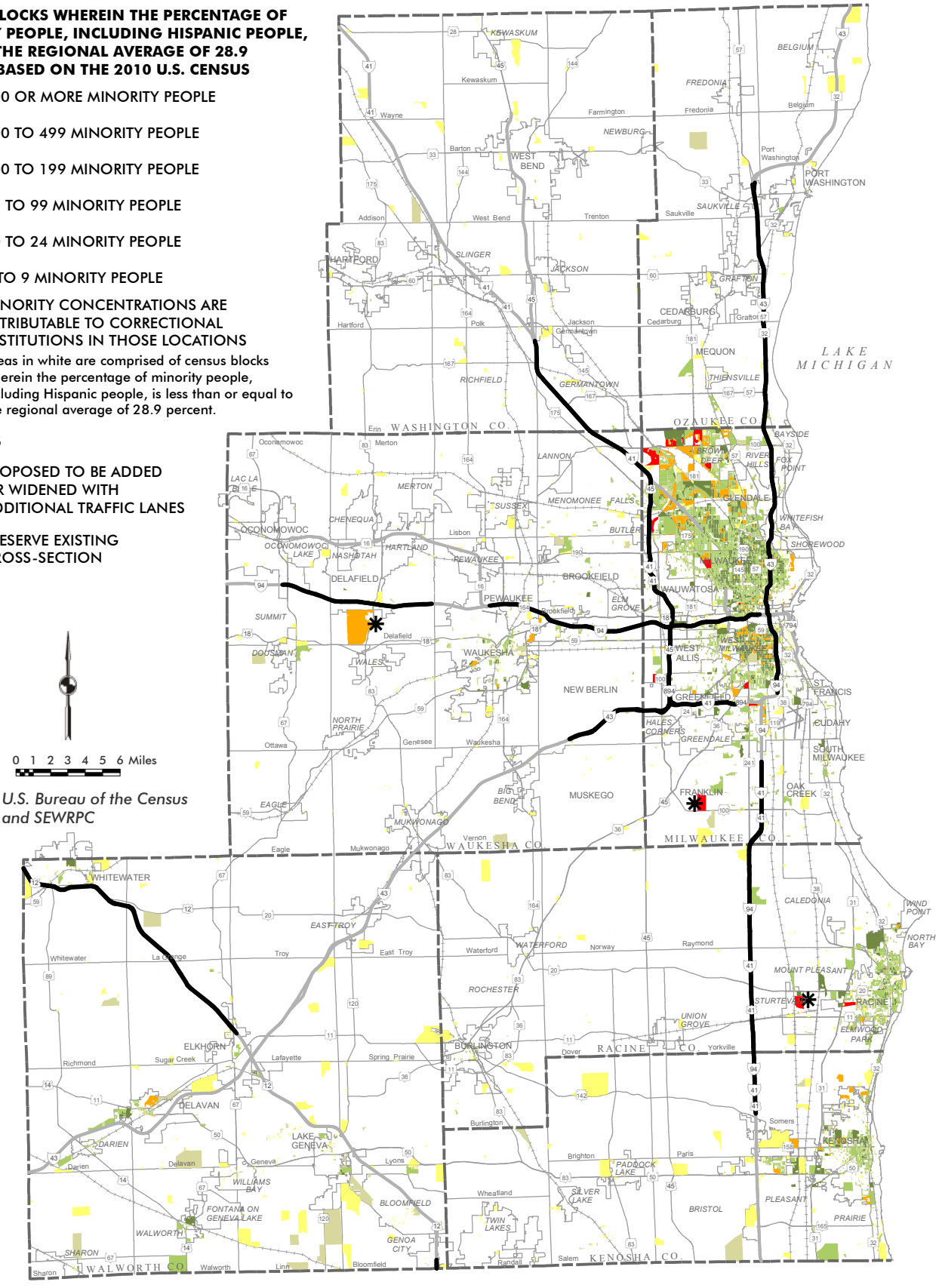
CENSUS BLOCKS WHEREIN THE PERCENTAGE OF MINORITY PEOPLE, INCLUDING HISPANIC PEOPLE, EXCEEDS THE REGIONAL AVERAGE OF 28.9 PERCENT BASED ON THE 2010 U.S. CENSUS

- 500 OR MORE MINORITY PEOPLE
- 200 TO 499 MINORITY PEOPLE
- 100 TO 199 MINORITY PEOPLE
- 25 TO 99 MINORITY PEOPLE
- 10 TO 24 MINORITY PEOPLE
- 1 TO 9 MINORITY PEOPLE
- * MINORITY CONCENTRATIONS ARE ATTRIBUTABLE TO CORRECTIONAL INSTITUTIONS IN THOSE LOCATIONS

Note: Areas in white are comprised of census blocks wherein the percentage of minority people, including Hispanic people, is less than or equal to the regional average of 28.9 percent.

FREEWAYS

- PROPOSED TO BE ADDED OR WIDENED WITH ADDITIONAL TRAFFIC LANES
- PRESERVE EXISTING CROSS-SECTION



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

Map H.65
Comparison of Existing Concentrations of Families in Poverty in the Region to Freeways: Trend and Preliminary Recommended Plan

CENSUS TRACTS WHEREIN THE PERCENTAGE OF FAMILIES IN POVERTY EXCEEDS THE REGIONAL AVERAGE OF 10.3 PERCENT BASED ON THE 2008-2012 U.S. CENSUS AMERICAN COMMUNITY SURVEY

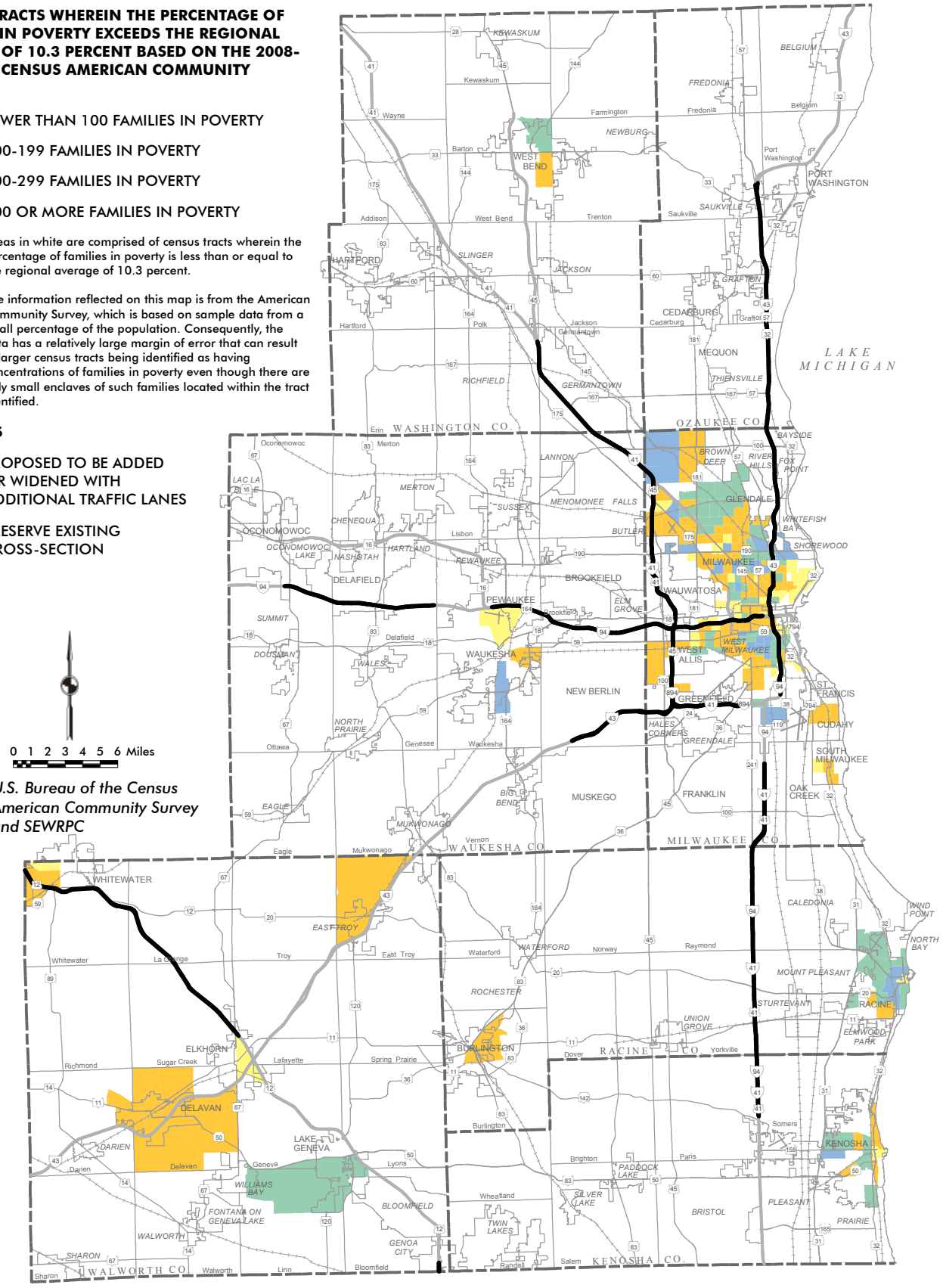
- FEWER THAN 100 FAMILIES IN POVERTY
- 100-199 FAMILIES IN POVERTY
- 200-299 FAMILIES IN POVERTY
- 300 OR MORE FAMILIES IN POVERTY

Notes: Areas in white are comprised of census tracts wherein the percentage of families in poverty is less than or equal to the regional average of 10.3 percent.

The information reflected on this map is from the American Community Survey, which is based on sample data from a small percentage of the population. Consequently, the data has a relatively large margin of error that can result in larger census tracts being identified as having concentrations of families in poverty even though there are only small enclaves of such families located within the tract identified.

FREEWAYS

- PROPOSED TO BE ADDED OR WIDENED WITH ADDITIONAL TRAFFIC LANES
- PRESERVE EXISTING CROSS-SECTION



Source: U.S. Bureau of the Census American Community Survey and SEWRPC

Table H.23
Minority Population and Families in Poverty Residing in Proximity to a Freeway Widening[a]

Population and Families Within One-Half Mile

Plan	Total Population Near a Freeway Widening	Minority Population		Total Families Near a Freeway Widening	Families in Poverty	
		Near a Freeway Widening	Percent of Total		Near a Freeway Widening	Percent of Total
Trend/Plan	206,900	81,800	39.5	51,700	7,500	14.5

Population and Families Within One-Quarter Mile

Plan	Total Population Near a Freeway Widening	Minority Population		Total Families Near a Freeway Widening	Families in Poverty	
		Near a Freeway Widening	Percent of Total		Near a Freeway Widening	Percent of Total
Trend/Plan	93,600	38,300	40.9	24,900	3,600	14.5

[a] *Total population and minority population are based on the 2010 U.S. Census and total families and families in poverty are based on the 2008-2012 American Community Survey.*

Source: U.S. Bureau of the Census, U.S. Census and American Community Survey; and SEWRPC

Table H.24
Percent of Total Minority/Non-Minority Population and Families in Poverty/Families Not in Poverty Residing in Proximity to a Freeway Widening[a]

Population and Families Within One-Half Mile

Plan	Minority Population	Non-Minority Population	Families in Poverty	Families Not in Poverty
Trend/Plan	14	9	14	10

Population and Families Within One-Quarter Mile

Plan	Minority Population	Non-Minority Population	Families in Poverty	Families Not in Poverty
Trend/Plan	7	4	7	5

[a] *Minority population and non-minority population are based on the 2010 U.S. Census and families in poverty and families not in poverty are based on the 2008-2012 American Community Survey.*

Source: U.S. Bureau of the Census, U.S. Census and American Community Survey; and SEWRPC

that reside in proximity to the freeway widenings, as shown in Table H.24. Under the Preliminary Plan, the existing minority population and families in poverty that reside within one-half mile of freeway widenings would represent about 14 percent of the total minority population and families in poverty, compared to about 9 to 10 percent of the non-minority population and families not in poverty. The existing minority population and families in poverty that reside within one-quarter mile of freeway widenings would represent about 7 percent of the total minority population and families in poverty, compared to about 4 to 5 percent of the non-minority population and families not in poverty.

CRITERION 2.1.5: TRANSPORTATION-RELATED AIR POLLUTION IMPACTS ON MINORITY POPULATIONS AND LOW-INCOME POPULATIONS

Automobiles and trucks traveling on arterial streets and highways emit air pollutants that generally exist in higher concentrations in the atmosphere near the arterial streets and highways with the most traffic, such as the Region's freeways. The lower speeds and starting/stopping of vehicles associated with congested conditions increases the level of transportation air pollutant emissions. Individuals living in proximity to the Region's freeways may be exposed to higher levels of transportation-related air pollutants.

Due in large part to past, current, and future Federal fuel and vehicle fuel economy standards and improved emissions controls, transportation-related air pollutant emissions in the Region have been declining, and are expected to continue to decline in the future. As indicated in Criterion 1.4.4 (Greenhouse Gas Emissions and Other Air Pollutants), this decline is expected to continue through the year 2050, even with the projected 25 and 26 percent increase in vehicle-miles of travel for the Preliminary Recommended Plan and the Trend, respectively. While the expected reductions in emissions are similar between the Trend and Preliminary Plan, the Preliminary Plan would be expected to result in lower levels of transportation-related air pollutant emissions (generally about 1 to 2 percent lower than the Trend), thereby reducing the exposure of residents of the region to these pollutants, including minority populations and low-income populations.

Even with the expected significant reductions in transportation-related air pollutant emissions, residents of the Region, including minority populations and families in poverty, living in proximity to roads with higher traffic volumes, such as freeways, may be exposed to higher levels of transportation-related air pollutants. The following is an assessment of whether there would be an expected disproportionate impact on, or over-representation of, existing minority populations and low-income populations residing along existing and new freeways under the Trend and Preliminary Plan.

- **Evaluation Results:** Tables H.25 and H.26 show the existing total and minority population and the existing total number of families and families in poverty that reside in proximity to the freeway system under the Trend and Preliminary Plan. Maps H.66 through H.67 show the freeway system, including those freeway segments to be widened, under the Trend and Preliminary Plan compared to locations of existing areas with concentrations of minority populations and low-income populations. The segments of freeways proposed to be widened and the extent of the freeways under the Trend and Preliminary Plan are the same. The percentages of the total population located in proximity to the freeway system under the Trend and Preliminary Plan that are of minority population or of low income are generally similar (equal or within a few percent lower or higher) to the percentage of the total minority population and low-income population residing within each county. At the regional level, about 36 percent of the existing population residing within one-half mile or one-quarter mile of a freeway are minorities, compared to about 29 percent of the total population of the Region that are minorities. With regards to existing low-income populations, about 14 percent of the families residing within one-half mile or one-quarter mile of a freeway are in poverty, compared to 10 percent of the total families in the Region.

Table H.25
Total and Minority Populations Residing in Proximity to a Freeway[a]

Population Within One-Half Mile

County	Total and Minority Populations			Total and Minority Populations Within One-Half Mile of Existing Freeways		
		Minority Population			Minority Population	
	Total Population	Population	Percent of Total	Total Population	Population	Percent of Total
Kenosha	166,426	36,534	22.0	1,550	230	14.8
Milwaukee	947,735	432,777	45.7	239,200	110,400	46.2
Ozaukee	86,395	5,706	6.6	9,500	800	8.4
Racine	195,408	49,994	25.6	1,200	90	7.5
Walworth	102,228	13,538	13.2	16,600	2,400	14.5
Washington	131,887	7,539	5.7	15,200	840	5.5
Waukesha	389,891	36,777	9.4	46,300	4,400	9.5
Region	2,019,970	582,865	28.9	329,550	119,160	36.2

Population Within One-Quarter Mile

County	Total and Minority Populations			Total and Minority Populations Within One-Quarter Mile of Existing Freeways		
		Minority Population			Minority Population	
	Total Population	Population	Percent of Total	Total Population	Population	Percent of Total
Kenosha	166,426	36,534	22.0	520	35	6.7
Milwaukee	947,735	432,777	45.7	109,700	49,900	45.5
Ozaukee	86,395	5,706	6.6	3,400	310	9.1
Racine	195,408	49,994	25.6	530	45	8.5
Walworth	102,228	13,538	13.2	6,100	780	12.8
Washington	131,887	7,539	5.7	7,100	370	5.2
Waukesha	389,891	36,777	9.4	21,300	2,200	10.3
Region	2,019,970	582,865	28.9	148,650	53,640	36.1

[a] *Total population and minority population are based on the 2010 U.S. Census.*

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

As shown in Table H.27, at the regional level, about 20 percent each of existing minorities and of families in poverty are located within one-half mile of a freeway, while about 10 percent are located within one-quarter mile, compared to about 15 percent each of existing non-minorities and of families not in poverty that reside within one-half mile of a freeway and about 7 percent of those same categories who are within one-quarter mile of a freeway. Within each county, the percentages of existing total minority populations and non-minority populations, and the percentages of existing families in poverty and families not in poverty, that reside within one-half mile or one-quarter mile of a freeway are generally equal or within several percent lower or higher.

Table H.26
Total Families and Families in Poverty Residing in Proximity to a Freeway[a]

Families Within One-Half Mile

County	Total Families and Families in Poverty in the Region			Total Families and Families in Poverty Within One-Half Mile of Existing Freeways		
		Families in Poverty			Families in Poverty	
	Total Families	Families	Percent of Total	Total Families	Families	Percent of Total
Kenosha	42,167	4,024	9.5	930	30	3.2
Milwaukee	218,244	35,962	16.5	54,000	10,300	19.1
Ozaukee	24,344	642	2.6	2,300	60	2.6
Racine	50,148	4,630	9.2	570	20	3.5
Walworth	26,268	2,102	8.0	4,900	470	9.6
Washington	37,757	1,388	3.7	4,300	120	2.8
Waukesha	108,845	3,586	3.3	13,300	420	3.2
Region	507,773	52,334	10.3	80,300	11,280	14.2

Families Within One-Quarter Mile

County	Total Families and Families in Poverty in the Region			Total Families and Families in Poverty Within One-Quarter Mile of Existing Freeways		
		Families in Poverty			Families in Poverty	
	Total Families	Families	Percent of Total	Total Families	Families	Percent of Total
Kenosha	42,167	4,024	9.5	470	20	4.3
Milwaukee	218,244	35,962	16.5	25,300	4,800	19.0
Ozaukee	24,344	642	2.6	1,100	30	2.7
Racine	50,148	4,630	9.2	290	10	3.4
Walworth	26,268	2,102	8.0	2,600	250	9.6
Washington	37,757	1,388	3.7	2,100	60	2.9
Waukesha	108,845	3,586	3.3	6,700	210	3.1
Region	507,773	52,334	10.3	38,560	5,380	14.0

[a] *Total families and families in poverty are based on the 2008-2012 American Community Survey.*

Source: U.S. Bureau of the Census American Community Survey and SEWRPC

Map H.66
Comparison of Existing Concentrations of Total Minority Population in the Region to Freeways: Trend and Preliminary Recommended Plan

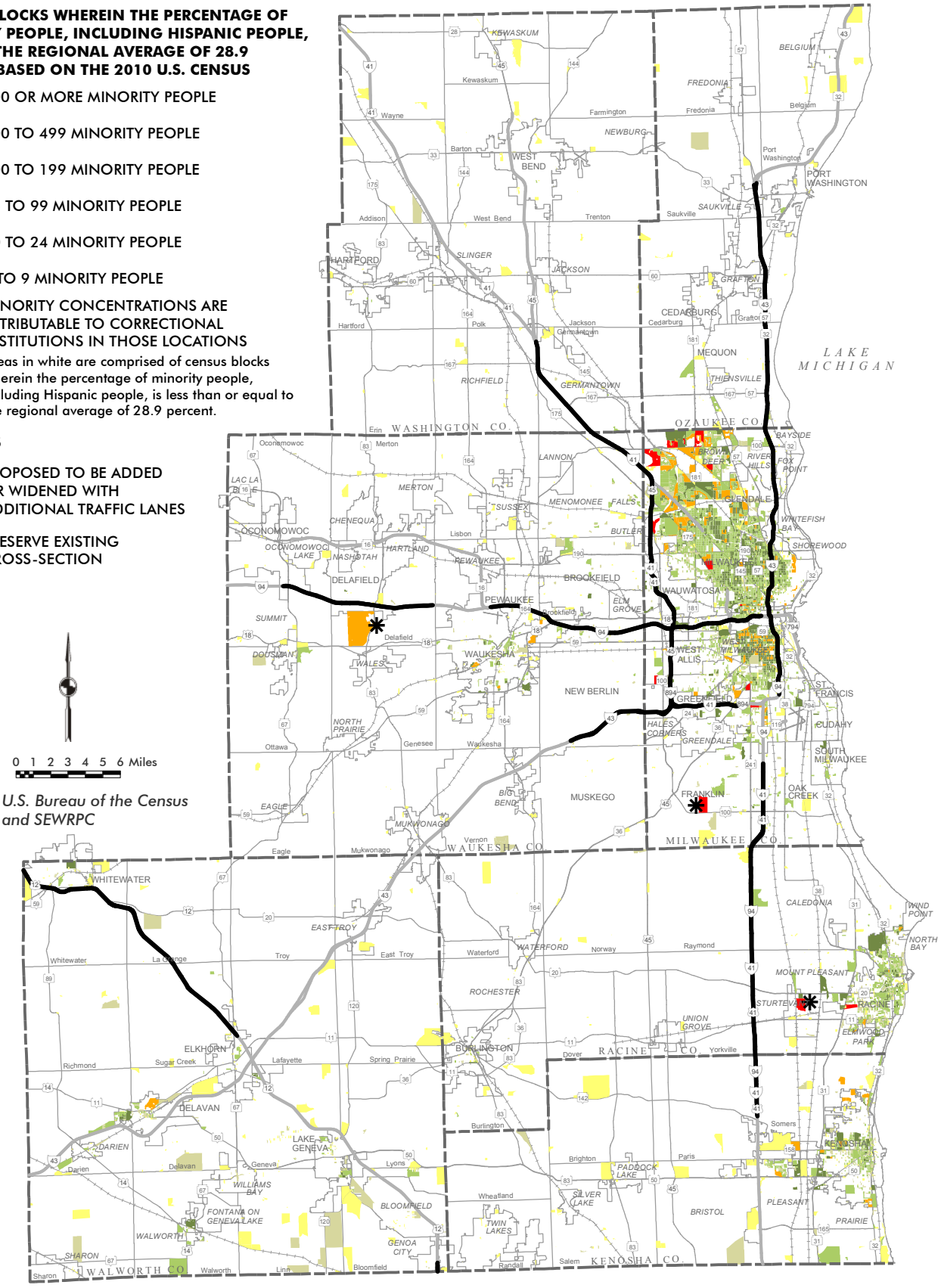
CENSUS BLOCKS WHEREIN THE PERCENTAGE OF MINORITY PEOPLE, INCLUDING HISPANIC PEOPLE, EXCEEDS THE REGIONAL AVERAGE OF 28.9 PERCENT BASED ON THE 2010 U.S. CENSUS

- 500 OR MORE MINORITY PEOPLE
- 200 TO 499 MINORITY PEOPLE
- 100 TO 199 MINORITY PEOPLE
- 25 TO 99 MINORITY PEOPLE
- 10 TO 24 MINORITY PEOPLE
- 1 TO 9 MINORITY PEOPLE
- * MINORITY CONCENTRATIONS ARE ATTRIBUTABLE TO CORRECTIONAL INSTITUTIONS IN THOSE LOCATIONS

Note: Areas in white are comprised of census blocks wherein the percentage of minority people, including Hispanic people, is less than or equal to the regional average of 28.9 percent.

FREEWAYS

- PROPOSED TO BE ADDED OR WIDENED WITH ADDITIONAL TRAFFIC LANES
- PRESERVE EXISTING CROSS-SECTION



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

Map H.67
Comparison of Existing Concentrations of Families in Poverty in the Region to Freeways: Trend and Preliminary Recommended Plan

CENSUS TRACTS WHEREIN THE PERCENTAGE OF FAMILIES IN POVERTY EXCEEDS THE REGIONAL AVERAGE OF 10.3 PERCENT BASED ON THE 2008-2012 U.S. CENSUS AMERICAN COMMUNITY SURVEY

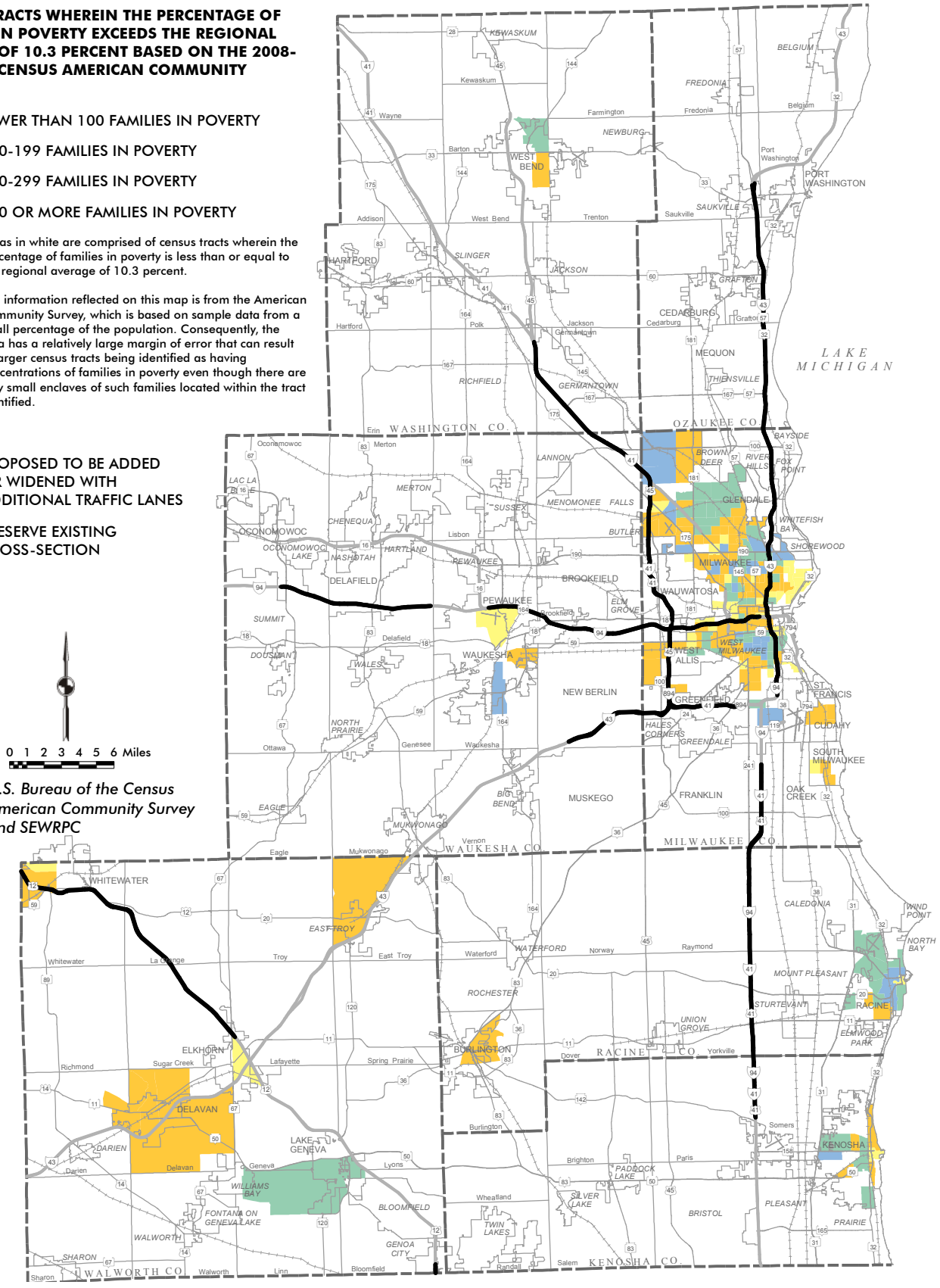
- FEWER THAN 100 FAMILIES IN POVERTY
- 100-199 FAMILIES IN POVERTY
- 200-299 FAMILIES IN POVERTY
- 300 OR MORE FAMILIES IN POVERTY

Notes: Areas in white are comprised of census tracts wherein the percentage of families in poverty is less than or equal to the regional average of 10.3 percent.

The information reflected on this map is from the American Community Survey, which is based on sample data from a small percentage of the population. Consequently, the data has a relatively large margin of error that can result in larger census tracts being identified as having concentrations of families in poverty even though there are only small enclaves of such families located within the tract identified.

FREEWAYS

- PROPOSED TO BE ADDED OR WIDENED WITH ADDITIONAL TRAFFIC LANES
- PRESERVE EXISTING CROSS-SECTION



0 1 2 3 4 5 6 Miles

Source: U.S. Bureau of the Census American Community Survey and SEWRPC

Table H.27
Minority/Non-Minority Populations and Families in Poverty/ Families Not in Poverty Residing in Proximity to a Freeway[a]

Population and Families Within One-Half Mile

County	Percent of Populations Within One-Half Mile of Existing Freeways		Percent of Families Within One-Half Mile of Existing Freeways	
	Minorities	Non-Minorities	Families in Poverty	Families Not in Poverty
Kenosha	0.6	1.0	0.7	2.4
Milwaukee	25.5	25.0	28.6	24.0
Ozaukee	14.0	10.8	9.3	9.5
Racine	0.2	0.8	0.4	1.2
Walworth	17.7	16.0	22.4	18.3
Washington	11.1	11.5	8.6	11.5
Waukesha	12.0	11.9	11.7	12.2
Region	20.4	14.6	21.8	15.1

Population and Families Within One-Quarter Mile

County	Percent of Populations Within One-Quarter Mile of Existing Freeways		Percent of Families Within One-Quarter Mile of Existing Freeways	
	Minorities	Non-Minorities	Families in Poverty	Families Not in Poverty
Kenosha	0.1	0.4	0.5	1.2
Milwaukee	11.5	11.6	13.3	11.2
Ozaukee	5.4	3.8	4.7	4.5
Racine	0.1	0.3	0.2	0.6
Walworth	5.8	6.0	11.9	9.7
Washington	4.9	5.4	4.3	5.6
Waukesha	6.0	5.4	5.9	6.2
Region	9.2	6.6	10.3	7.3

[a] *Minority population and non-minority population are based on the 2010 U.S. Census and families in poverty and families not in poverty are based on the 2008-2012 American Community Survey.*

Source: U.S. Bureau of the Census, U.S. Census and American Community Survey; and SEWRPC

CRITERION 2.2.1: HOUSEHOLDS WITH AFFORDABLE HOUSING + TRANSPORTATION COSTS

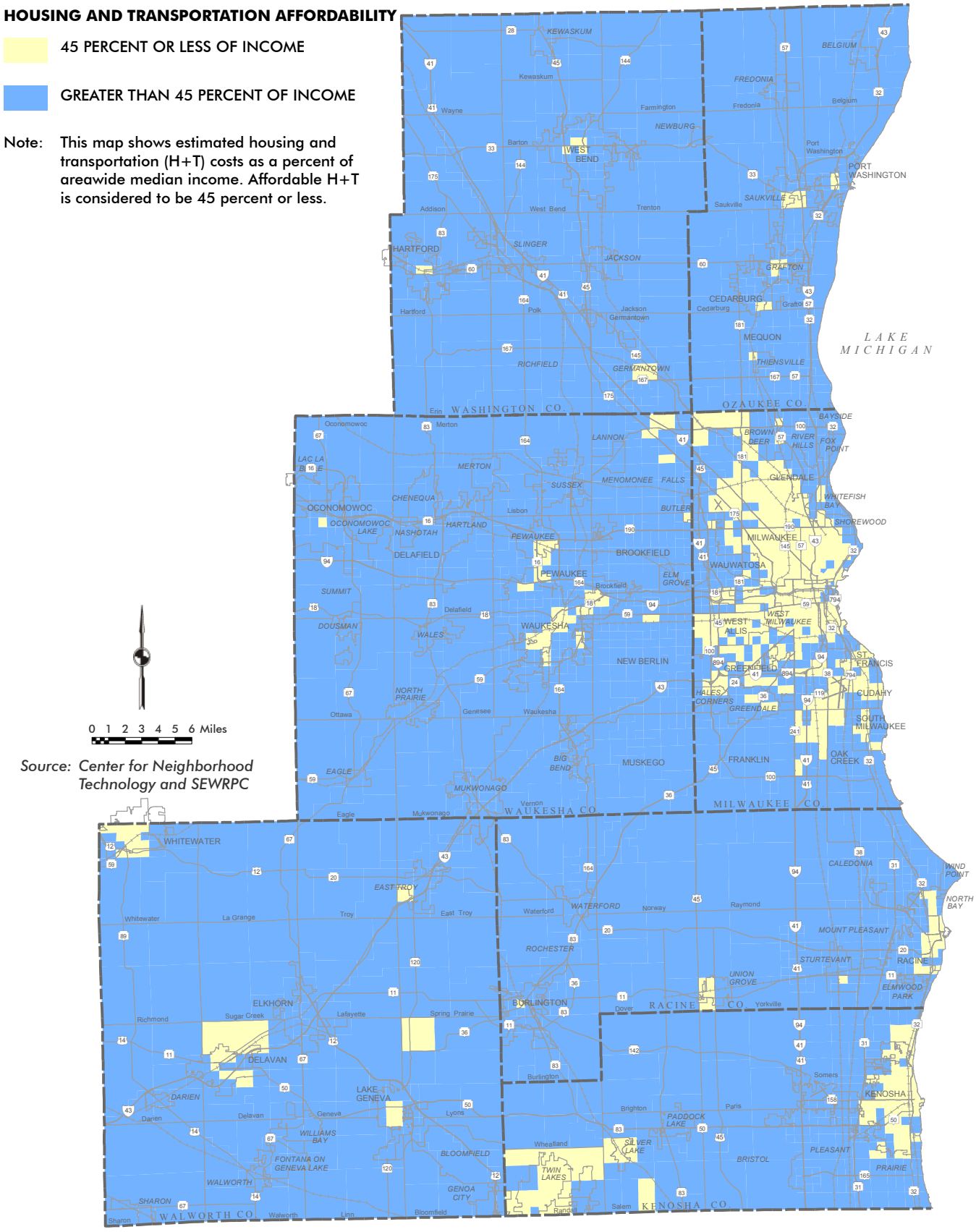
As described in the alternatives evaluation, this criterion attempts to estimate the affordability of an area by combining estimates of housing costs and transportation costs as a proportion of a household's budget. Like Alternative Plans I and II, the Preliminary Recommended Plan would result in the most households located in H+T-affordable areas (defined as areas with estimated housing and transportation costs that are 45 percent or less of areawide median income). The results of the analysis, presented in Table H.28 and Maps H.68 through H.70, show that compact, mixed-use communities with a balance of housing, jobs, and stores and easy access to transit have lower transportation costs because they enable residents to meet daily needs with fewer vehicles, which are the single greatest transportation cost factor for most households. The Trend, which would include more lower-density development and significantly less public transit service than the Preliminary Plan, would have fewer H+T-affordable areas.

Table H.28
Households with Affordable Housing + Transportation Costs

Plan	Households with Affordable H+T Costs	Total Households	Percent of Total Households with Affordable H+T Costs
Existing - 2011	299,200	800,100	37.4
Trend - 2050	342,800	972,400	35.3
Plan - 2050	371,300	987,500	37.6

Source: Center for Neighborhood Technology and SEWRPC

Map H.68
Housing and Transportation Affordability in the Region: Existing



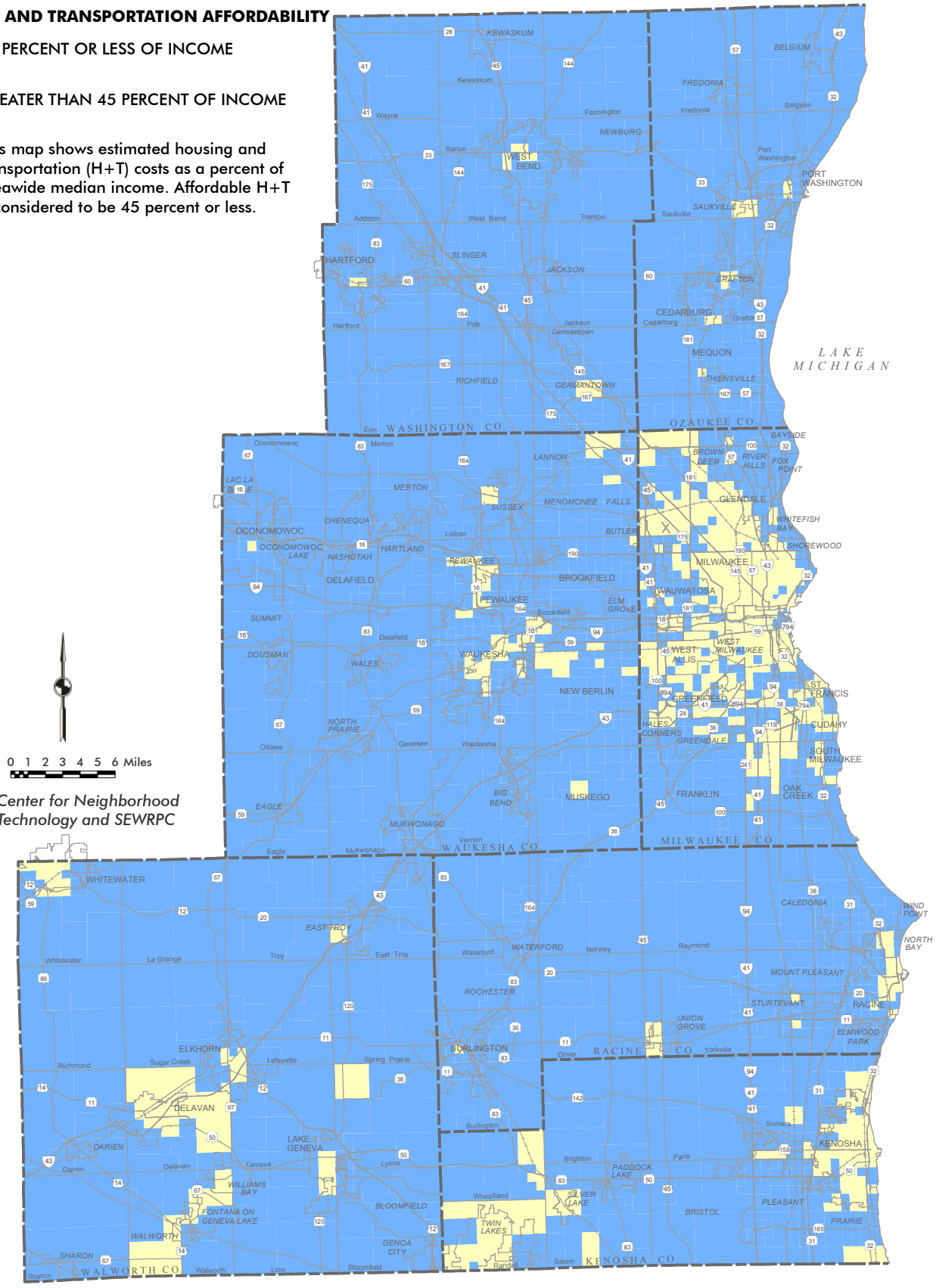
Map H.69
Housing and Transportation Affordability in the Region: Trend

HOUSING AND TRANSPORTATION AFFORDABILITY

45 PERCENT OR LESS OF INCOME

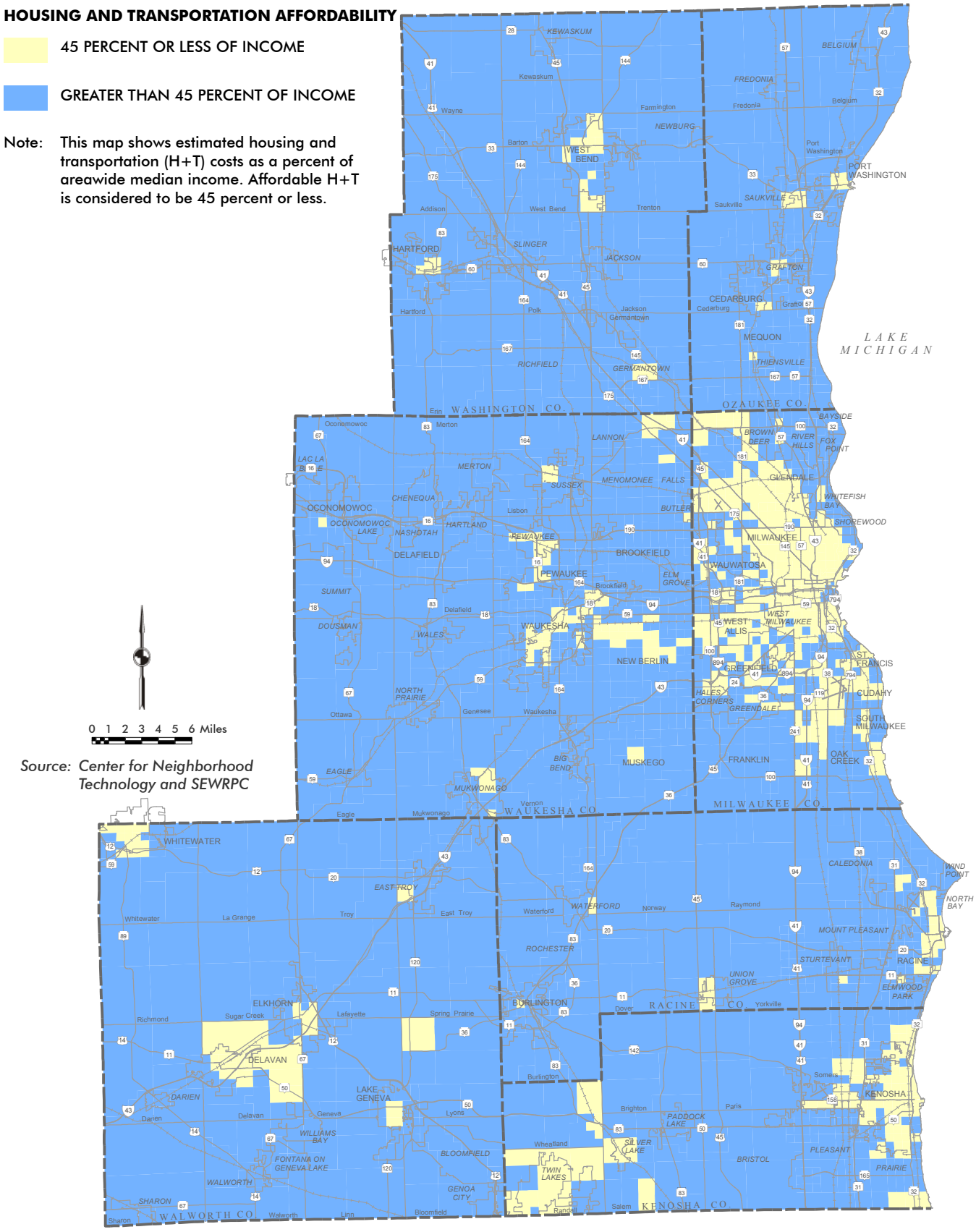
GREATER THAN 45 PERCENT OF INCOME

Note: This map shows estimated housing and transportation (H+T) costs as a percent of areawide median income. Affordable H+T is considered to be 45 percent or less.



Source: Center for Neighborhood Technology and SEWRPC

Map H.70
Housing and Transportation Affordability in the Region: Preliminary Recommended Plan



CRITERION 2.2.2: ABILITY TO ACCOMMODATE DEMOGRAPHIC SHIFTS

As noted in the alternatives evaluation, forecasts prepared for VISION 2050 anticipate continued change in the demographics of the Region. The number of residents age 65 and older is projected to double by 2050 and extrapolation of past trends indicates that the minority share of the Region's population will increase to 45 percent by 2050. As the Baby Boomer population ages, there will be a need to attract population and labor force from outside the Region to grow employment. The Preliminary Recommended Plan would provide housing and transportation options to meet the variety of needs of an increasingly diverse population.

The Preliminary Plan would support the changing housing needs attributable to demographic shifts. Providing accessible housing and affordable workforce housing are two key concerns. The Region currently has excess demand for accessible housing, which is likely to increase in the coming years. In terms of affordable workforce housing, over 46 percent of renters in the Region have a high housing cost burden. The Preliminary Plan would likely increase the supply of accessible and affordable housing in the Region by adding more multifamily housing (apartments), which tends to be more accessible due to Federal and State fair housing laws and also tends to be more affordable to a wider range of households than single-family homes. About 42 percent of new housing would be multifamily units under the Preliminary Plan, compared to about 25 percent under the Trend.

The Preliminary Plan would also better accommodate the changing needs of the Region's population than the Trend in terms of transportation, proposing significant increases in local transit service and encouraging mixed-use TOD around fixed-guideway transit stations. These proposals would aid the Region in addressing an expected growth in demand for reliable and convenient public transit service to shopping, recreation, and health care as the Region's population ages and becomes increasingly reliant on public transit. Walkability is also expected to become increasingly important as the population ages. Studies have determined that neighborhoods with a high level of pedestrian amenities and shorter travel times to shopping and services are desirable features for people with mobility and sensory disabilities. As analyzed in Criterion 1.1.1, the Preliminary Plan would result in more people living in walkable areas and more areas of the Region being considered walkable. Studies recommend that accessible housing be combined with mixed-use, high-density neighborhoods to maximize accessibility in housing and access to various community amenities. Improved public transit service, including fixed-guideway transit (BRT, light rail, and commuter rail), walkability, and bicycle facilities may also increase the Region's ability to attract young workers who desire a variety of transportation and housing options.

CRITERION 2.3.1: AREAS WITH A JOB-WORKER MISMATCH

The alternatives evaluation discussed how it is essential to have the necessary workforce available for existing businesses to maintain their presence and consider expansion, and to attract new business and industry to the Region. An adequate amount of workers in proximity to employers can help ensure workforce availability and reduce the distance workers have to travel to their jobs. Under the Preliminary Plan there would still be areas of the Region with job-worker mismatches, but more areas would have a match between jobs and workers than under the Trend. More jobs (957,700) and households (668,100) would be located in areas of the Region that have a job-worker match than the Trend (866,400 jobs and 616,400 households).

In addition, more jobs and households would be located in Milwaukee County under the Preliminary Plan than the Trend, including TOD near rapid transit and commuter rail stations. The TODs in the Preliminary Plan would include a mix of high-density housing and jobs, which helps to improve job-worker matches. The Preliminary Plan also includes fixed-guideway transit service from Milwaukee County to job opportunities in outlying counties, which may not contribute to job-worker match, but the improved transit options increase job opportunities for those without access to a personal vehicle. A rapid transit line connecting Milwaukee to the City of Waukesha through Brookfield, and commuter rail lines connecting Milwaukee to Racine and Kenosha and to Waukesha County communities would particularly improve this type of job access.

Communities that may have a shortage of workers tend to have public sewer service, with concentrations of employers and existing lower-density housing. The lower-density housing results in a lower population density and less available workers in proximity to employers. There may also be a lack of existing multifamily housing, which tends to be more affordable to a wider range of workers than single-family housing. Several of these communities that may have a shortage of workers are located in Waukesha County. Jobs in several Waukesha County communities would be more accessible to Milwaukee County workers through the rapid transit and commuter rail lines noted above.

Areas where there may be a shortage of jobs are generally outlying residential areas that do not offer the public services needed to support extensive commercial and industrial development, such as public sewer and water supply, or "bedroom communities" that do not include a significant employment base.

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CRITERION 3.1.1: IMPACT OF THE DISTRIBUTION OF GROWTH ON PROPERTY VALUES

The Preliminary Recommended Plan is designed to accommodate the year 2050 population, households, and employment projected by the Commission. While the Trend represents a continuation of overall decline in density across the Region, the Preliminary Plan includes more compact, walkable development, with a focus on TOD around fixed-guideway transit stations.

The change in TODs and walkable areas under the Preliminary Plan is expected to impact property values in those areas. There would be very few areas that could support TOD under the Trend. In addition, fewer of the Region's residents (724,600) would live in walkable neighborhoods under the Trend. There would be 161 rapid transit stations and 18 commuter rail stations that could potentially support TOD under the Preliminary Plan, and 844,000 residents would live in walkable neighborhoods.

As discussed in the alternatives evaluation, studies acknowledge that it is difficult to determine the exact impact of transit stations on development potential and property values within a station area in light of other factors, such as the overall strength of the local and regional real estate market; strength of the economy/job market; and other planning and development initiatives. Despite this uncertainty, a number of previous studies in metropolitan areas with fixed-guideway transit networks have shown a range of property value increases in station areas. Three examples include:

- 2 to 18 percent for condominiums within one-half mile of a station (San Diego)
- 15 percent for office development within one-half mile of a station (Santa Clara County)
- 30 percent for retail development within one-quarter mile of a station (Dallas)

Studies have also found that walkable neighborhoods have a positive impact on residential property values. A 2009 CEOs for Cities study of 15 metropolitan areas found that homes in areas with above average walkscores sell for $4,000 (Dallas) to $34,000 (Sacramento) more than comparable homes in areas with average walkscores.

The primary challenge associated with increased property values is addressing the potential for resultant housing cost increases. This is of particular concern for redevelopment in areas with concentrations of low-income households, as it may lead to the displacement of existing residents of a neighborhood if it becomes unaffordable for them to stay. Displacement may be one of the elements of a phenomenon commonly referred to as gentrification, which has been studied in detail by many experts for decades. The conclusions of those decades of research are mixed, and occasionally contradictory. Some studies indicate displacement due to housing in a neighborhood becoming unaffordable is relatively rare, occurring at a rate of about 1 percent of

longtime residents per year,[44] while others find a displacement rate of up to 10 percent each year in some cities with significant economic growth and high demand for urban living.[45] In addition, there is some evidence that in certain areas of high demand where local governments relax limitations on the height and density of new developments, nearby neighborhoods experience less gentrification, new development, and displacement.

To address the housing cost challenge, strategies for encouraging mixed-income housing in compact, walkable redevelopment areas should be pursued, including:

- Density bonus and reduced parking requirements as incentives for affordable housing
- Incentives to use Low-Income Housing Tax Credits in TODs
- Public/private partnerships through options including acquiring and assembling land, streamlining rezoning and permitting processes, and assistance with brownfield mitigation grants
- Developing enough new housing and preserving existing affordable housing to meet the potential demand (a review of nationwide studies conducted for the FTA estimates that demand for housing in transit station areas could grow 150 percent by 2030)

In terms of development in rural areas, public service costs of farmland are low compared to scattered lower-density residential development. In general, the tax returns to a community from farms are greater than the public service and facilities costs that farms require. Costs to provide public services and facilities to scattered residential development generally exceed tax revenues. Converting productive farmland can increase the cost of public services and impact a community's character. There would be significantly more farmland converted to urban development under the Trend (77 square miles) than the Preliminary Plan (58 square miles).

The emphasis on compact development in the Preliminary Plan may also have a positive impact on community property tax revenues, particularly in communities that have very little developable land. A community is allowed to increase its levy over the amount it levied in the prior year by the percentage of increase in equalized value from net new construction, with few exceptions. If no new construction occurred in a community, then the allowable tax levy increase is 0 percent.[46] Compact development or redevelopment provides an opportunity for communities, with otherwise very little developable land, to maximize the amount of new construction that may occur.

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[44] *Newman, S. J. and Owen, M. S. (1982),* Residential Displacement: Extent, Nature, and Effects. *Journal of Social Issues, 38: 135–148. doi: 10.1111/j.1540-4560.1982.tb01775.x and Freeman, Lance (2005),* Displacement or Succession? Residential Mobility in Gentrifying Neighborhoods. *Urban Affairs Review, vol. 40, no. 4: 463-491. doi: 10.1177/1078087404273341.*

[45] *Newman, Kathe and Wyly, Elvin K. (2006),* The Right to Stay Put, Revisited: Gentrification and Resistance to Displacement in New York City. *Urban Studies, vol. 43, no. 1: 23-57. doi: 10.1080/00420980500388710.*

[46] *League of Wisconsin Municipalities.*

CRITERION 3.1.2: RETURN ON INVESTMENT

There are a variety of ways to look at the return on investment of the Preliminary Recommended Plan. The return on investment criterion attempts to determine what is gained from the proposed land development pattern and transportation system, by comparing the numerous quality of life and fiscal benefits discussed throughout the evaluation to the costs associated with building the Preliminary Plan's land development pattern and transportation system. This criterion, as was the done for the alternatives evaluation, is arranged in a series of short discussions on the costs and benefits associated with the Preliminary Plan.

- **Tax Revenue Required for Transportation Investment:** Criterion 3.2.1 (Average Annual Transportation System Investment) discusses the amount of tax revenue that would be needed to construct, operate, and maintain the transportation system included in the Preliminary Plan. The Preliminary Plan's regional transportation system would require 23 percent more tax revenue in the average year of the Plan ($198 million more annually) to construct, operate, and maintain than the Trend. The additional tax revenue required to support the transportation system would need to be raised from the Region's residents and/or businesses (as well as Federal and State sources), and would impact their household or corporate budgets.

- **Impacts of the Transportation System on Homes, Businesses, Land, Parkland, and Natural Resource Areas:** In addition to the needed additional tax revenue to fund the Preliminary Plan's transportation system, the system's expansion (in particular, new and widened arterial streets and highways) would negatively impact natural resource areas and require some relocations or acquisitions of homes, businesses, and parkland, as would system expansion under the Trend. However, impacts to natural resource areas would be relatively minor under both the Trend and Preliminary Plan, with 218.8 acres (out of 311,900 existing acres) of primary environmental corridors impacted by transportation system expansion under the Preliminary Plan and 229.7 acres under the Trend. Impacts to a number of other natural resource areas, including wetlands and critical species habitats, are summarized in Criterion 1.3.2 (Impacts to Natural Resource Areas). Although it is difficult, and in some cases, not desirable, to monetize these impacts from transportation system expansion, there is certainly a non-monetary cost associated with these impacts.

  As described in Criterion 1.5.1 (Homes, Businesses, Land, and Parkland Acquired), the Trend would have a greater impact on homes, businesses, land, and parkland, with expansion of the transportation system requiring 365 homes or businesses to be relocated and 126 acres of parkland to be acquired. The Preliminary Plan would have a slightly smaller impact with 332 homes or businesses relocated and 123 acres of parkland acquired. Home and business relocation can have a negative impact on the local economy, and acquiring parkland can negatively impact quality of life, in the neighborhoods adjacent to transportation system expansion.

- **Private Costs of Using the Transportation System:** As discussed in Criterion 3.3.1 (Private Transportation Costs per Capita), an expanded transit system that provides more frequent and faster service to more destinations has the ability to decrease the overall amount residents

of the Region spend on transportation. Under the Preliminary Plan, more residents are projected to live in households with fewer cars than under the Trend, with many of their journeys instead being taken on transit. Even with only a modestly higher transit mode share compared to the Trend, the Region's residents would spend $144 million less annually directly on transportation under the Preliminary Plan.

- **Improvements in Housing + Transportation Affordability:** Partially due to the decrease in private costs of transportation, Criterion 2.2.1 (Households with Affordable Housing + Transportation Costs) estimates that under the Preliminary Plan, compared to the Trend, 28,500 more households would be located in H+T-affordable areas (defined as areas with estimated housing and transportation costs that are 45 percent or less of the areawide household median income), and therefore would potentially have more money to save or spend on other needs.

- **Benefits of Decreased Crash Rates:** Crashes contribute to overall transportation costs by causing delay and unreliability on the transportation network; they increase public costs for police and emergency medical services; and, if they result in injury, increase medical costs and can lead to a heavy toll in life, property damage, and human suffering. One of the causes of crashes is poor or unsafe roadway design, and improving the roadway network, as would be done under both the Trend and Preliminary Plan, would result in reductions in crash rates and the negative effects of crashes. As can be seen in Criterion 1.6.1 (Crashes by Mode), the total number of crashes on the transportation system would be lower under the Preliminary Plan (300 to 600 fewer crashes annually than under the Trend), due primarily to the decrease in vehicle-miles traveled in private automobiles. FHWA has provided estimates of total societal costs of $3,200 to $290,000 per nonfatal crash (depending on severity) and $4,200,000 for the average crash resulting in a fatality. Applying these costs, the Preliminary Plan would save between $23.8 million and $24.9 million annually over the Trend.

- **Costs of Travel Delay:** As discussed in Criterion 3.3.2 (Per Household Cost of Delay), when people are stuck in traffic—either in a car, bus, or truck—they are prevented from doing more productive things with their time. Valuing the costs associated with traffic delays can be challenging, as estimates of the value of a person's time while they are stuck in traffic vary widely. Using guidance from USDOT, it is estimated that the total cost of delay in the Region would be higher under the Preliminary Plan ($29.1 million more per year than under the Trend), as the rapid transit network proposed by the Preliminary Plan would require a reduction of travel lanes on a few major arterial streets in Milwaukee County, increasing congestion on those segments of roadway.

- **Costs of Infrastructure and Services to Local Governments:** Significant research has been done nationally on the costs to local governments to maintain the public infrastructure associated with serving homes and businesses, but costs can vary widely across different parts of the country depending on construction and maintenance needs and practices. Criterion 3.4.1 (Supportive Infrastructure Costs) uses local information to estimate costs for providing sewer, water, and local roads to the new development under the Trend and Preliminary

Plan, and indicates that approximately $41 million less would need to be spent annually to build new sewers, water mains, and local roads under the Preliminary Plan. The cost of building this infrastructure is frequently borne by developers, rather than cities, villages, and towns. However, local governments are often left with the long-term maintenance and replacement costs associated with this infrastructure, and national data indicate that the per capita cost of maintaining roads, water mains, and sewer pipes, and providing fire protection, school transportation, and solid waste collection, all decrease as density increases. In addition—all else being equal—walkable neighborhoods have higher per unit housing values, and retain those values better in the face of a real estate slowdown. Therefore, walkable, dense neighborhoods offer local governments not only lower costs per capita, but higher and more stable property tax revenues per unit.

- **Benefits to the Environment:** As covered extensively in Criterion 1.4.7 (Overall Environmental Sustainability), the Preliminary Plan would have less impact and greater benefit to the environment than the Trend. It would preserve 0.2 percent more of the Region's total land area as pervious surface than the Trend, resulting in less ecological damage and flooding. About 18 fewer square miles of areas with high groundwater recharge potential would be developed under the Preliminary Plan than the Trend. Transportation-related greenhouse gas emissions and other air pollutants would be slightly lower under the Preliminary Plan (1 to 2 percent lower than the Trend). Although it is difficult to monetize many of these benefits, they can have a direct impact on the Region's ability to prepare for an uncertain climate future, and therefore are essential to the future economic competitiveness of the Region.

- **Benefits to Public Health:** The Preliminary Plan would improve public health by making active transportation (such as biking and walking) easier through increased density and enhanced bicycle facilities, and having lower overall air pollutant levels than the Trend, as discussed in Criterion 1.2.3 (Benefits and Impacts to Public Health). As active transportation increases, public health tends to improve and obesity-linked conditions tend to decline. As a result, the costly expenditures related to caring for these conditions may be reduced, which would lessen the healthcare costs to individuals and society as a whole. Following this logic, the Preliminary Plan would have a greater potential to reduce healthcare costs than the Trend.

- **Reduced Demand for Social Services:** Providing access to jobs for those without access to a car is one of the goals of the expansive transit services proposed under the Preliminary Plan. In addition to the numerous benefits associated with providing better transit service listed in this criterion and elsewhere in Chapter 4 of this volume, providing better access to jobs could decrease the need for other social services within the Region, as individuals who are currently unable to break the cycle of poverty gain access to higher-paying jobs at suburban business and industrial parks, decreasing their need for forms of government assistance.

CRITERION 3.1.3: ABILITY TO CONNECT TO NEARBY METRO AREAS AND LEVERAGE THE VALUE OF THOSE AREAS

The alternatives evaluation noted the important role the transportation system plays in the Region's economic growth. High-quality, well-designed transportation infrastructure connecting the Region to nearby economic hubs, particularly the Chicago metropolitan region, is important to enable the flow of people and goods. This criterion discusses how the Preliminary Recommended Plan's transportation system addresses congestion on Southeastern Wisconsin's freeway system as well as improves regional connections to the airport, train stations, intercity bus stops, and ferry terminal that are used by people traveling to and from neighboring cities and metro areas. The Preliminary Plan's impacts on the movement of freight to, from, and within the Region is discussed in Criterion 4.6.3 (Impacts to Freight Traffic).

- **Southeastern Wisconsin Freeways:** The Region's freeways provide critical connections in the Region for people traveling by car and bus to and from neighboring cities and metro areas, playing a vital role in connecting business travelers and commuters with those areas. According to WisDOT, approximately 25,000 businesses are currently located within two miles of key freeway segments in the Region, including IH 41, IH 43, IH 94, and IH 894, and additional business development adjacent to the Region's freeways is expected to continue through the year 2050.

  Both the Trend and the Preliminary Plan would reduce freeway congestion compared to existing conditions, with the Preliminary Plan performing slightly better than the Trend (see Criterion 4.4.1). The Preliminary Plan would result in 24.4 percent (70 miles) of the freeway system operating over its design capacity (moderate, severe, or extreme congestion) on an average weekday, about 1.4 percent less than the Trend (71 miles).

- **General Mitchell International Airport:** General Mitchell International Airport currently provides access to commercial air service, intercity bus service, and intercity passenger rail service, connecting the Region to both nearby regions and other metropolitan areas across the nation and world. Under the Trend, regional access to the Airport would be provided by the arterial street and highway system, local bus transit service, and a commuter bus route operating between Kenosha and Milwaukee. The Preliminary Plan would improve regional access to the Airport by providing a rapid transit line connecting the Airport with downtown Milwaukee, Oak Creek (Drexel Town Square), and Franklin, and by providing a commuter rail line operating between Kenosha and downtown Milwaukee that would serve the Airport.

- **Milwaukee Intermodal Station:** The Milwaukee Intermodal Station (MIS) in downtown Milwaukee provides access to intercity bus service and intercity passenger rail service connecting Southeastern Wisconsin to nearby cities and metro areas. Under the Trend, regional access to MIS would be directly provided by the arterial street and highway system, local bus transit service, the downtown Milwaukee streetcar line, and a commuter bus route operating between Kenosha and Milwaukee. The Preliminary Plan would greatly enhance transit access to MIS by improving local bus transit service to MIS; replacing the commuter bus route with a commuter rail line connecting Kenosha

and downtown Milwaukee; establishing four rapid transit corridors connecting downtown Milwaukee with northwestern Milwaukee, with Milwaukee's East Side and Bayshore Town Center, with the Airport, Oak Creek (Drexel Town Square), and Franklin, and with West Allis; and providing a second commuter rail line operating between Oconomowoc and downtown Milwaukee.

- **Other Intercity Bus Stops, Train Stations, and Ferry Terminals:** Several other locations in the Region provide access to intercity bus service, intercity passenger rail service, commuter rail service, and Lake Michigan ferry service. The Goerke's Corners park-ride lot in Brookfield provides access to daily intercity bus service connecting Waukesha County with Madison, Wisconsin Rapids, and Stevens Point. The Sturtevant Amtrak station provides access to daily intercity passenger rail service connecting Racine County with the Chicago metro area. The Kenosha Metra station provides access to daily commuter rail service connecting the City of Kenosha with the Chicago metro area. Bus stops in Twin Lakes, Silver Lake, and Paddock Lack provide access to Western Kenosha County Transit service connecting to the Metra station in Antioch, Illinois. Finally, the Lake Express ferry terminal in Milwaukee provides access to daily Lake Michigan ferry service in the spring, summer, and fall connecting Milwaukee with Muskegon, Michigan.

  Under the Trend, regional access to the Goerke's Corners park-ride lot would be provided by the arterial street and highway system, local bus transit service, and commuter bus routes connecting downtown Milwaukee with both Oconomowoc and Waukesha. The Preliminary Plan would improve access by providing a rapid transit line connecting Goerke's Corners to downtown Waukesha and downtown Milwaukee.

  Under the Trend, regional access to the Sturtevant Amtrak station would be provided by the arterial street and highway system and by local bus transit service. The Preliminary Plan would improve access by providing improved local bus transit service and by providing an express bus route connecting the station to the Ives Grove park-ride lot and the Corinne Reid Owens Transit Center in downtown Racine.

  Under the Trend, regional access to the Kenosha Metra station would be provided by the arterial street and highway system, by local bus transit service, and by the Kenosha streetcar line. The Preliminary Plan would improve access by providing improved local bus transit service; by providing an express bus route connecting the station to Paddock Lake, Silver Lake, and Twin Lakes; and by providing a commuter rail line connecting the station with downtown Milwaukee.

  Under the Trend, there would be no transit service connecting communities in western Kenosha County and southeastern Walworth County with Metra service in northeastern Illinois. The Preliminary Plan would improve access by providing a commuter bus route connecting Burlington and Paddock Lake with the Metra station in Antioch, Illinois and by providing a commuter bus route connecting Elkhorn, Lake Geneva, and Genoa City with the Metra station in Fox Lake, Illinois.

  Under the Trend, regional access to the Lake Express ferry terminal in Milwaukee would continue to be provided by the arterial street and highway system. The Preliminary Plan would improve access by connecting it to the transit network with local bus service.

CRITERION 3.1.4: POTENTIAL FOR ATTRACTING RESIDENTS AND BUSINESSES

As discussed in the alternatives evaluation, attracting businesses and residents will be vitally important in the future as there will be a need to in-migrate population to grow businesses and jobs in the long term. The alternatives evaluation noted that there are many factors that affect where a business decides to locate or expand and where an individual or family decides to make their home. Many of these factors are unique to the particular business or individual, and would not directly be impacted by VISION 2050. Primary factors significantly impacted by the Preliminary Plan are transportation infrastructure and housing.

While location decisions are clearly individual choices, the Trend and the Preliminary Plan include elements that may make the Region more attractive to potential businesses and residents. In terms of traffic congestion, both the Trend and the Preliminary Plan would reduce congestion compared to existing conditions, with the Trend performing slightly better than the Preliminary Plan (see Criterion 4.4.1). In particular, both the Trend and the Preliminary Plan would reduce severe and extreme congestion compared to existing conditions by providing additional capacity on the arterial street and highway system, and the Preliminary Plan would also significantly improve the transit system to provide alternatives to severely or extremely congested roads. Compared to existing conditions, the lower levels of traffic congestion under the Trend and Preliminary Plan would result in shorter travel times and decreased chances of crashes that would reduce transportation reliability.

For people looking to avoid the need to drive, and for businesses looking for robust transit service and housing options for their employees, the Preliminary Plan would perform far better than the Trend. More people would have access to transit, and more people would have access to higher-quality, fixed-guideway transit, than under the Trend. The Preliminary Plan would also have more walkable areas, providing prospective residents with the opportunity to walk to many destinations, and a greater variety of housing options. While the Trend would improve the bicycle network, the Preliminary Plan proposes further improvements to the bicycle network through the provision of enhanced bicycle facilities (such as protected bike lanes or buffered bike lanes) in key regional corridors.

CRITERION 3.2.1: AVERAGE ANNUAL TRANSPORTATION SYSTEM INVESTMENT

The Preliminary Recommended Plan's transportation system would require additional revenues beyond what is currently available for transportation from Federal, State, and local taxes. Potential sources for these additional revenues are discussed in the Financial Analysis of the Preliminary Recommended Plan, presented in Chapter 4 of this volume.

Considered solely based on the amount of tax dollars required to provide the transportation system, the Trend is less expensive than the Preliminary Plan. Overall, as shown in Table H.29, the Preliminary Plan would require more public investment ($198 million annually, or 23 percent more than the Trend), as it includes significantly increased investment in transit and bicycle facilities, while still adding arterial street and highway capacity to address traffic congestion not addressed by transit, bicycle, and other measures.

Table H.29
Average Annual Transportation System Investment (in Millions of 2015 Dollars)

	Arterial Streets and Highways			Transit Services			Bicycle Facilities	
Plan	Construction	Operations & Maintenance	Subtotal	Construction & Vehicles	Operations & Maintenance	Subtotal	Construction	**Annual Total**
Existing - 2015	$590	$77	$667	$30	$131	$161	$4	$832
Trend - 2050	$663	$84	$747	$21[a]	$107[a]	$128[a]	$2	$877
Plan - 2050	$662	$84	$746	$125[a,b]	$198[a,b]	$323[a]	$6	$1,075

[a] *Amounts for the Trend and Preliminary Plan represent the average annual costs for the transportation system during the plan period (2015-2050). Because the Trend and the Preliminary Plan transit systems change in size (and therefore cost) significantly over the life of the plan, the amounts in this table do not represent the costs of the Trend or Preliminary Plan in the year 2050.*

[b] *The rapid transit corridors included in the Preliminary Plan are assumed to be median or center-lane running bus rapid transit for the purposes of estimating the investment required to implement the Preliminary Plan. In general, median-running light rail construction costs are approximately $63.5 million per mile, while median-running bus rapid transit construction costs are approximately $12.8 million per mile. Operating costs per service hour are also higher for light rail than bus rapid transit, although the greater capacity of light rail vehicles can result in a lower operating cost per passenger than bus rapid transit.*

Source: SEWRPC

CRITERION 3.3.1: PRIVATE TRANSPORTATION COSTS PER CAPITA

While Criterion 3.2.1 estimated the public expenditures on transportation infrastructure necessary to implement the Preliminary Recommended Plan, this criterion estimates the amount of money that residents would spend on transportation directly. While driving is still expected to be the dominant mode of travel in 2050, some residents would be expected to forgo owning a car and instead use alternative transportation modes under the Preliminary Plan. As the average vehicle in Southeastern Wisconsin costs its owner approximately $5,500 per year, compared to a range of $300 to $1,000 for an annual transit pass, those residents able to eliminate the need for one or more cars would be able to save a significant amount of money on transportation. Overall, the Preliminary Plan would save the Region's residents approximately $29 million annually by the year 2050 compared to the Trend due to the increase in walking, biking, and transit trips caused by a more compact development pattern and expanded transit services. As shown in Table H.30, this equates to $60 per year in savings on a per person basis (dividing the cost savings by the total population of the Region), although the savings would be distributed based on which households decide to replace one or more vehicles with walking, biking, and taking transit. Compared to the savings under the alternative plans (see Criterion 3.3.1 in Appendix F), the Preliminary Plan has significantly smaller overall cost savings due to the travel of the 35,200 additional residents projected under the Preliminary Plan. If the Preliminary Plan and the Trend had the same number of residents, the Preliminary Plan would save the Region's residents approximately $144 million annually by the year 2050.

Table H.30
Private Transportation Costs per Capita

Plan	Regional Private Cost of Driving (Average Annual in 2015 Dollars)	Regional Private Cost of Using Transit (Average Annual in 2015 Dollars)	Combined Average Private Transportation Cost per Capita (Average Annual in 2015 Dollars)
Existing - 2011	$6,175,000,000	$57,213,000	$3,085
Trend - 2050	$7,485,000,000	$53,419,000	$3,203
Plan - 2050	$7,387,000,000	$122,174,000	$3,143

Source: SEWRPC

CRITERION 3.3.2: PER HOUSEHOLD COST OF DELAY

Recognizing that it is difficult to quantify the value of people's time when it comes to time lost traveling on congested roadways, this criterion examines the expected delay on the transportation system (see Criterion 4.4.2) and makes an attempt to monetize the time lost due to that delay for auto, transit, and commercial truck travel. The cost of delay is particularly important to commercial travel, which has a high per hour value of time largely due to the fact that the person whose time is affected is being paid to transport goods, some of which require faster shipping and have a correspondingly higher value placed on the shipping time.

Table H.31 presents a comparison of the estimated cost of delay on an average weekday and on an average annual basis for existing conditions, the Trend, and the Preliminary Plan. The total cost of delay (personal and commercial) to the Region would be higher under the Preliminary Plan ($497.5 million per year)—6 percent more than under the Trend ($468.4 million). The higher cost of delay under the Preliminary Plan is in part a result of the additional household and employment growth envisioned under the Preliminary Plan compared to the Trend. The total cost of delay would be higher under both the Trend and Preliminary Plan than under existing conditions ($434.4 million); however, per household cost of delay would be less under both the Trend and Preliminary Plan, as an additional 172,300 households are projected to be added to the Region through the year 2050 under the Trend, and an additional 187,400 households are projected to be added under the Preliminary Plan.

On a per household basis for personal travel, the average annual cost of delay under the Preliminary Plan (about $302 per household per year) would be about 6 percent higher than the Trend (about $284). However, per household cost of delay would be lower under both the Trend and Preliminary Plan than existing conditions ($338).

It should be noted that the cost of delay (total and per household) for transit is higher under the Preliminary Plan than the Trend, largely due to the expected increases in transit use (see Criterion 4.1.1). The increased transit travel under the Preliminary Plan would utilize both transit service operating in mixed traffic and fixed-guideway transit service operating in medians, transit-only lanes, or rail corridors. The transit travel in mixed traffic would be subject to traffic congestion and associated travel time delay, while fixed-guideway transit would mostly be unaffected by traffic congestion.

Table H.31
Per Household Cost of Delay

Plan	Cost of Delay on an Average Weekday ($ millions)			
	Personal Travel		Commercial Travel	Total
	Automobile	Transit		
Existing - 2011	$1.01	$0.06	$0.63	$1.70
Trend - 2050	$1.04	$0.05	$0.74	$1.83
Plan - 2050	$1.05	$0.13	$0.76	$1.94

Plan	Average Annual Cost of Delay ($ millions)			
	Personal Travel		Commercial Travel	Total
	Automobile	Transit		
Existing - 2011	$257.0	$13.5	$163.9	$434.4
Trend - 2050	$264.3	$11.9	$192.2	$468.4
Plan - 2050	$267.5	$30.9	$199.1	$497.5

Plan	Per Household Cost of Delay for Personal Travel ($)	
	Average Weekday	Average Annual
Existing - 2011	$1.34	$338.08
Trend - 2050	$1.12	$284.04
Plan - 2050	$1.19	$302.18

[a] *Average annual delay is based on average weekday delay multiplied by the number of weekdays in a year.*

Source: U.S. Department of Transportation, Puget Sound Regional Council, and SEWRPC

CRITERION 3.3.3: RESILIENCE IN ADAPTING TO CHANGING FUEL PRICES

As discussed in the alternatives evaluation, one of the major unknowns in planning for the Region's transportation system is the future availability and cost of fuel. This criterion tests the Preliminary Plan's performance given two opposite assumptions related to fuel prices. The first assumes the expected long-term fuel price would approximately double (about $7.50 per gallon), while the second assumes fuel price would approximately halve ($1.75 per gallon).[47]

Recognizing the difficulty in predicting how significant an impact a fuel price increase or decrease would have on the amount of driving in the long term, the Commission's travel demand models were used to estimate how much VMT might be expected to fluctuate if fuel prices were to be doubled or halved, as presented in Table H.32. Under the higher fuel price, VMT under the Trend would be 8 percent lower than under the expected fuel price. It would be 11 percent lower under the Preliminary Plan. Under the lower fuel price, VMT would be 5 percent higher under both the Trend and Preliminary Plan. The fluctuations in VMT indicate that some residents of the Region would shift their travel behavior based on changes to the long-term price, although the changes would be relatively modest.

Part of one's mode choice is dependent on the perceived cost of using that mode, which can be impacted by fuel prices. Fuel price is particularly significant because a person filling up their car's gas tank immediately notices when they are saving or spending more on fuel. The Commission's travel demand models were used to estimate how mode choice could change if the expected fuel price were to be doubled or halved, as presented in Table H.33. Under the Trend, where transit service would decline from existing levels, transit trips would increase by 35 percent under the higher fuel price and decrease by 10 percent under the lower fuel price. Under the Preliminary Plan, where transit service would be significantly improved and expanded, transit trips would increase by 58 percent under the higher fuel price and decrease by 14 percent under the lower fuel price. Non-motorized trips based on the different fuel price assumptions would vary between the Trend and Preliminary Plan similar to transit trips, although to a lesser degree. Similar to the fluctuations in VMT, the change in the number of trips by mode shows that some residents of the Region would shift their travel behavior based on changes to the long-term fuel price.

As discussed in the alternatives evaluation, even with significantly improved and expanded transit, bicycle, and pedestrian facilities, projected increases in transit ridership and non-motorized travel under the expected fuel price may be relatively modest with respect to their effect on total regional travel (see Criterion 4.1.1). Similarly, as shown in testing the impact of a higher fuel price, the projected increases in trips by alternative modes may also be relatively modest. However, the significantly improved and expanded transit infrastructure under the Preliminary Plan would provide the capacity to carry even more of the Region's residents. By increasing the capacity of the transportation system to handle more travel by alternative modes to the automobile, the system would be even more resilient should the long-term fuel price significantly increase beyond what is expected.

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[47] The projected fuel price in the year 2050 is estimated to be about $3.64 per gallon in year 2015 dollars.

Table H.32
Vehicle-Miles of Travel Under Different Fuel Prices

Plan	Average Weekday VMT (millions)		
	Expected Fuel Price	Double the Fuel Price	Half the Fuel Price
Trend - 2050	51.6	47.5	54.1
Plan - 2050	51.1	45.6	53.8

Source: SEWRPC

Table H.33
Trips per Day by Mode Under Different Fuel Prices

Plan	Trips on an Average Weekday Under the Expected Fuel Price			
	Automobile	Transit	Non-Motorized	Total
Trend - 2050	6,498,000	130,000	582,000	7,210,000
Plan - 2050	6,504,000	211,000	605,000	7,320,000

Plan	Trips on an Average Weekday Under a Doubling of the Expected Fuel Price			
	Automobile	Transit	Non-Motorized	Total
Trend - 2050	6,367,000	175,000	668,000	7,210,000
Plan - 2050	6,295,000	333,000	692,000	7,320,000

Plan	Trips on an Average Weekday Under a Halving of the Expected Fuel Price			
	Automobile	Transit	Non-Motorized	Total
Trend - 2050	6,548,000	117,000	545,000	7,210,000
Plan - 2050	6,572,000	181,000	567,000	7,320,000

Source: SEWRPC

In terms of the impact of fuel prices on transit system operating costs, lower fuel prices in the long term would reduce costs, while higher fuel prices would increase costs. However, fuel costs are a relatively small proportion of total operating costs, with salaries and benefits for drivers and other staff usually accounting for the majority of total operating costs.

CRITERION 3.4.1: SUPPORTIVE INFRASTRUCTURE COSTS

Compared to the Trend, the Preliminary Plan would potentially have lower costs associated with extending supportive infrastructure to new development. Table H.34 shows the Preliminary Plan has a lower cost for extending sewer and water infrastructure to new development, which is due to a more compact development pattern, redevelopment/infill development, and multifamily development. Table H.34 also shows the cost of extending local roads to new development is less under the Preliminary Plan than the Trend. This is due to less frontage associated with the Preliminary Plan's higher-density development pattern, which reduces the distance local roads need to be extended, and to more redevelopment/infill development, which may be able to take advantage of existing streets.

Table H.34
Supportive Infrastructure Costs

Plan	Sewer Infrastructure (billions of $)	Water Infrastructure (billions of $)	Local Roads (billions of $)	Total Supportive Infrastructure (billions of $)
Trend	$1.65	$1.39	$3.89	$6.93
Plan	$1.31	$1.07	$3.12	$5.50

Source: SEWRPC

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CRITERION 4.1.1: TRIPS PER DAY BY MODE

The vast majority of travel currently made in the Region by residents of the Region is by car, and is likely to continue to be by car in the future. However, the Preliminary Plan proposes significant improvements to public transit and bicycling facilities, which would provide improved alternatives to driving and could significantly increase the number of people that are able and choose to use these alternative modes. Table H.35 presents the total number of person trips by mode for residents of the Region on an average weekday within the Region under the existing transportation system and development pattern, as well as under the Trend and Preliminary Plan. The Commission's travel demand models forecast a continuing, though modest, increase of about 18 percent in total travel through the year 2050, given projected increases in population, households, and employment. Total travel under the Preliminary Plan is higher than the Trend, in part due to additional household and employment growth envisioned under the Preliminary Plan compared to the Trend. Under the Trend and Preliminary Plan, automobile travel continues to account for the vast majority of trips and is expected to increase by about 18 percent over the next 35 years, or about 0.5 percent per year. The Preliminary Plan would have 62 percent more transit trips and 4 percent more non-motorized trips than the Trend.

Table H.35
Trips per Day by Mode Within the Region by Residents of the Region

Plan	Trips on an Average Weekday			
	Automobile	Transit	Non-Motorized	Total
Existing - 2011	5,521,000	134,000	524,000	6,179,000
Trend - 2050	6,498,000	130,000	582,000	7,210,000
Plan - 2050	6,504,000	211,000	605,000	7,320,000

Source: SEWRPC

CRITERION 4.1.2: VEHICLE-MILES OF TRAVEL

Even with the Preliminary Recommended Plan's focus on providing viable alternatives to driving, and on a more compact development pattern that can reduce trip lengths, total VMT is expected to increase through 2050. The Commission's travel demand models forecast a continuing, though modest, increase in overall travel through the year 2050, given projected increases in population, households, and employment, and the vast majority of travel is likely to continue to be by car. However, the Preliminary Plan would result in about 1 percent less total VMT than the Trend, as shown in Table H.36. Under the Preliminary Plan, VMT is expected to increase by 25 percent over the next 35 years, or about 0.7 percent per year, slightly less than the 26 percent increase under the Trend.

VMT per capita is also expected to increase under the Preliminary Plan, although as discussed in the alternatives evaluation, this does not necessarily mean residents would be driving more on average. Projected future increases in commercial vehicle travel and travel through the Region are likely causing the future VMT per capita estimates to be higher.

Table H.36
Vehicle-Miles of Travel

	Average Weekday		Average Annual	
Plan	Total VMT (millions)	VMT per Capita	Total VMT (billions)	VMT per Capita
Existing - 2011	40.9	20.2	13.7	6,800
Trend - 2050	51.6	21.9	17.3	7,300
Plan - 2050	51.1	21.4	17.2	7,200

Source: SEWRPC

CRITERION 4.1.3: IMPACTS OF TECHNOLOGY CHANGES

The alternatives evaluation discussed a number of emerging technologies that have the potential to affect future land use patterns and transportation infrastructure in the Region, acknowledging that their precise impacts are difficult to predict. The technologies discussed included car and bike sharing, mobile app innovation, autonomous cars, and vehicle fuel efficiency.

As the alternatives evaluation noted, mobile app technology (used by ridesharing services like Uber and Lyft) and car/bike sharing may increase transit use, reduce greenhouse gas emissions and, due to increased bike share usage, improve public health. The Preliminary Plan would accommodate emerging mobile app technology in transportation by providing flexibility in mode choice with significantly greater options for transit use, increasing the likelihood some individuals may choose to replace private automobile ownership with Uber or Lyft in combination with relying more on public transit. The Preliminary Plan, like Alternatives I and II, proposes increasing the availability of car share and bike share facilities and services in the Region, and would support the growth of car and bike sharing by improving transit service, enhancing bicycle facilities, and creating denser, more walkable areas in the Region. Increased availability of car share could serve to enhance the Preliminary Plan proposals, as car sharing is especially effective at replacing personal automobile ownership in areas with robust rapid transit. Additionally, the enhanced bicycle facilities proposed under the Preliminary Plan, along with the encouragement of more walkable and bicycle-friendly urban areas, would aid in addressing the needs of the growing bike sharing industry.

Of the numerous changes in technology that will likely happen between now and 2050, autonomous cars may have the largest impact on the future of mobility. Autonomous cars, also known as driverless or self-driving cars, may improve road safety and increase mobility for those currently unable to drive, while their impact on congestion may be positive or negative. The future of autonomous cars hinges on the ability to develop advanced artificial intelligence to sense rapidly changing road and weather conditions, making the timing for widespread implementation of autonomous cars uncertain. It is difficult to predict how infrastructure investment should be adjusted to adapt to a future in which some or all cars are autonomous, and there are diverging views among experts about whether autonomous cars will reduce congestion or increase congestion.

The fuel efficiency of vehicles is expected to nearly double by the year 2050 (see Criterion 1.4.3), which is desirable for many reasons, including reducing the environmental impacts. However, if fuel efficiency significantly reduces the cost of driving it has the potential to adversely affect transit ridership. More fuel-efficient vehicles also have the potential to result in declining transportation revenues from fuel sales, as discussed in the Financial Analysis of the Preliminary Plan presented in Chapter 4 of this volume.

CRITERION 4.2.1: TRAVEL TIME TO IMPORTANT PLACES BY MODE

As under the alternatives, the proportion of the Region's population living within a reasonable travel time by auto to a major activity center or regional destination would remain about the same under both the Trend and Preliminary Plan. However, the Preliminary Plan would result in significantly more of the Region's population living within a reasonable travel time by transit to a major activity center or regional destination, while the Trend would reduce the number of people with reasonable access by transit.

Table H.37
Population Within 30 Minutes of a Retail Center

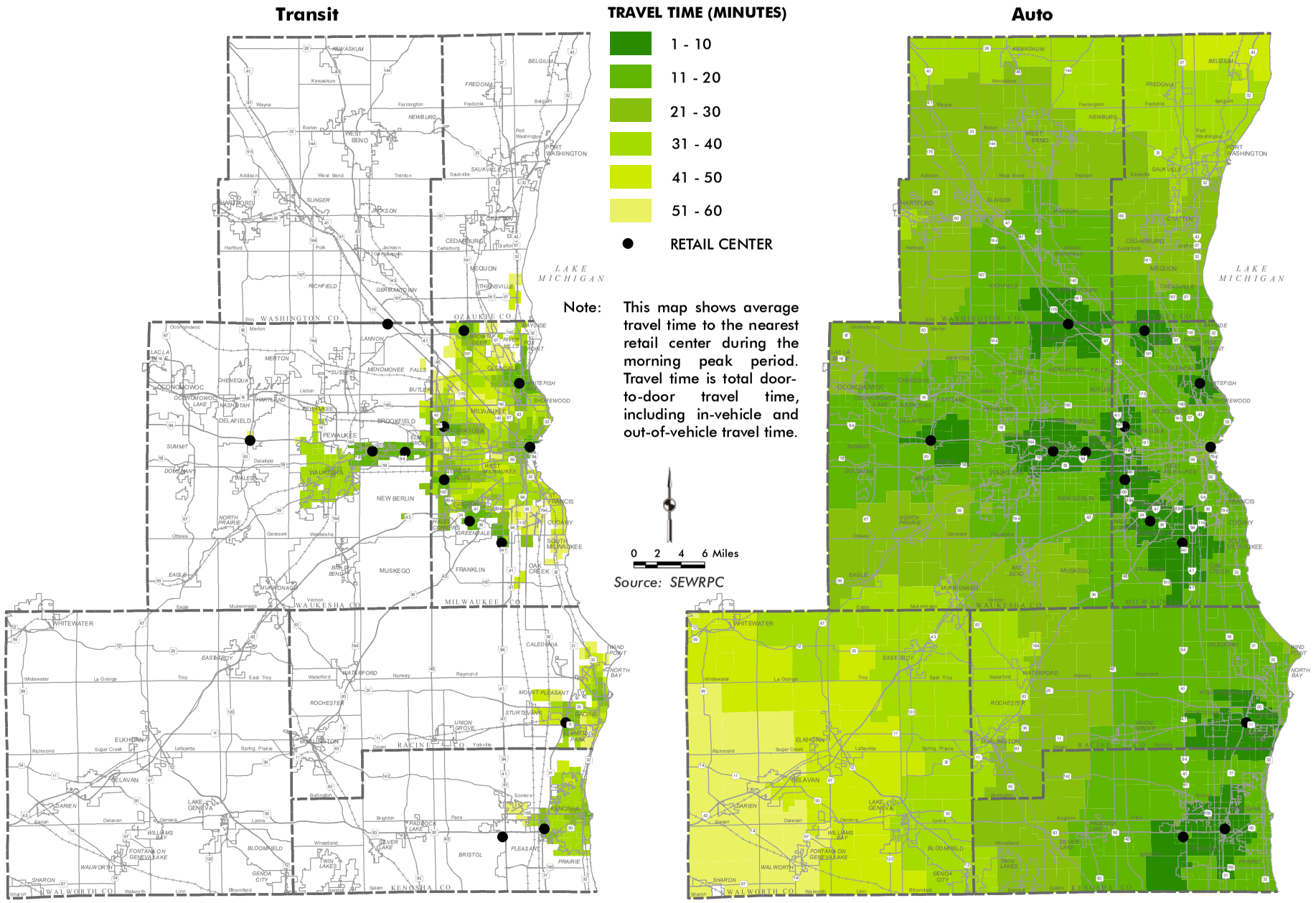
Plan	Total Population Within a 30-Minute Transit Trip of a Retail Center		Total Population Within a 30-Minute Drive of a Retail Center	
	Population with Access	Percent of Total Population	Population with Access	Percent of Total Population
Existing - 2011	285,400	14.1	1,849,900	91.6
Trend - 2050	223,600	9.5	2,117,700	90.0
Plan - 2050	872,300	36.5	2,163,500	90.6

Source: SEWRPC

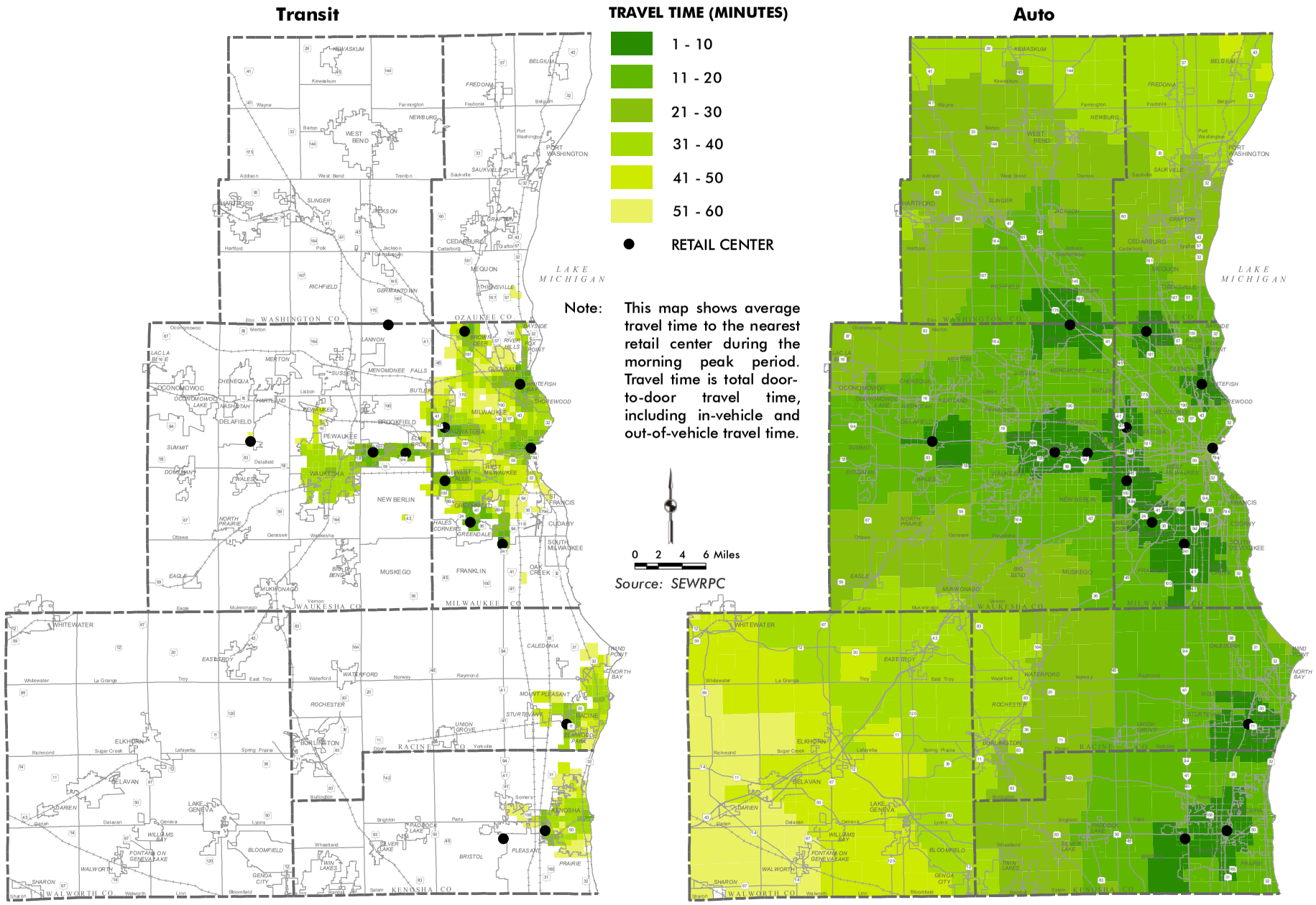
- **Transportation Access to Retail Centers:** Maps H.71 through H.73 show drive and transit trip times to one of the Region's existing 14 retail centers, and Table H.37 presents the population that would be within 30 minutes.[48] About 92 percent of the Region's population is currently within a 30-minute drive of one of the Region's existing retail centers. This proportion would remain at about 90 to 91 percent under both the Trend and Preliminary Plan, with the Preliminary Plan slightly higher primarily due to its more compact development pattern. Despite a projected increase in the Region's total population, approximately 60,000 fewer residents (22 percent less) would be within a 30-minute transit trip of a retail center under the Trend compared to today. Compared to the Trend, the Preliminary Plan would provide transit service within 30 minutes of a retail center to about 650,000 additional residents (290 percent more).

[48] *For this criterion, only retail and retail/office centers having at least 2,000 retail jobs or 3,500 total jobs were analyzed.*

Map H.71
Average Peak Travel Time to Retail Centers: Existing



Map H.72
Average Peak Travel Time to Retail Centers: Trend



Map H.73
Average Peak Travel Time to Retail Centers: Preliminary Recommended Plan

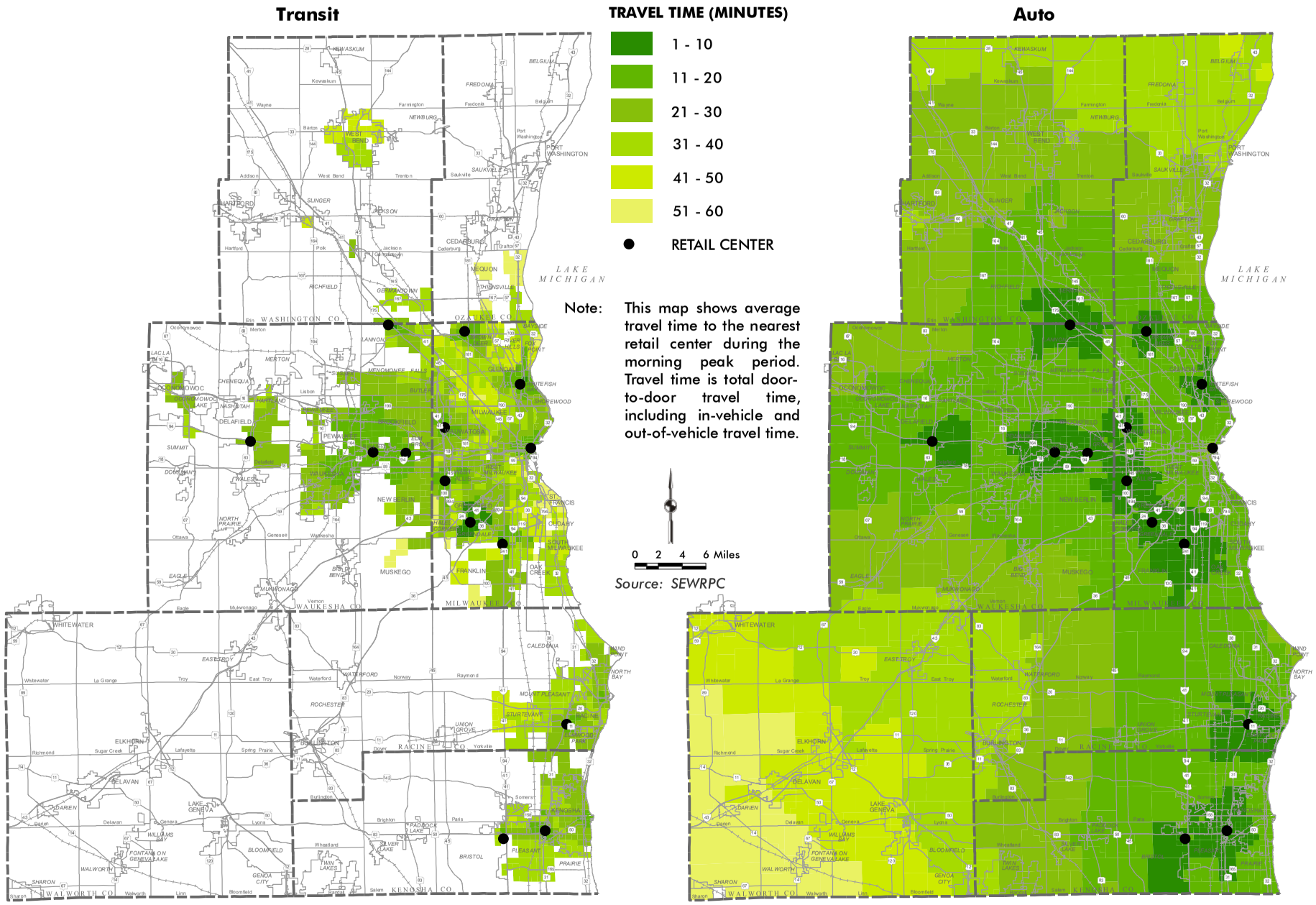


Table H.38
Population Within 30 Minutes of a Major Park

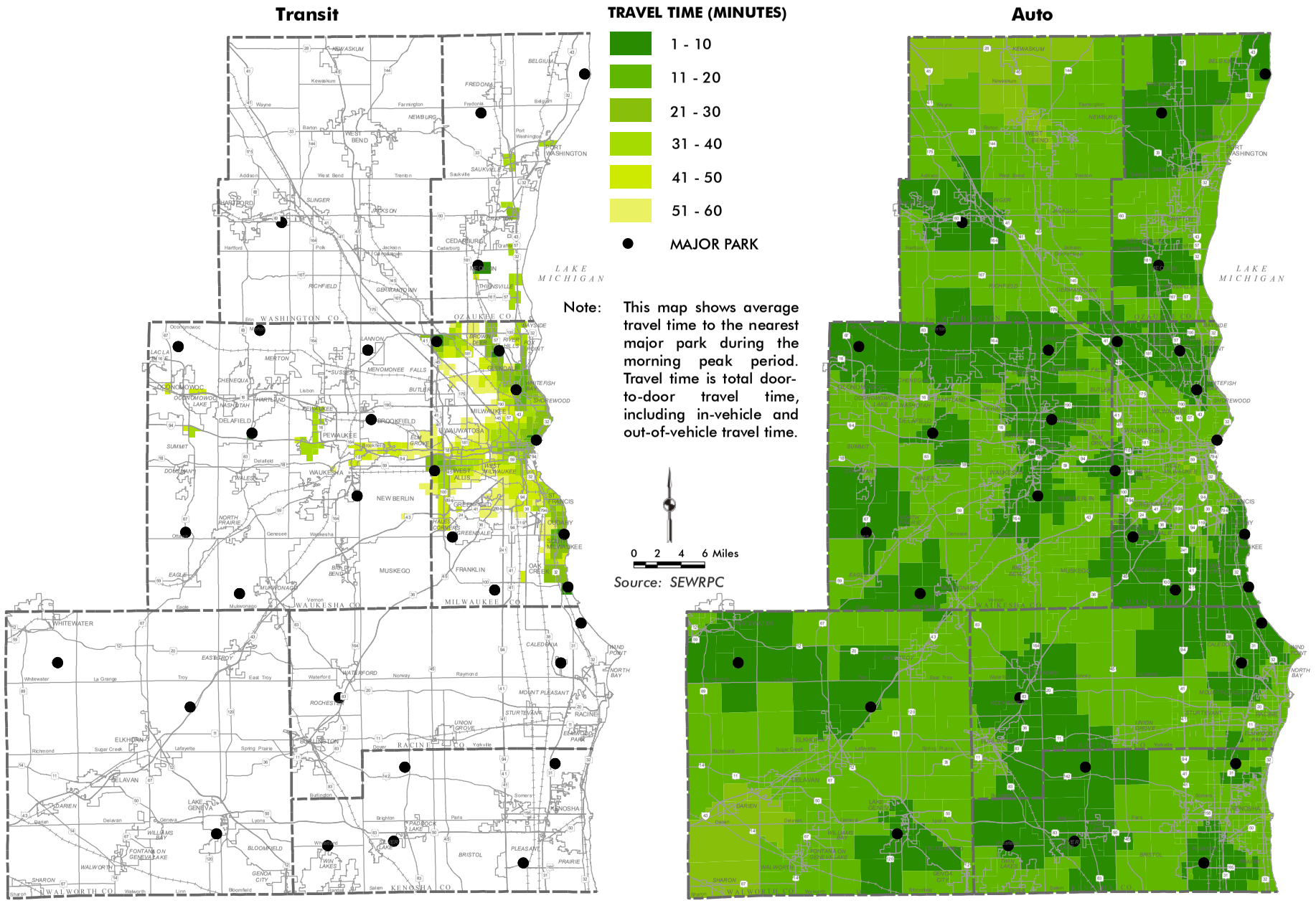
Plan	Total Population Within a 30-Minute Transit Trip of a Major Park		Total Population Within a 30-Minute Drive of a Major Park	
	Population with Access	Percent of Total Population	Population with Access	Percent of Total Population
Existing - 2011	162,200	8.0	2,020,000	100.0
Trend - 2050	125,200	5.3	2,354,000	100.0
Plan - 2050	553,200	23.2	2,389,200	100.0

Source: SEWRPC

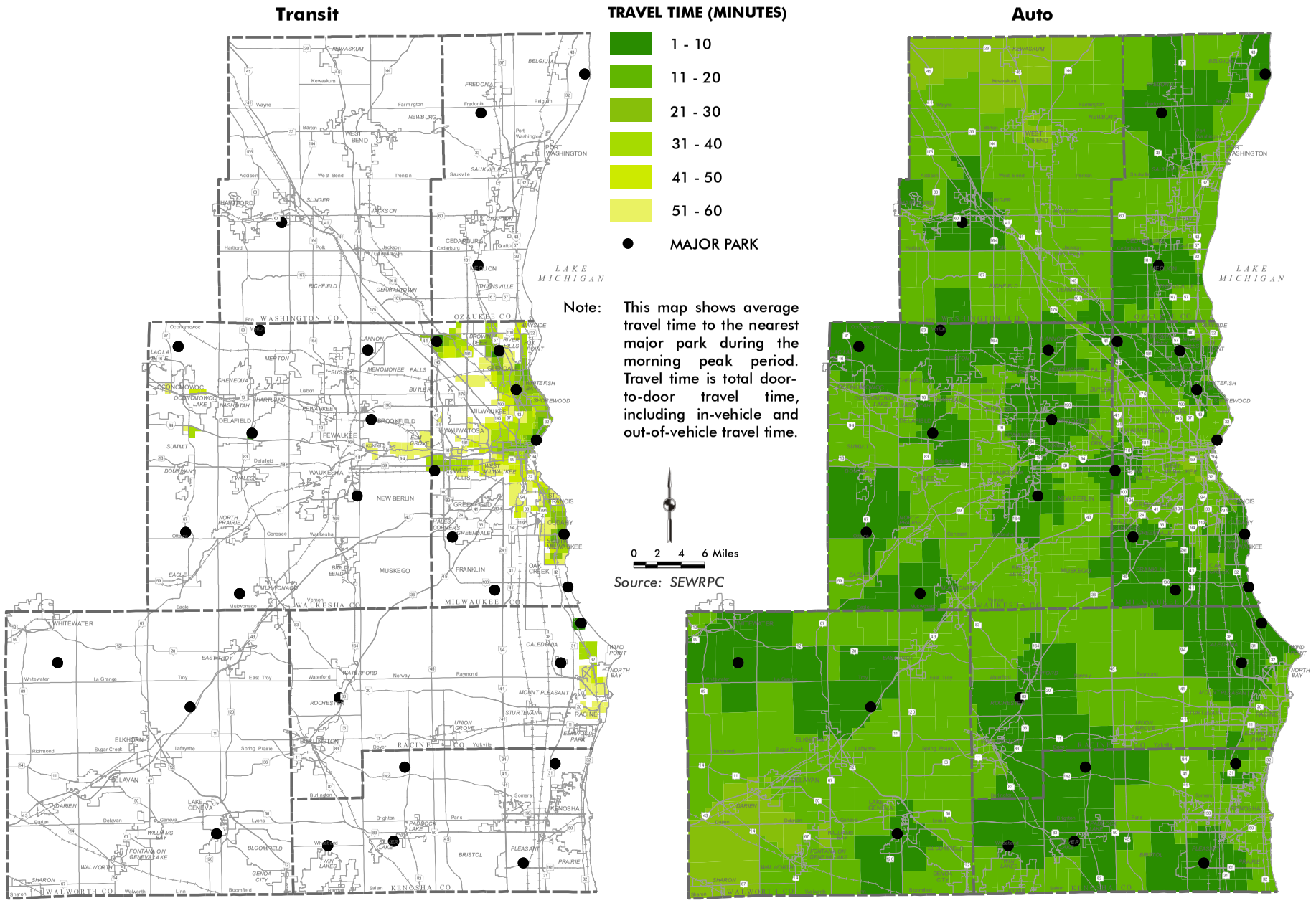
- **Transportation Access to Major Parks:** Maps H.74 through H.76 show drive and transit trip times to one of the Region's existing 32 major parks, and Table H.38 presents the population that would be within 30 minutes.[49] The entire population of the Region is currently within a 30-minute drive of one of the Region's existing major parks, which would continue under both the Trend and Preliminary Plan. Despite a projected increase in the Region's total population, approximately 37,000 fewer residents (23 percent less) would be within a 30-minute transit trip of a major park under the Trend compared to today. Compared to the Trend, the Preliminary Plan would provide transit service within 30 minutes of a major park to about 430,000 additional residents (342 percent more).

[49] *For this criterion, only parks having an area of at least 250 acres were analyzed.*

Map H.74
Average Peak Travel Time to Major Parks: Existing



Map H.75
Average Peak Travel Time to Major Parks: Trend



Map H.76
Average Peak Travel Time to Major Parks: Preliminary Recommended Plan

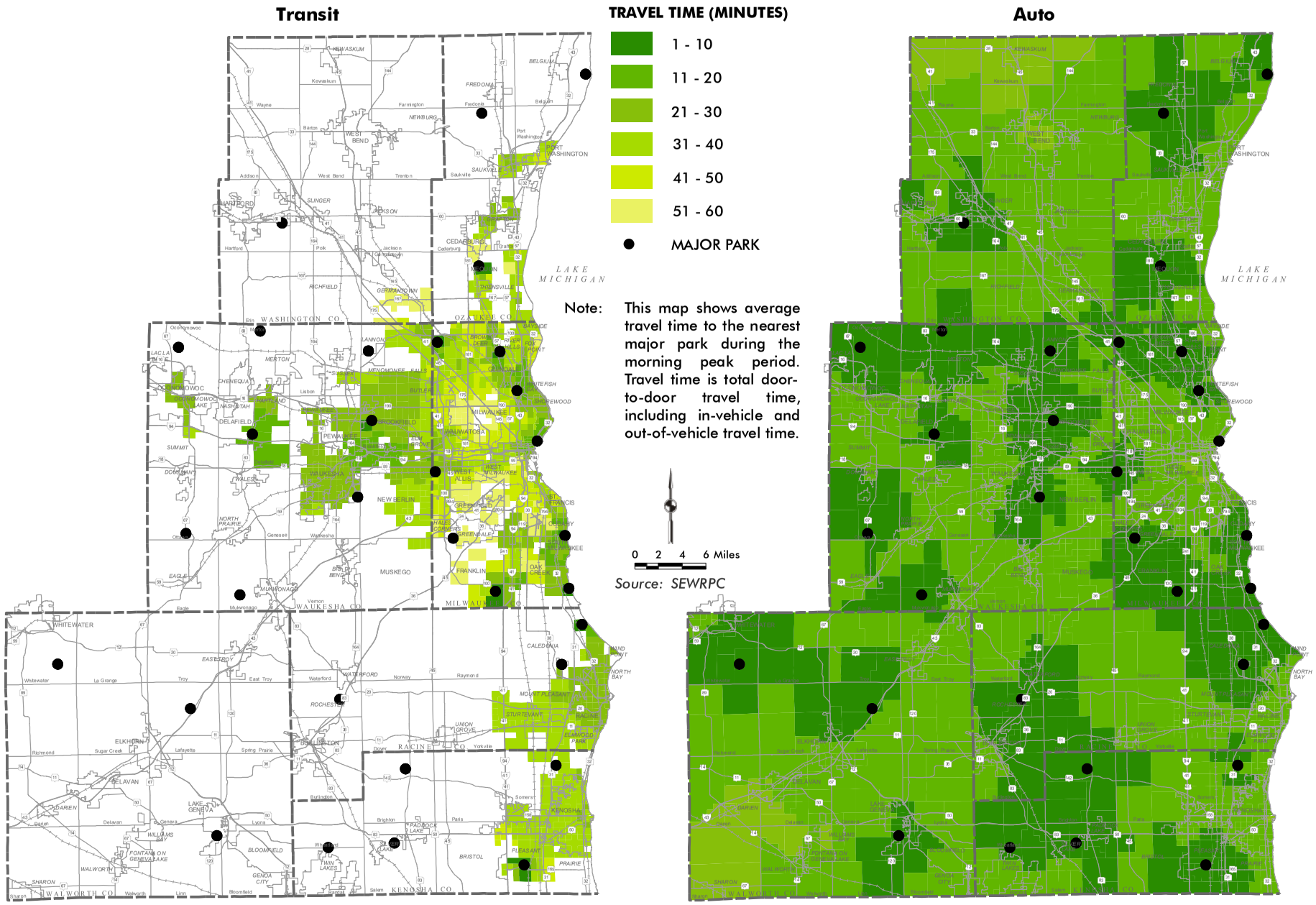


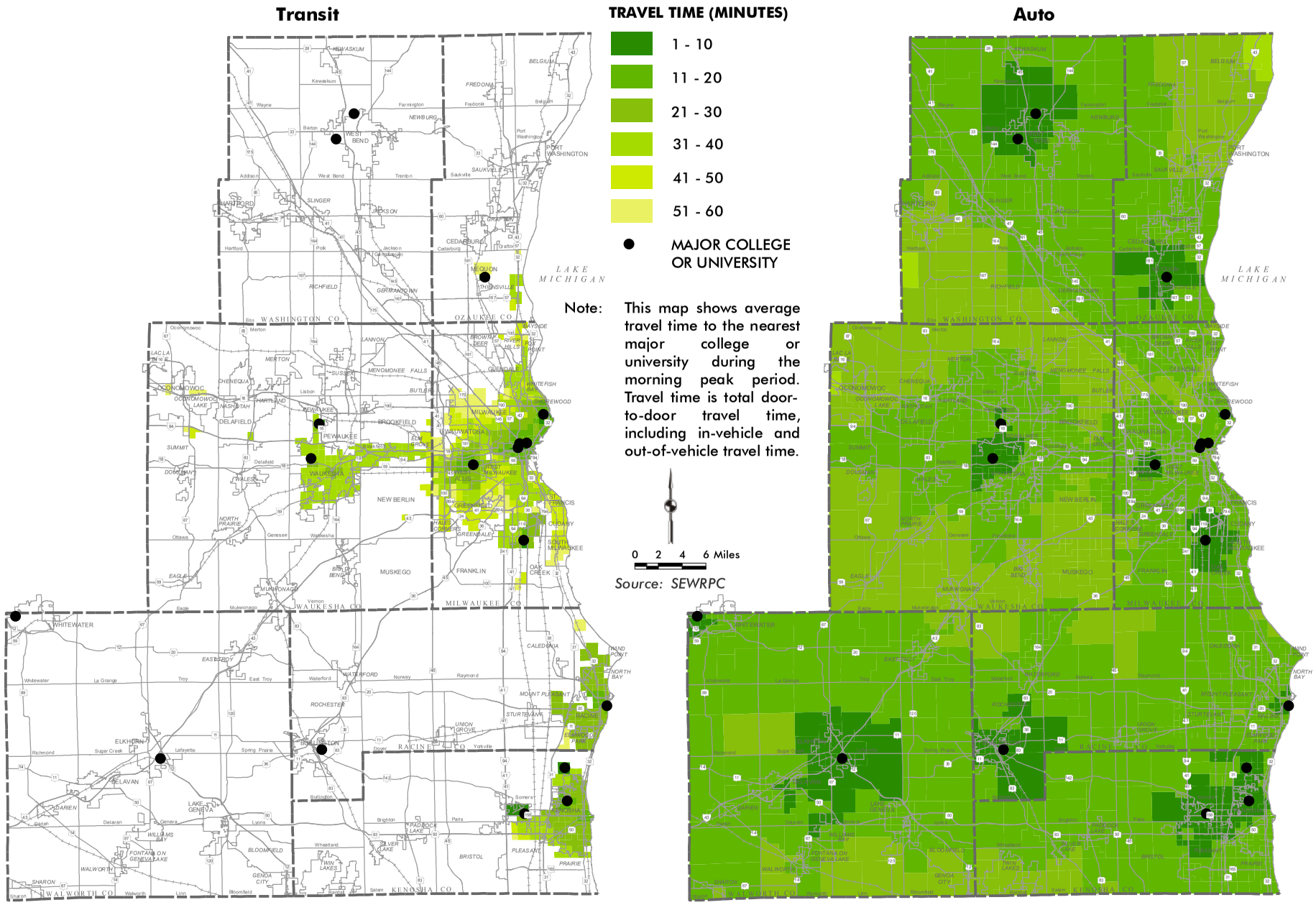
Table H.39
Population Within 30 Minutes of a College or University

Plan	Total Population Within a 30-Minute Transit Trip of a College or University		Total Population Within a 30-Minute Drive of a College or University	
	Population with Access	Percent of Total Population	Population with Access	Percent of Total Population
Existing - 2011	368,200	18.2	2,018,700	99.9
Trend - 2050	282,500	12.0	2,349,400	99.8
Plan - 2050	745,200	31.2	2,386,500	99.9

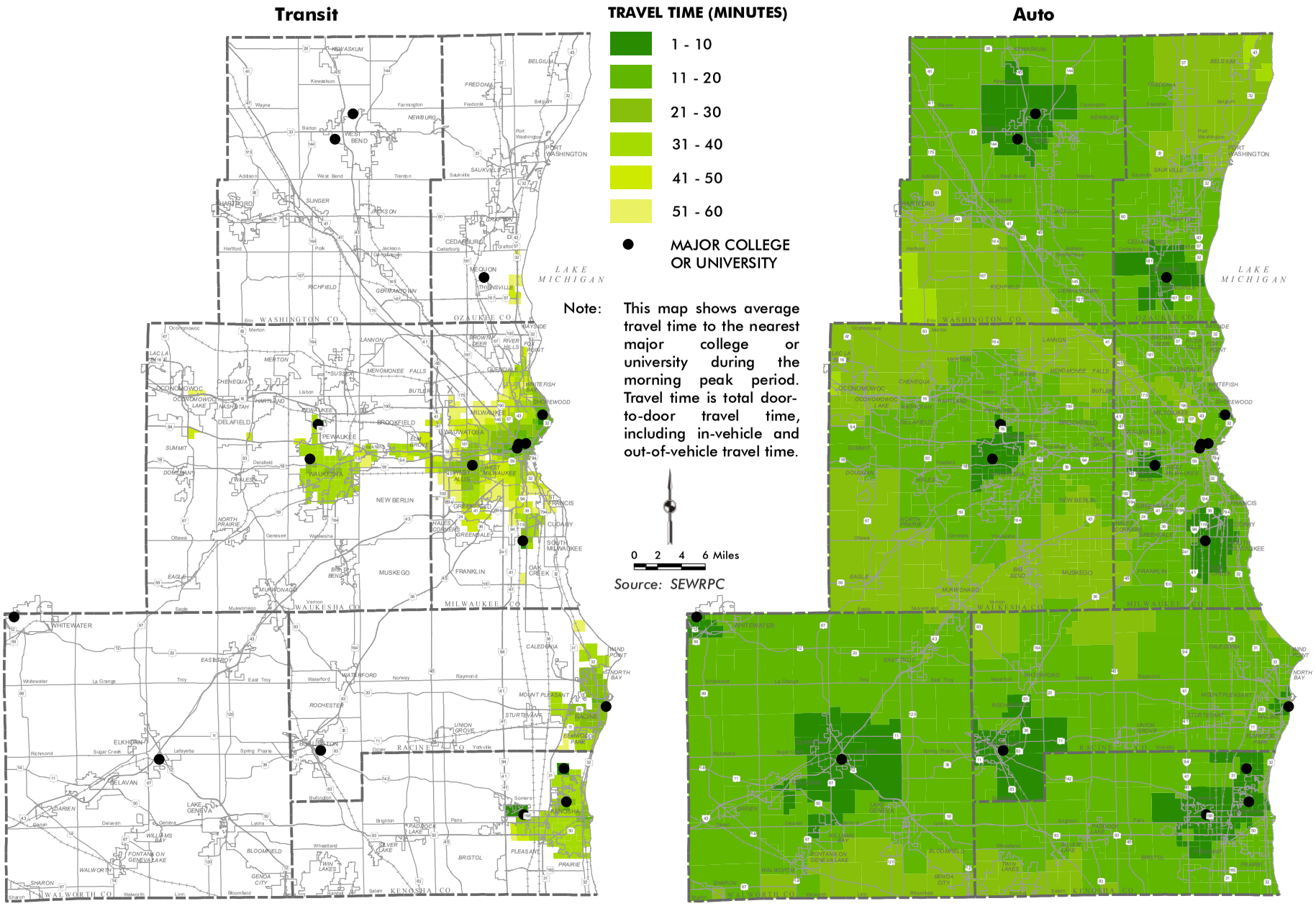
Source: SEWRPC

- **Transportation Access to Public Technical Colleges and Universities:** Maps H.77 through H.79 show drive and transit trip times to one of the Region's existing 18 public technical colleges or universities, and Table H.39 presents the population that would be within 30 minutes. Almost the entire population of the Region is currently within a 30-minute drive of one of the Region's existing colleges or universities, which would continue under both the Trend and Preliminary Plan. Despite a projected increase in the Region's total population, approximately 86,000 fewer residents (23 percent less) would be within a 30-minute transit trip of a college or university under the Trend compared to today. Compared to the Trend, the Preliminary Plan would provide transit service within 30 minutes of a college or university to about 460,000 additional residents (164 percent more).

Map H.77
Average Peak Travel Time to Public Technical Colleges and Universities: Existing



Map H.78
Average Peak Travel Time to Public Technical Colleges and Universities: Trend



Map H.79
Average Peak Travel Time to Public Technical Colleges and Universities: Preliminary Recommend Plan

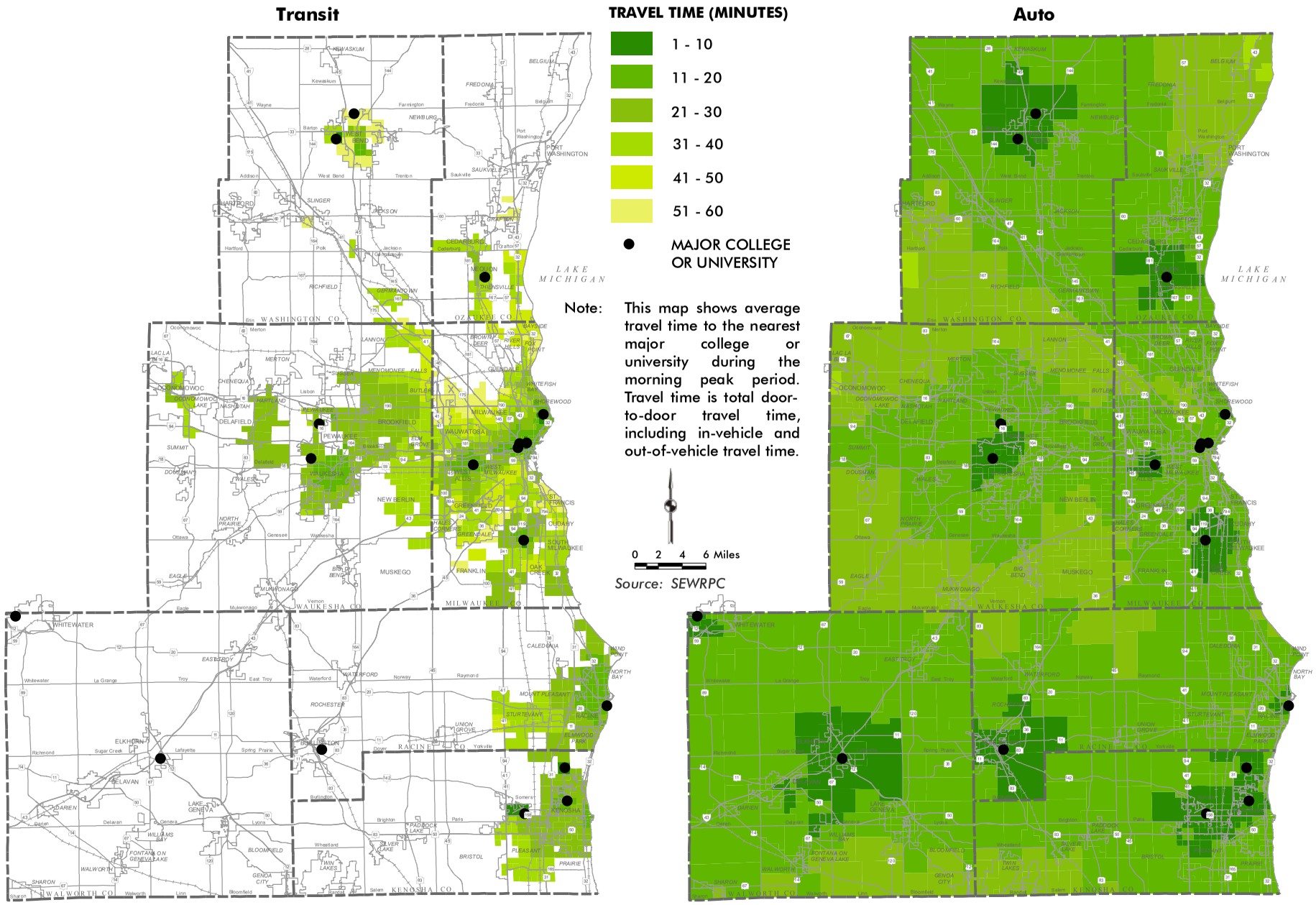


Table H.40
Population Within 30 Minutes of a Health Care Facility

Plan	Total Population Within a 30-Minute Transit Trip of a Health Care Facility		Total Population Within a 30-Minute Drive of a Health Care Facility	
	Population with Access	Percent of Total Population	Population with Access	Percent of Total Population
Existing - 2011	655,700	32.5	2,016,400	99.8
Trend - 2050	542,200	23.0	2,354,000	100.0
Plan - 2050	1,090,500	45.6	2,389,200	100.0

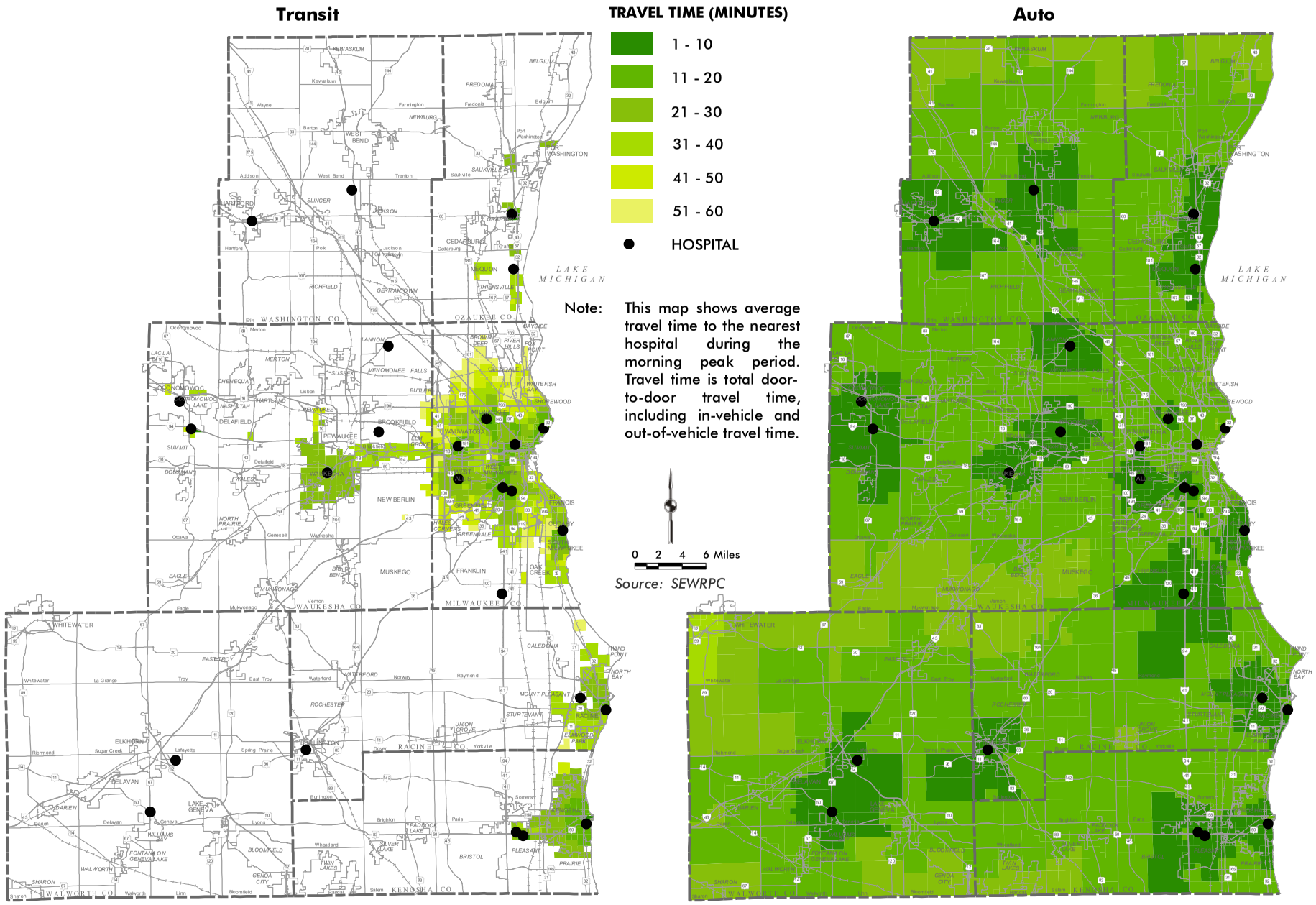
Source: SEWRPC

- **Transportation Access to Health Care Facilities:** Maps H.80 through H.82 show drive and transit trip times to one of the Region's existing 26 major hospitals, and Table H.40 presents the population that would be within 30 minutes.[50] Essentially the entire population of the Region is currently within a 30-minute drive of one of the Region's existing hospitals, which would continue under both the Trend and Preliminary Plan.[51] Despite a projected increase in the Region's total population, approximately 115,000 fewer residents (17 percent less) would be within a 30-minute transit trip of a hospital under the Trend compared to today. Compared to the Trend, the Preliminary Plan would provide transit service within 30 minutes of a hospital to about 550,000 additional residents (101 percent more).

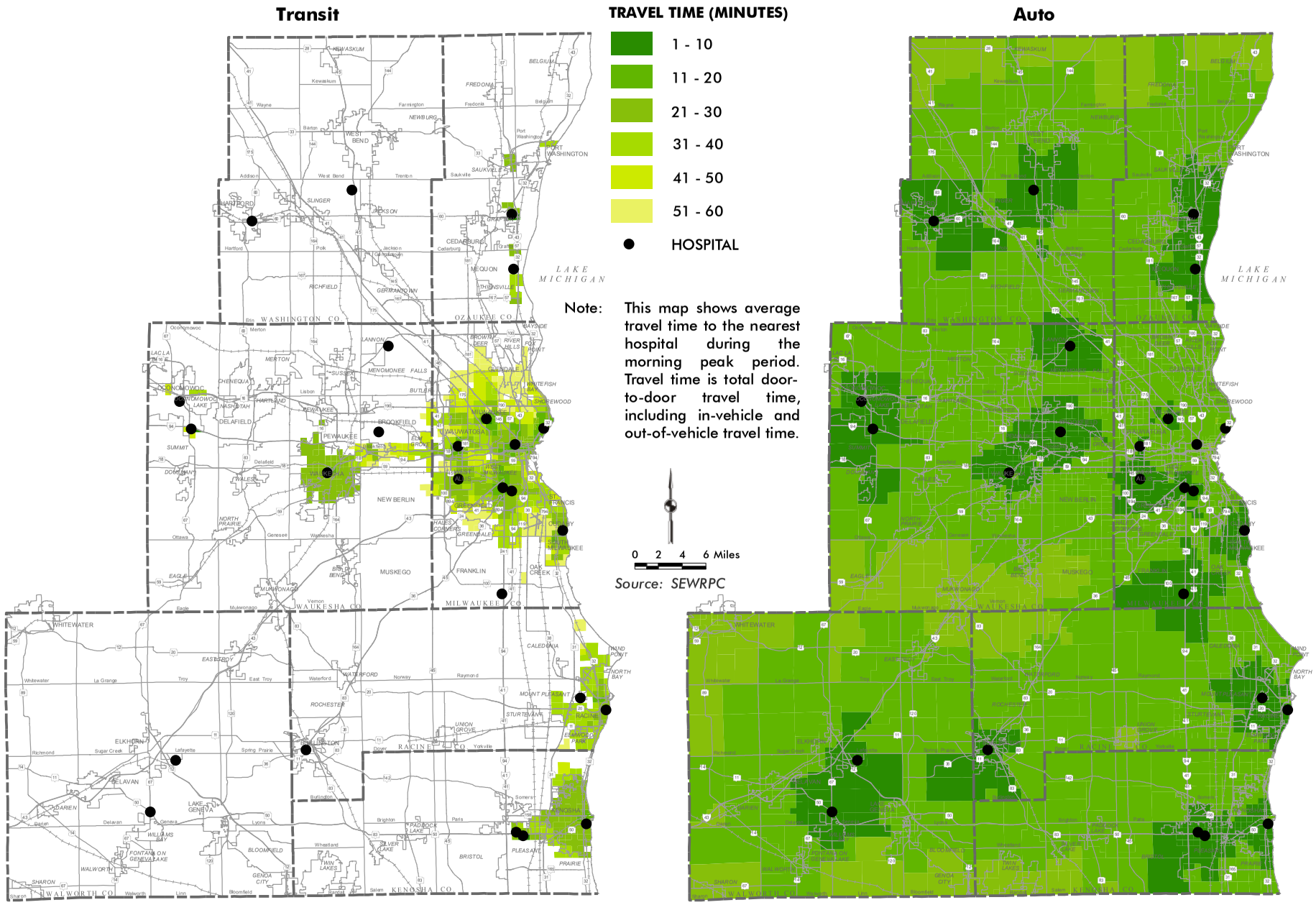
[50] For this criterion, only major hospitals for the general population were analyzed (other health care facilities were excluded, such as specialty hospitals, urgent care facilities, facilities requiring referrals, and veterans-only facilities).

[51] The only area not currently within a 30-minute drive of a Region hospital is in the northwest corner of Walworth County. This small area is, however, currently within a 30-minute drive of Fort Memorial Hospital, a major general-population hospital located outside the seven-county Region.

Map H.80
Average Peak Travel Time to Health Care Facilities: Existing



Map H.81
Average Peak Travel Time to Health Care Facilities: Trend



Map H.82
Average Peak Travel Time to Health Care Facilities: Preliminary Recommended Plan

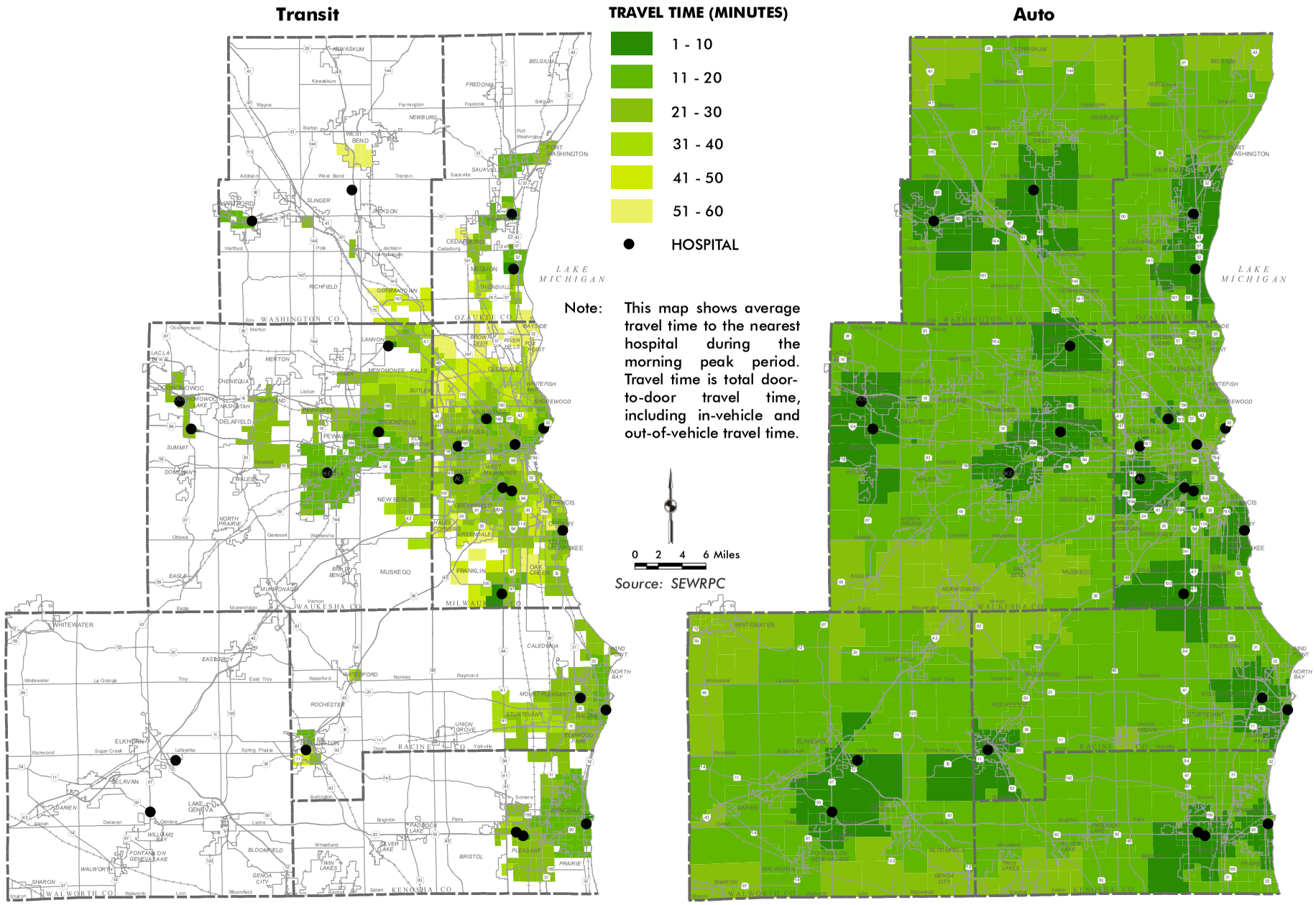


Table H.41
Population Within 30 Minutes of a Grocery Store

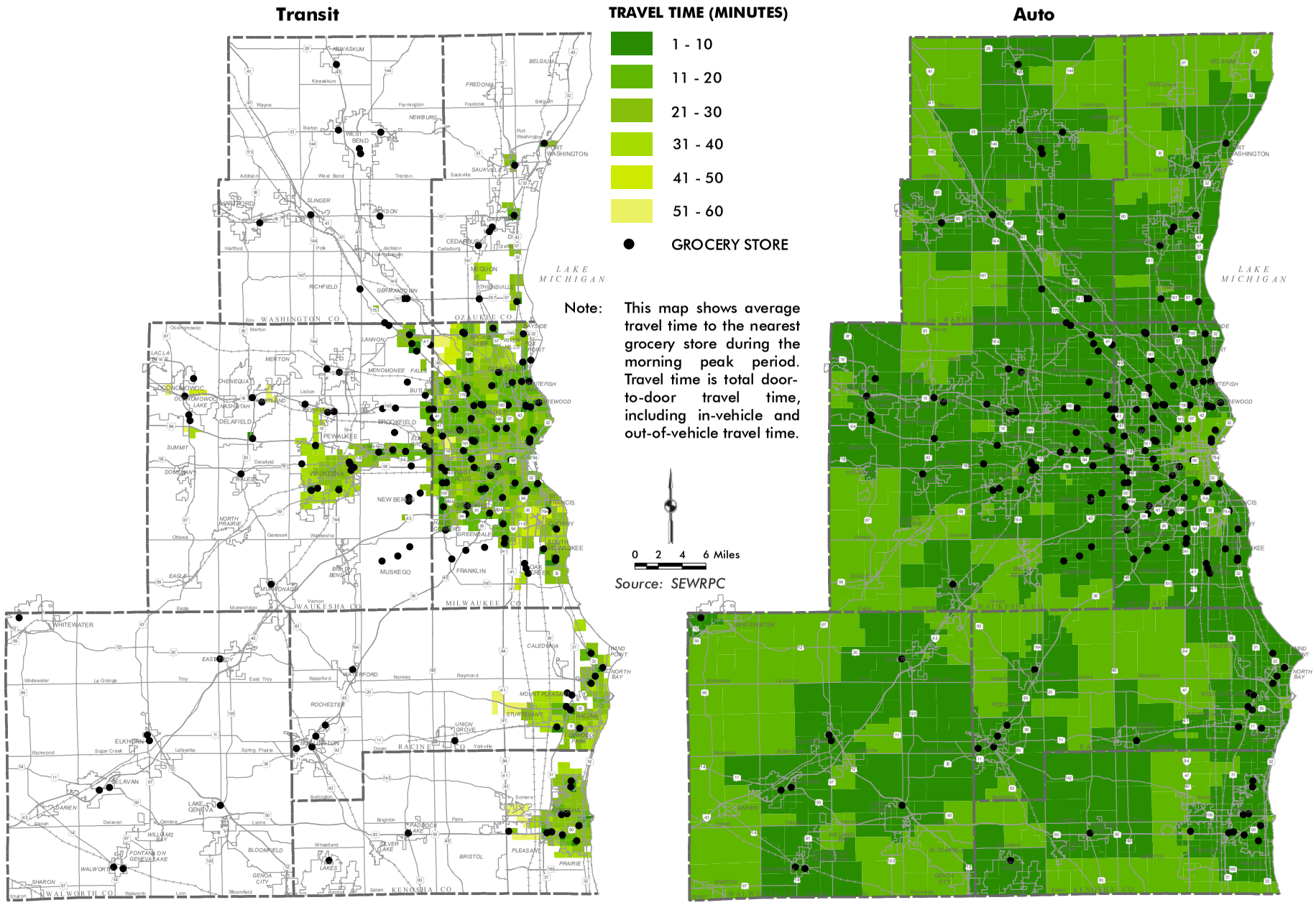
Plan	Total Population Within a 30-Minute Transit Trip of a Grocery Store		Total Population Within a 30-Minute Drive of a Grocery Store	
	Population with Access	Percent of Total Population	Population with Access	Percent of Total Population
Existing - 2011	1,015,400	50.3	2,020,000	100.0
Trend - 2050	976,700	41.5	2,354,000	100.0
Plan - 2050	1,555,800	65.1	2,389,200	100.0

Source: SEWRPC

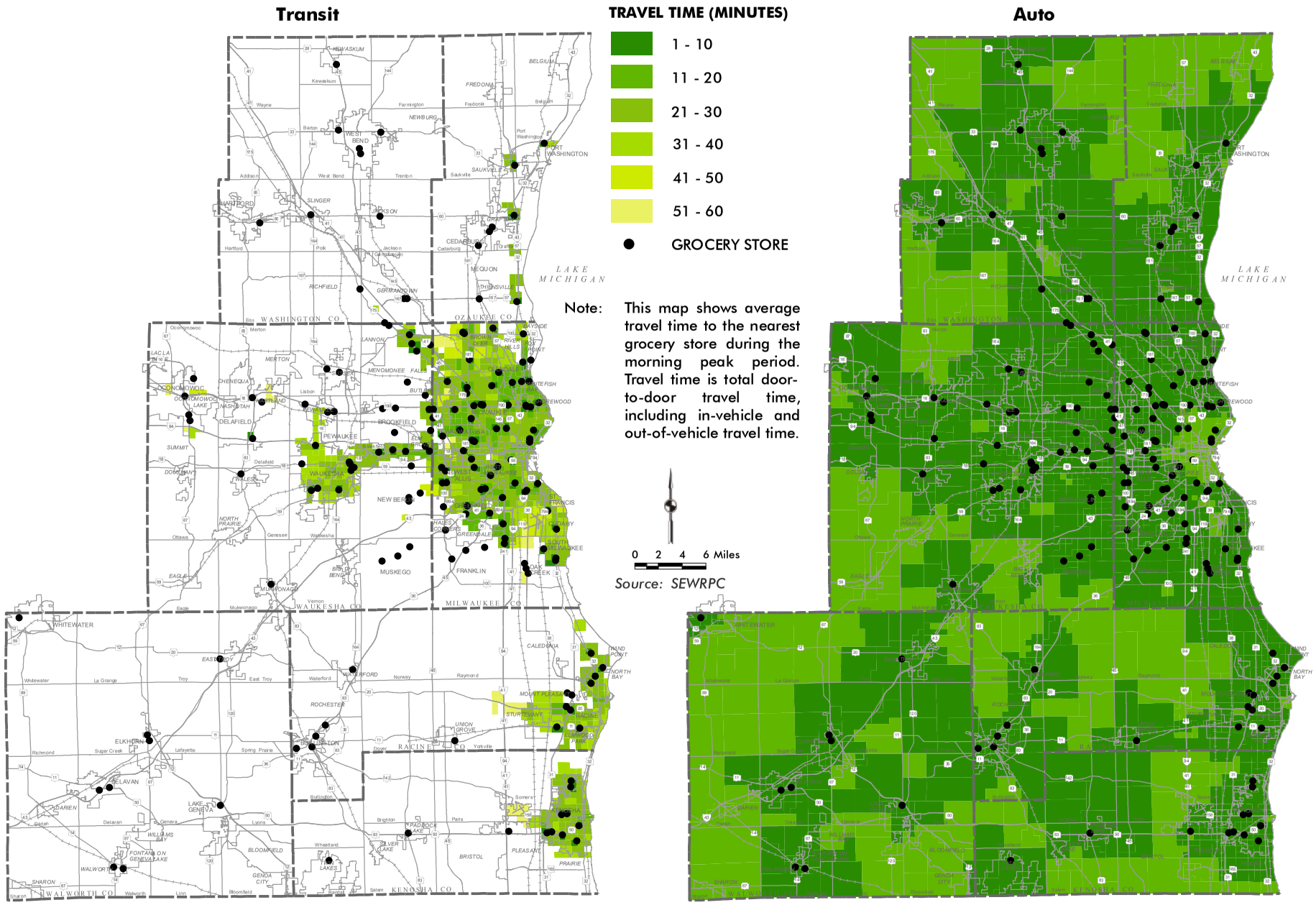
- **Transportation Access to Grocery Stores:** Maps H.83 through H.85 show drive and transit trip times to one of the Region's existing 177 grocery stores, and Table H.41 presents the population that would be within 30 minutes.[52] The entire population of the Region is currently within a 30-minute drive of one of the Region's existing grocery stores, which would continue under both the Trend and Preliminary Plan. Despite a projected increase in the Region's total population, approximately 40,000 fewer residents (4 percent less) would be within a 30-minute transit trip of a grocery store under the Trend compared to today. Compared to the Trend, the Preliminary Plan would provide transit service within 30 minutes of a grocery store to about 580,000 additional residents (59 percent more). As discussed under the alternatives evaluation, another important consideration for grocery store access is whether residents are within a reasonable walking travel time to a grocery store. Like Alternatives I and II, the Preliminary Plan would be expected to result in more residents having walking access to a grocery store than the Trend given that more people would live in walkable areas (see Criterion 1.1.1).

[52] *For this criterion, only grocery stores having at least 50,000 square feet were analyzed.*

Map H.83
Average Peak Travel Time to Grocery Stores: Existing



Map H.84
Average Peak Travel Time to Grocery Stores: Trend



Map H.85
Average Peak Travel Time to Grocery Stores: Preliminary Recommended Plan

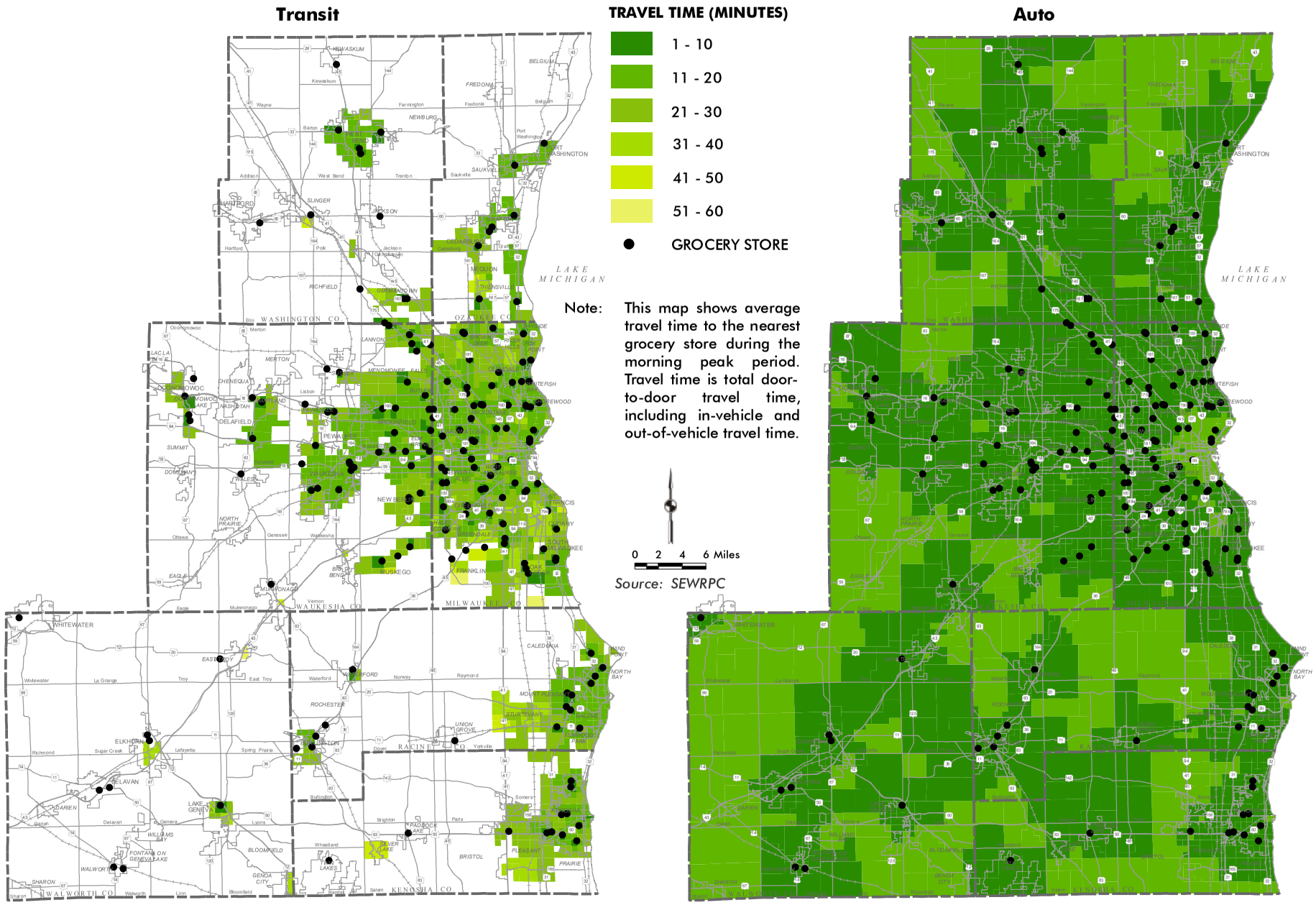


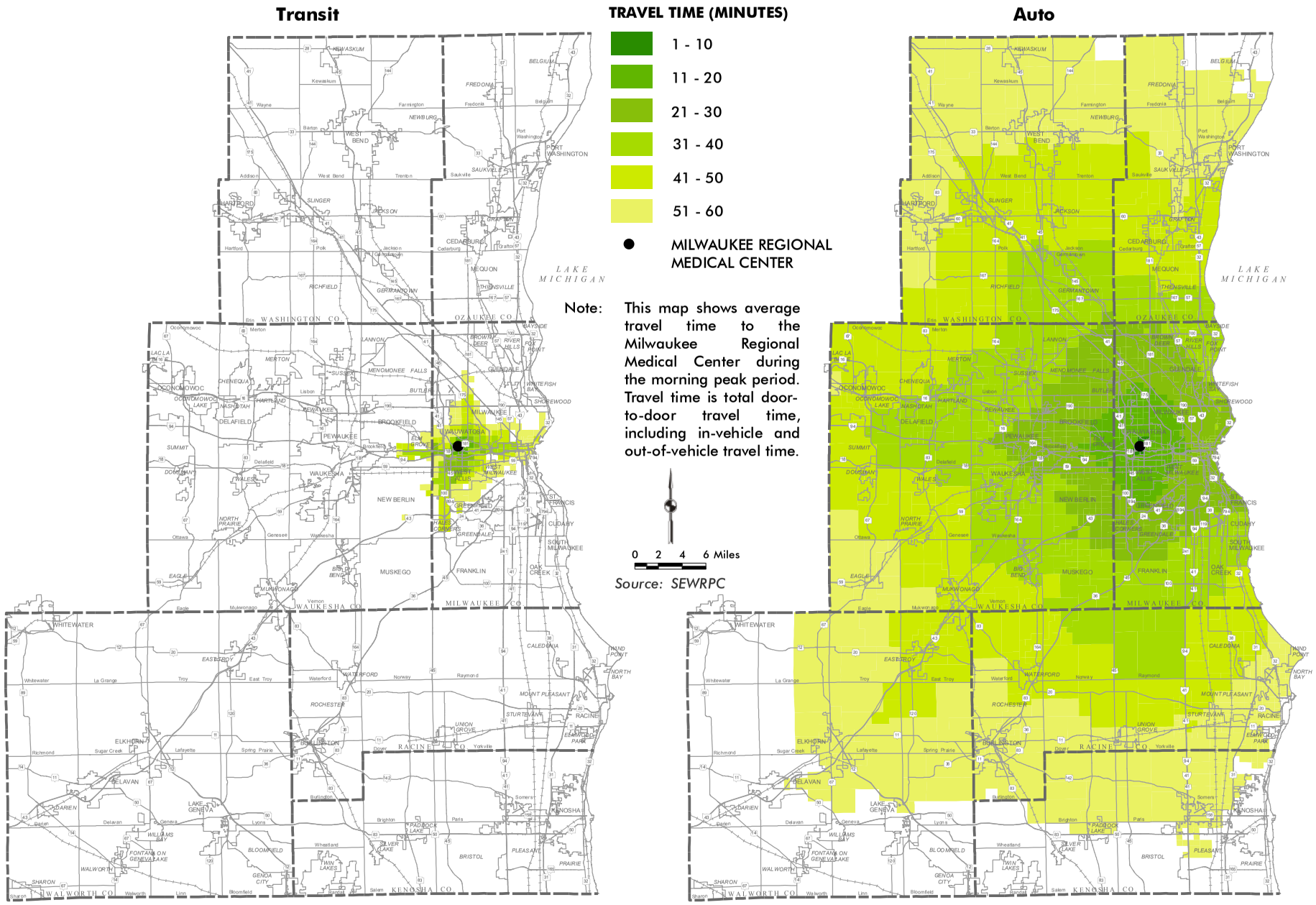
Table H.42
Population Within 60 Minutes of the Milwaukee Regional Medical Center

Plan	Total Population Within a 60-Minute Transit Trip of the Milwaukee Regional Medical Center		Total Population Within a 60-Minute Drive of the Milwaukee Regional Medical Center	
	Population with Access	Percent of Total Population	Population with Access	Percent of Total Population
Existing - 2011	343,400	17.0	1,792,600	88.7
Trend - 2050	266,100	11.3	2,091,700	88.9
Plan - 2050	917,500	38.4	2,125,900	89.0

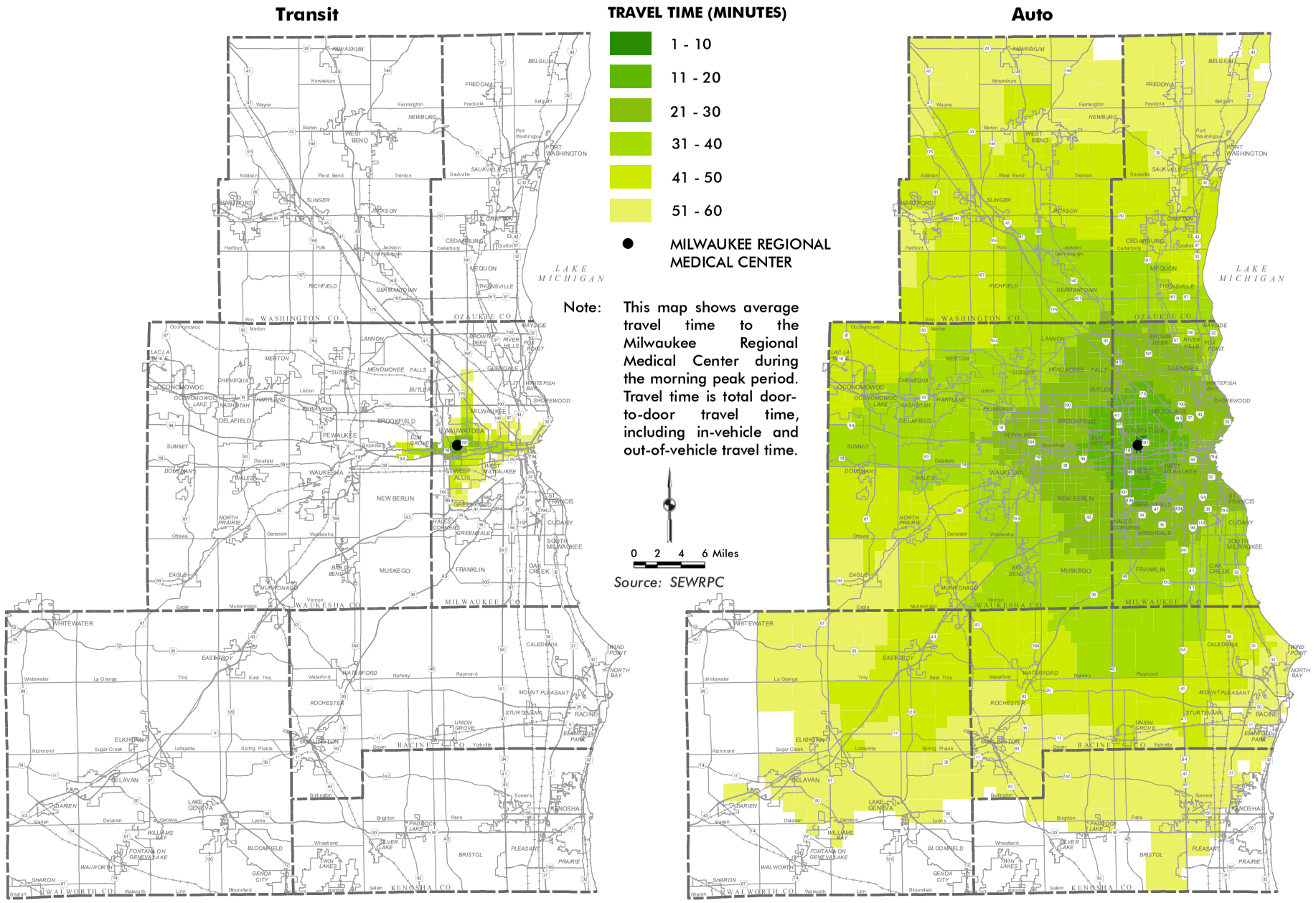
Source: SEWRPC

- **Transportation Access to Milwaukee Regional Medical Center:** Maps H.86 through H.88 show drive and transit trip times to the Milwaukee Regional Medical Center (MRMC) in Wauwatosa, and Table H.42 presents the population that would be within 60 minutes of MRMC. About 89 percent of the Region's population is currently within a 60-minute drive of MRMC. This proportion would remain at about 89 percent under the Trend and Preliminary Plan, with the Preliminary Plan slightly higher primarily due to its more compact development pattern. Despite a projected increase in the Region's total population, approximately 77,000 fewer residents (23 percent less) would be within a 60-minute transit trip of MRMC under the Trend compared to today. Compared to the Trend, the Preliminary Plan would provide transit service within 60 minutes of MRMC to about 650,000 additional residents (245 percent more).

Map H.86
Average Peak Travel Time to the Milwaukee Regional Medical Center: Existing



Map H.87
Average Peak Travel Time to the Milwaukee Regional Medical Center: Trend



Map H.88
Average Peak Travel Time to the Milwaukee Regional Medical Center: Preliminary Recommended Plan

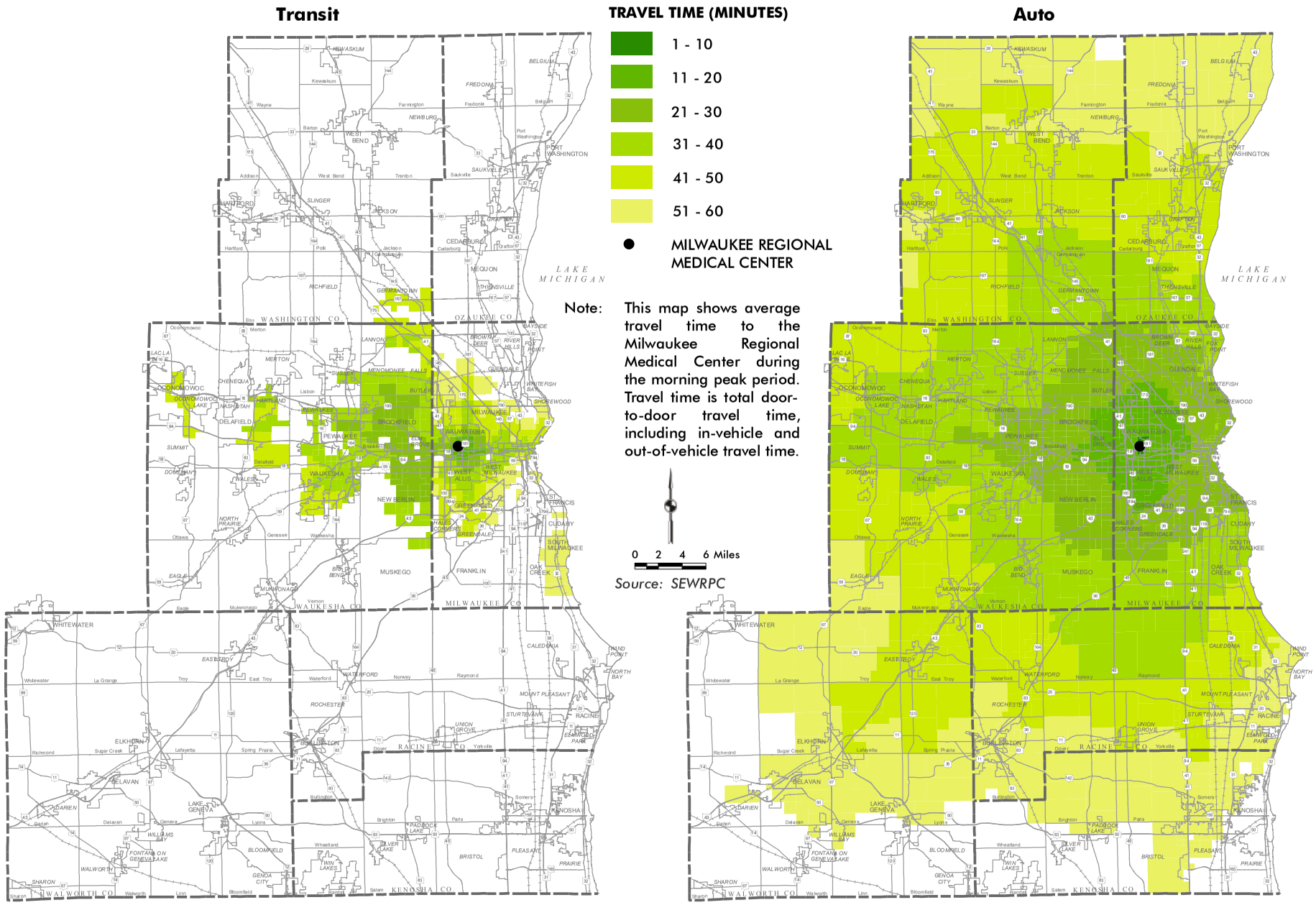


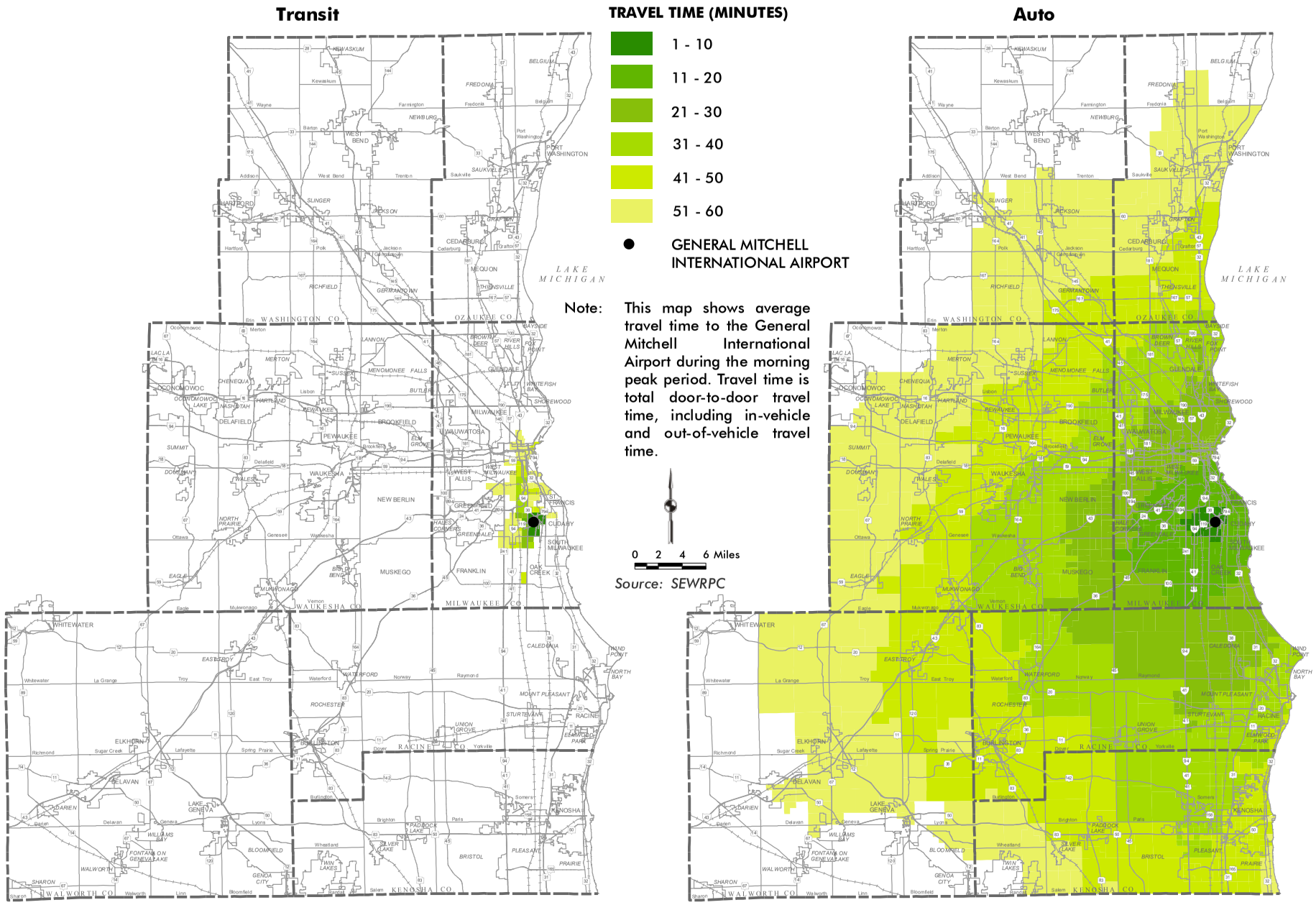
Table H.43
Population Within 60 Minutes of General Mitchell International Airport

Plan	Total Population Within a 60-Minute Transit Trip of General Mitchell International Airport		Total Population Within a 60-Minute Drive of General Mitchell International Airport	
	Population with Access	Percent of Total Population	Population with Access	Percent of Total Population
Existing - 2011	143,400	7.1	1,895,800	93.9
Trend - 2050	134,600	5.7	2,196,600	93.3
Plan - 2050	322,400	13.5	2,232,600	93.4

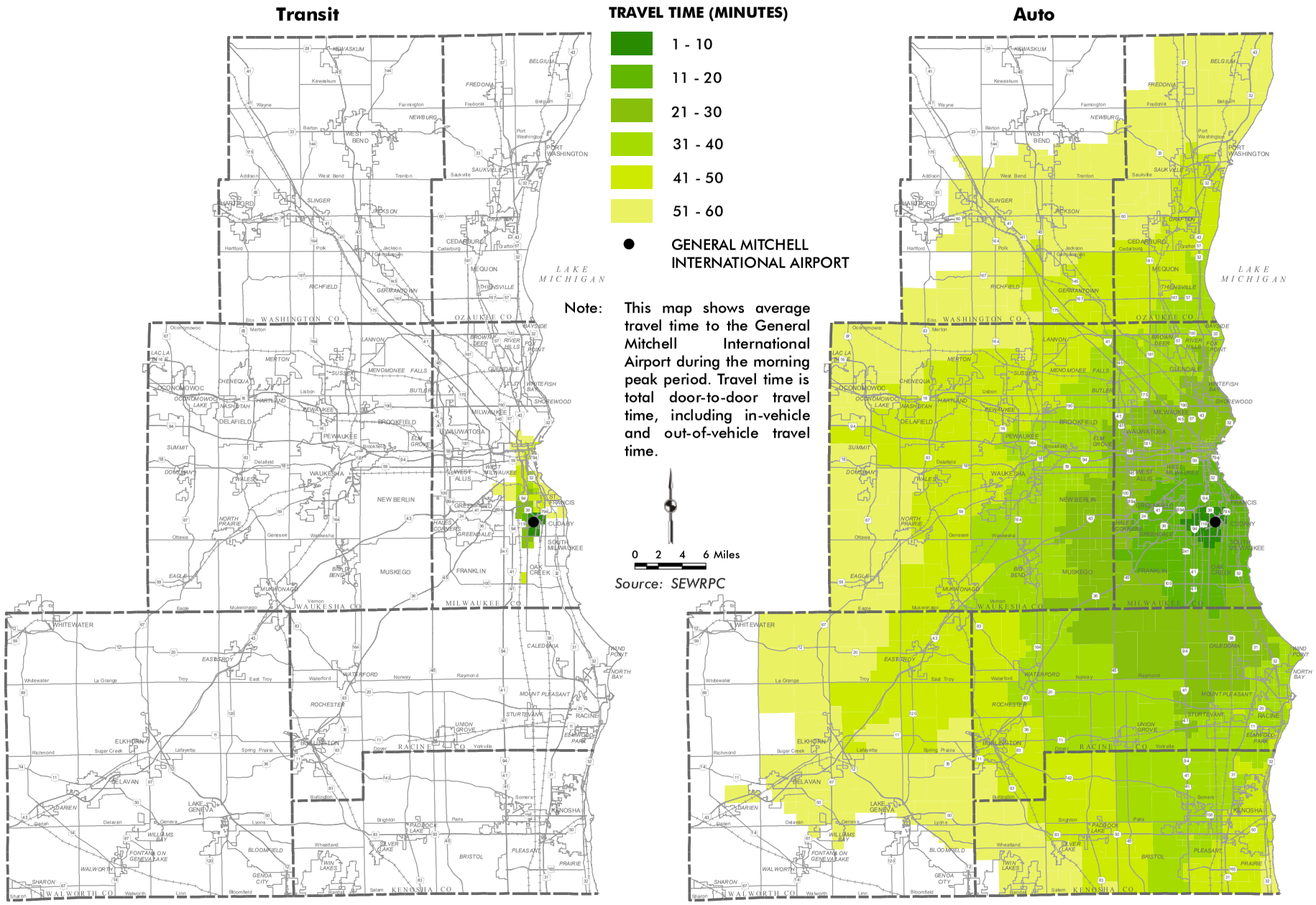
Source: SEWRPC

- **Transportation Access to General Mitchell International Airport:** Maps H.89 through H.91 show drive and transit trip times to General Mitchell International Airport (GMIA), and Table H.43 presents the population that would be within 60 minutes of GMIA. About 94 percent of the Region's population is currently within a 60-minute drive of GMIA. This proportion would remain at about 93 percent under the Trend and Preliminary Plan, with the Preliminary Plan slightly higher primarily due to its more compact development pattern. Despite a projected increase in the Region's total population, approximately 10,000 fewer residents (6 percent less) would be within a 60-minute transit trip of GMIA under the Trend compared to today. Compared to the Trend, the Preliminary Plan would provide transit service within 60 minutes of GMIA to about 190,000 additional residents (140 percent more).

Map H.89
Average Peak Travel Time to General Mitchell International Airport: Existing



Map H.90
Average Peak Travel Time to General Mitchell International Airport: Trend



Map H.91
Average Peak Travel Time to General Mitchell International Airport: Preliminary Recommended Plan

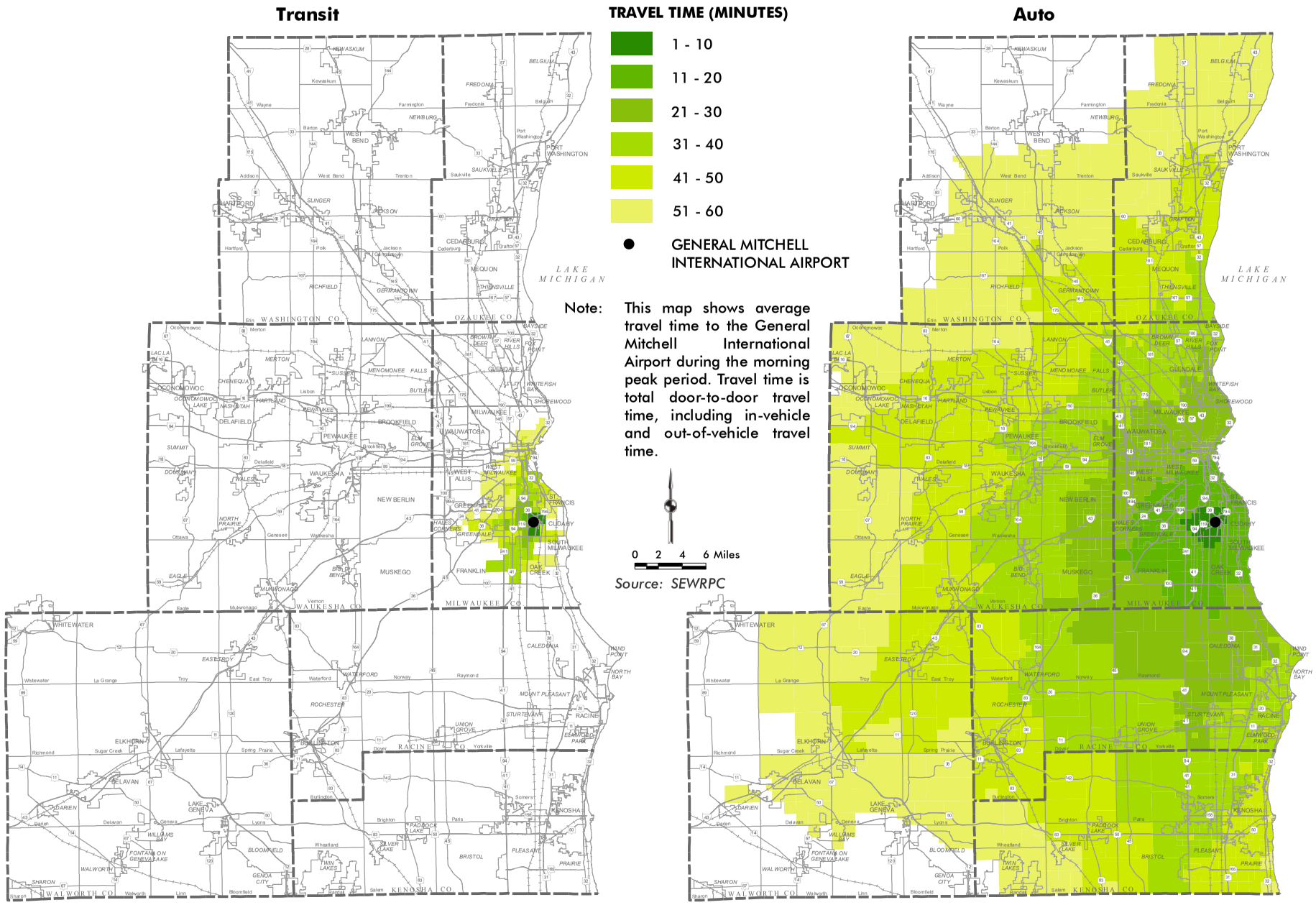


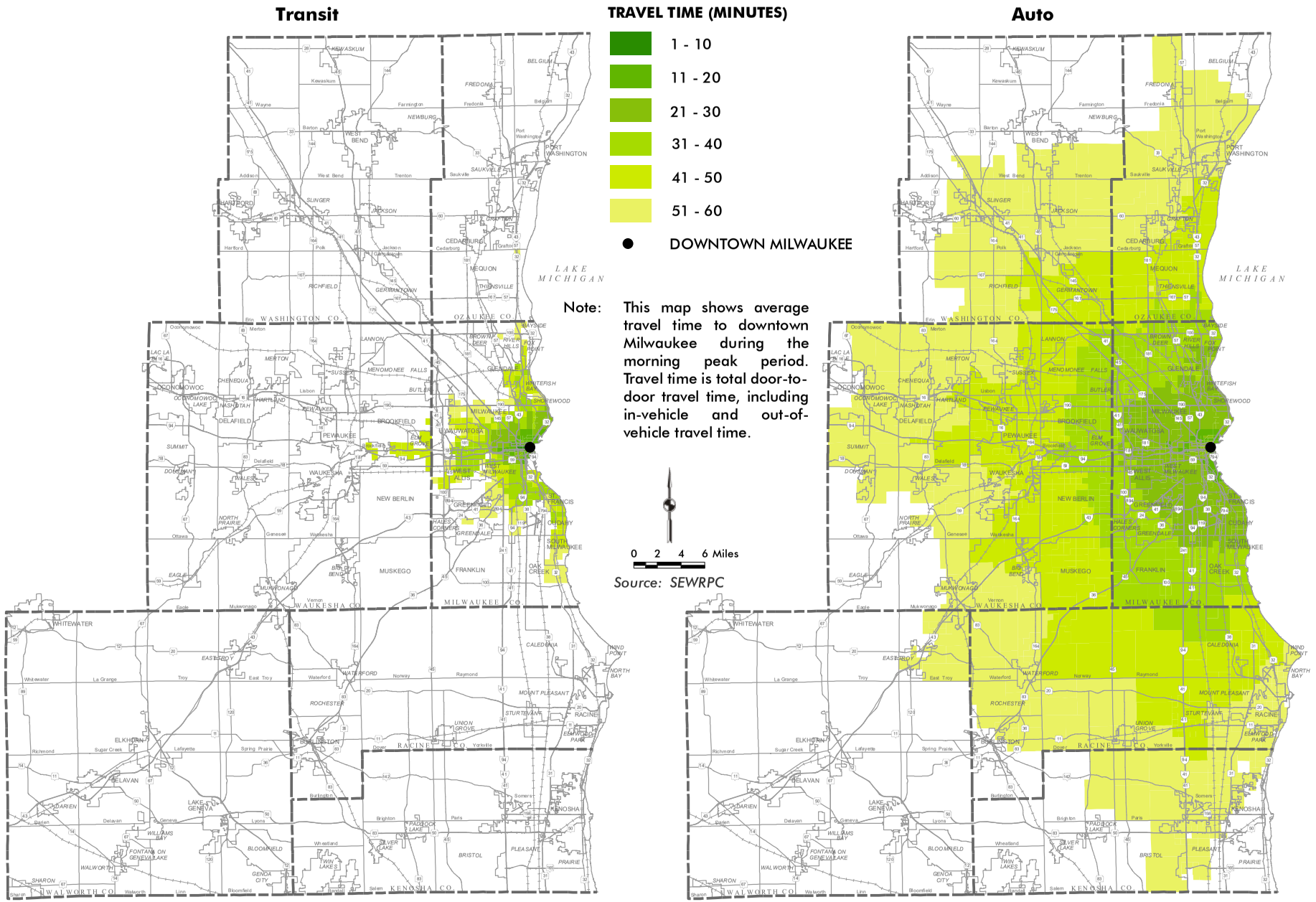
Table H.44
Population Within 30 Minutes of Downtown Milwaukee

Plan	Total Population Within a 30-Minute Transit Trip of Downtown Milwaukee		Total Population Within a 30-Minute Drive of Downtown Milwaukee	
	Population with Access	Percent of Total Population	Population with Access	Percent of Total Population
Existing - 2011	143,000	7.1	684,900	33.9
Trend - 2050	105,700	4.5	755,000	32.1
Plan - 2050	177,300	7.4	765,700	32.0

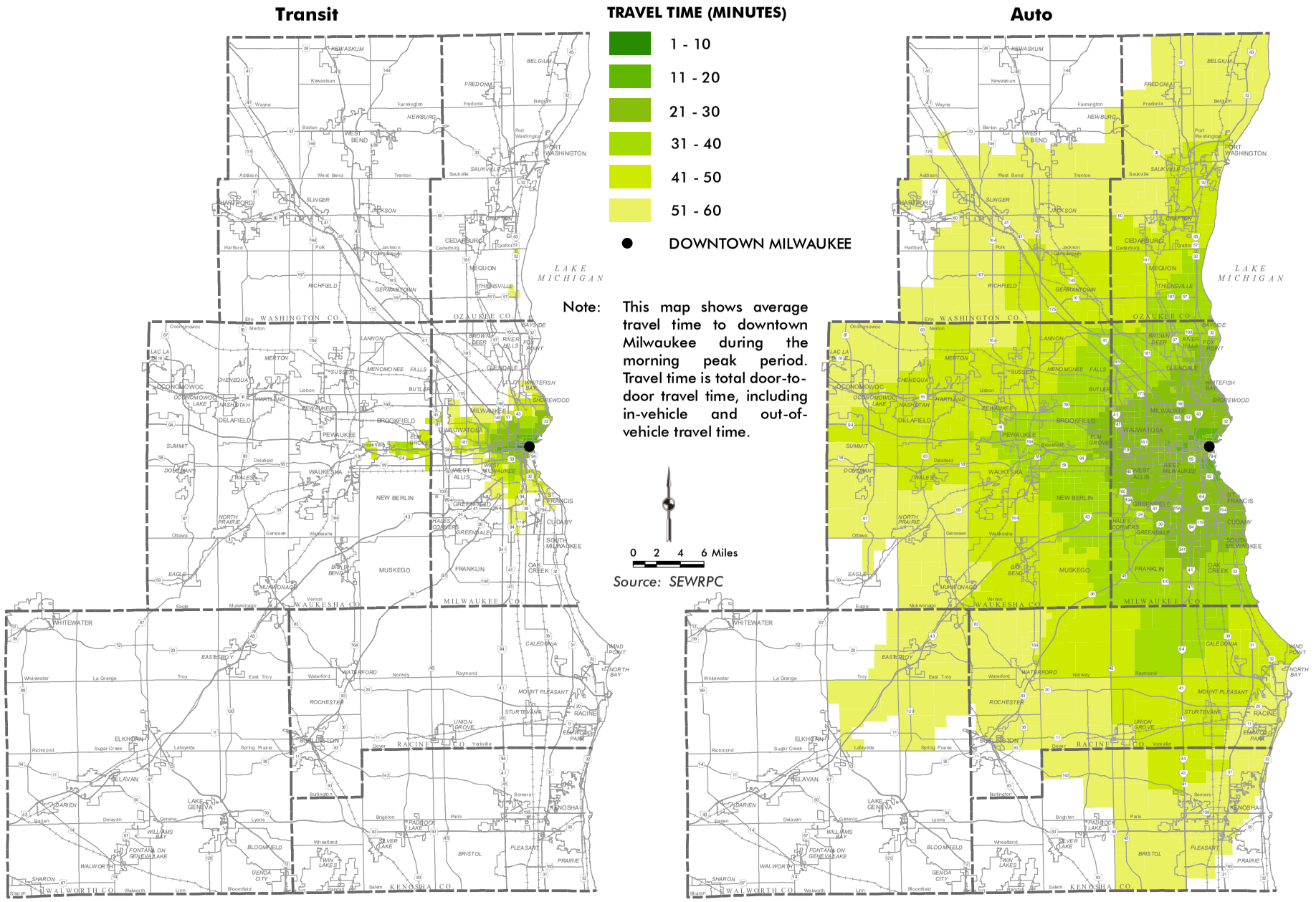
Source: SEWRPC

- **Transportation Access to Downtown Milwaukee:** Maps H.92 through H.94 show drive and transit trip times to downtown Milwaukee, and Table H.44 presents the population that would be within 30 minutes. About 34 percent of the Region's population is currently within a 30-minute drive of downtown Milwaukee. This proportion would remain about the same under both the Trend and Preliminary Plan. Despite a projected increase in the Region's total population, approximately 37,000 fewer residents (26 percent less) would be within a 30-minute transit trip of downtown Milwaukee under the Trend compared to today. Compared to the Trend, the Preliminary Plan would provide transit service within 30 minutes of downtown Milwaukee to about 72,000 additional residents (68 percent more).

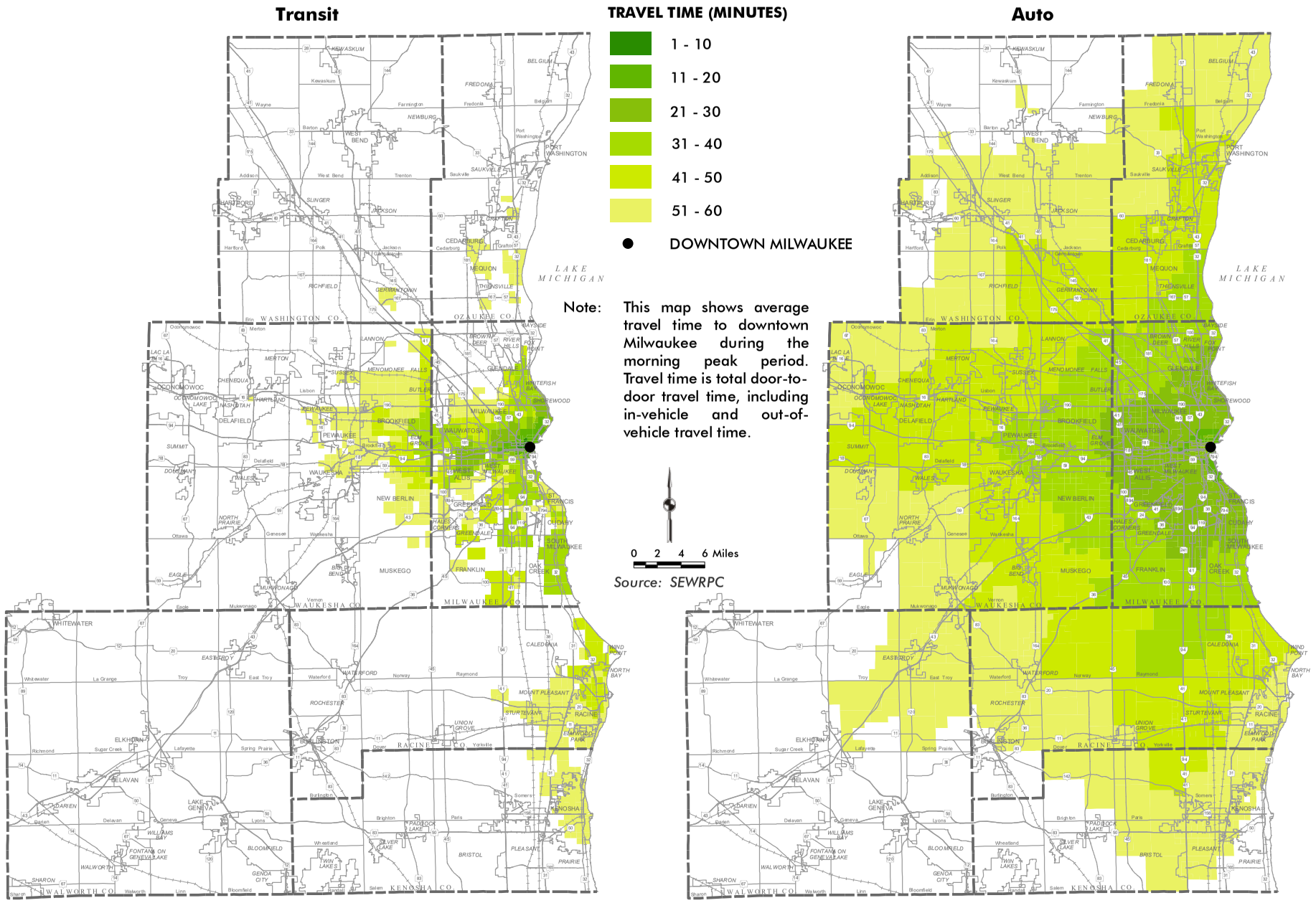
Map H.92
Average Peak Travel Time to Downtown Milwaukee: Existing



Map H.93
Average Peak Travel Time to Downtown Milwaukee: Trend



Map H. 94
Average Peak Travel Time to Downtown Milwaukee: Preliminary Recommend Plan



CRITERION 4.2.2: ACCESS TO PARK-RIDE FACILITIES

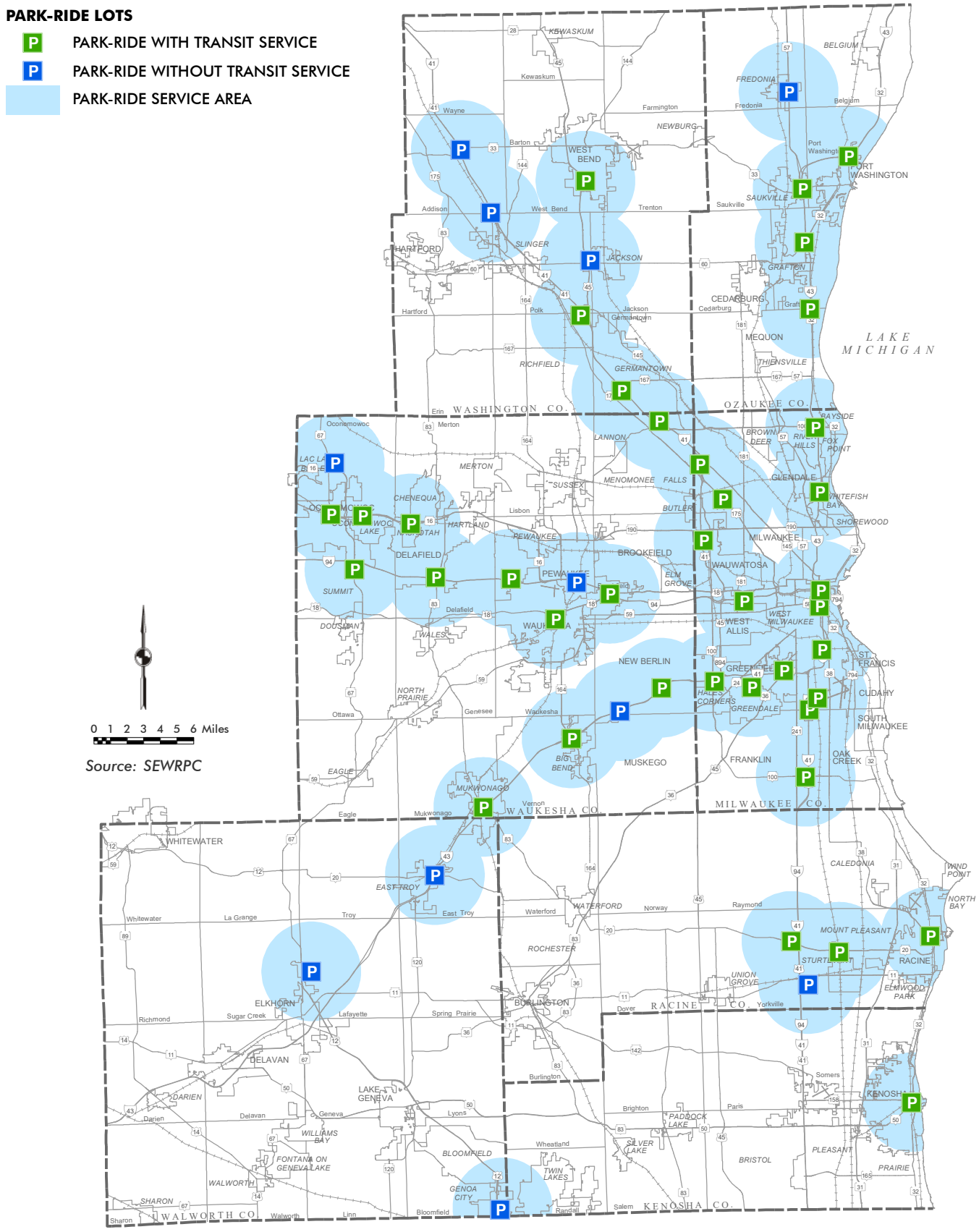
Significantly more residents would live within three miles of a park-ride facility under the Preliminary Plan (85.8 percent of all residents) compared to the Trend (68.7 percent), as shown in Table H.45 and on Maps H.95 through H.97. Despite having a few additional park-ride lots that would be added under the Trend as part of the reconstruction of the Region's freeway system, the percent of residents within three miles would decrease because more residents would be added to the Region outside of that three-mile buffer than within that buffer. Significantly more residents would live within three miles of a park-ride lot served by transit under the Preliminary Plan (81.5 percent) compared to the Trend (55.1 percent). The decrease in population living within three miles of a park-ride lot with transit service between existing conditions and the Trend is due to the significant reduction in commuter bus service included in the Trend.

Table H.45
Population with Access to Park-Ride Facilities

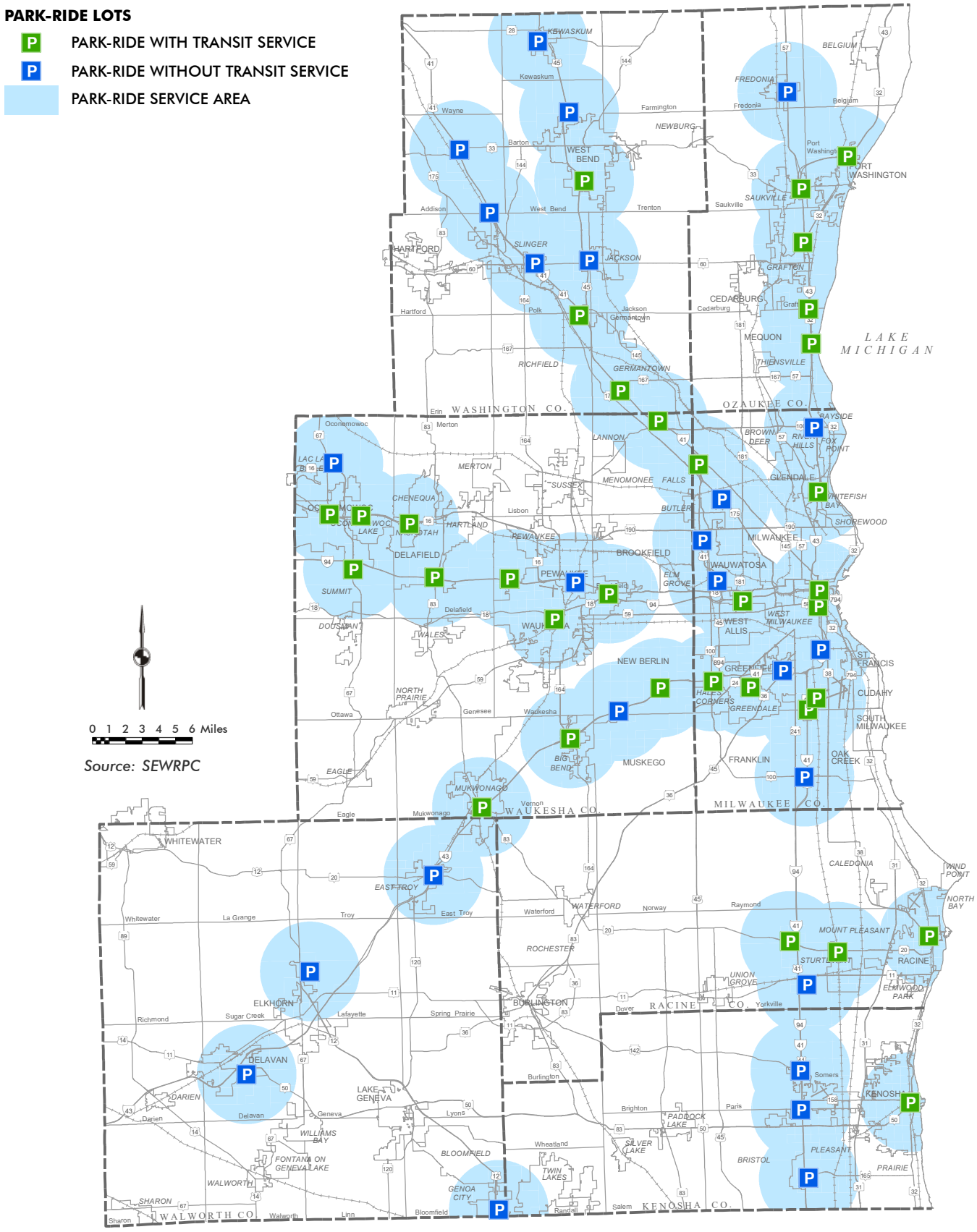
Plan	Within Three Miles of a Park-Ride Facility		Within Three Miles of a Park-Ride Facility with Transit Service	
	Population	Percent	Population	Percent
Existing - 2010	1,406,000	69.6	1,345,000	66.6
Trend - 2050	1,617,000	68.7	1,296,000	55.1
Plan - 2050	2,051,000	85.8	1,948,000	81.5

Source: SEWRPC

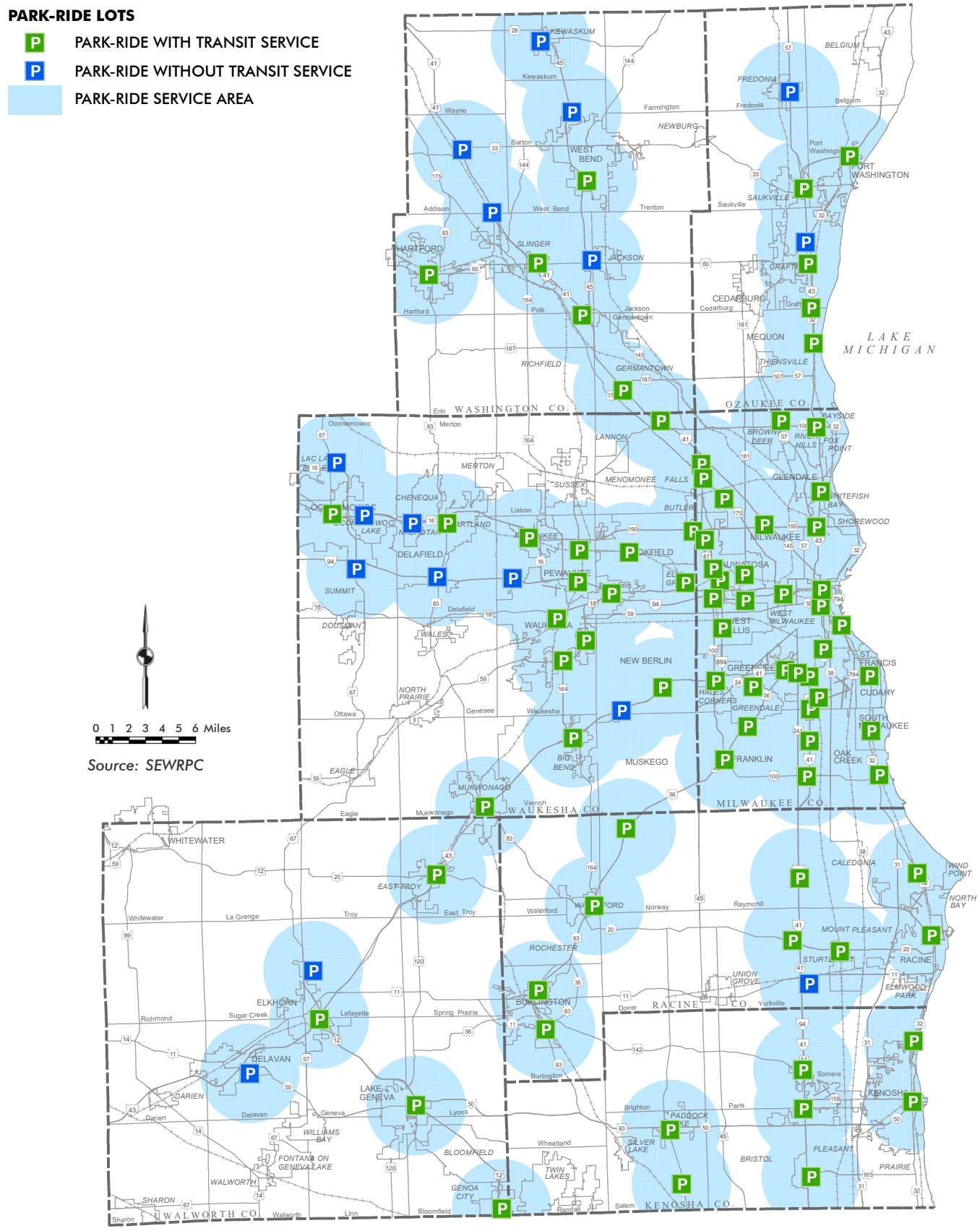
Map H.95
Access to Park-Ride Lots: Existing



Map H.96
Access to Park-Ride Lots: Trend



Map H.97
Access to Park-Ride Lots: Preliminary Recommended Plan



CRITERION 4.3.1: PAVEMENT CONDITION

As discussed in the alternatives evaluation, preserving the condition of the Region's arterial streets and highways is critical to provide for safe and efficient travel throughout the Region. Map H.98 shows the existing arterial streets and highways that have a pavement condition of good, fair, and poor under the base year (2013).[53] Costs were estimated for the Trend and Preliminary Plan to maintain similar pavement conditions through the year 2050 as were observed in 2013. The estimated number of miles of arterial streets and highways by pavement condition under each alternative is shown in Table H.46. As shown in Table H.47, the estimated annual costs associated with reconstructing and maintaining the envisioned arterial street and highway system under the Trend ($608.3 million annually) would be slightly higher than the Preliminary Plan ($605.0 million). The primary reason for the difference in costs is that there are slightly fewer widened arterial facilities in the Preliminary Plan.

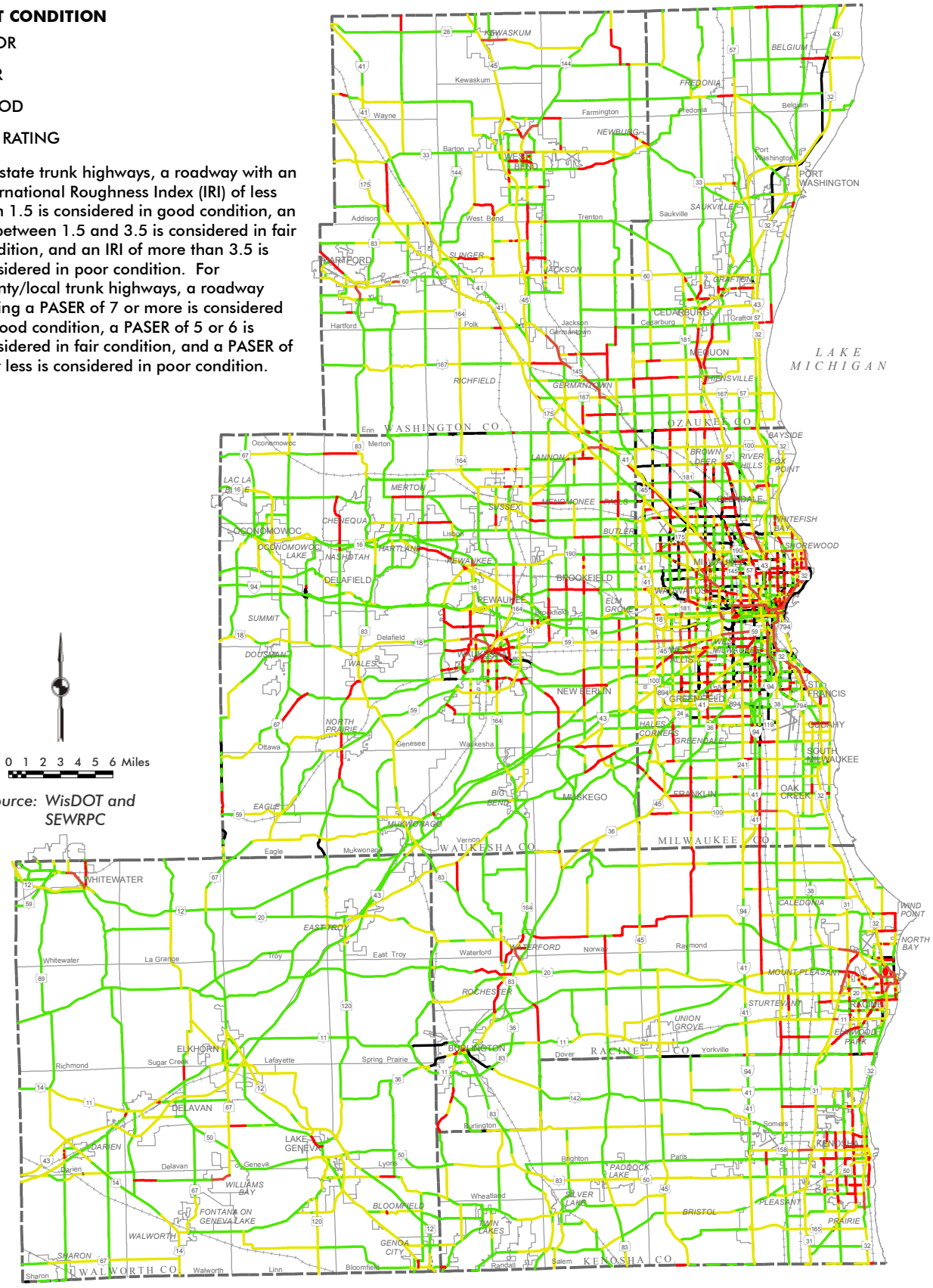
[53] For state trunk highways, a roadway with an International Roughness Index (IRI) of less than 1.5 is considered in good condition, an IRI between 1.5 and 3.5 is considered in fair condition, and an IRI more than 3.5 is considered in poor condition. For county/local trunk highways, a roadway having a Pavement Surface and Evaluation Rating (PASER) of 7 or more is considered in good condition, a PASER of 5 or 6 is considered in fair condition, and a PASER of 4 or less is considered in poor condition.

Map H.98
Pavement Condition on Arterial Streets and Highways in the Region: 2013

PAVEMENT CONDITION

- POOR
- FAIR
- GOOD
- NO RATING

Note: For state trunk highways, a roadway with an International Roughness Index (IRI) of less than 1.5 is considered in good condition, an IRI between 1.5 and 3.5 is considered in fair condition, and an IRI of more than 3.5 is considered in poor condition. For county/local trunk highways, a roadway having a PASER of 7 or more is considered in good condition, a PASER of 5 or 6 is considered in fair condition, and a PASER of 4 or less is considered in poor condition.



Source: WisDOT and SEWRPC

Table H.46
Pavement Condition of Arterial Streets and Highways

Condition	Existing (2013)		Trend (2050)		Plan (2050)	
	Miles	Percent	Miles	Percent	Miles	Percent
Good	1,958	54.7	2,255	61.5	2,255	61.5
Fair	1,239	34.7	1,021	27.9	1,021	27.9
Poor	380	10.6	389	10.6	389	10.6
Total	3,577	100.0	3,665	100.0	3,665	100.0

Source: WisDOT and SEWRPC

Table H.47
Cost per Year to Maintain Existing Pavement Condition Levels (in $ millions)

Highway	Trend (2050)	Plan (2050)
Surface Arterials[a]	$295.6	$292.3
Freeways		
Construction[a]	280.8	280.8
Resurface/Rehab	31.9	31.9
Total	$608.3	$605.0

[a] *Cost estimates include the highway improvements—new and widened facilities—included in the Trend and the Preliminary Plan.*

Source: SEWRPC

CRITERION 4.3.2: TRANSIT FLEET CONDITION

Assuming new, stable funding sources for transit are implemented as proposed under the Preliminary Plan, the transit fleet would be replaced as recommended by the Federal Transit Administration, and therefore none of the Region's 1,203 transit vehicles would be beyond their useful life by the year 2050. This would result in fewer breakdowns, lower operating and maintenance costs, and a more environmentally friendly fleet than under the Trend. The funding limitations projected under the Trend would result in approximately 20 percent of transit vehicles—about 75 of the Region's 387 fixed-route buses under the Trend—being beyond their useful life. As of 2015, approximately 15 percent of the transit fleet—about 90 of the Region's existing 591 fixed-route buses—is older than recommended.

CRITERION 4.4.1: CONGESTION ON ARTERIAL STREETS AND HIGHWAYS

Table H.48 presents a comparison of the average weekday congestion on the arterial street and highway system for the Region and for each county in the Region under existing conditions, the Trend, and the Preliminary Plan. Maps H.99 through H.101 illustrate the average weekday congestion on the arterial system.

- **Total Congestion:** About 8.2 percent (274.1 miles) of the Region's existing arterial system operates over its design capacity (moderate, severe, or extreme congestion[54]) for at least part of an average weekday. The proportion of the Region's arterial system that is congested would decrease under both the Trend—6.3 percent (230.4 miles)—and the Preliminary Plan—6.7 percent (246.1 miles)—with the Trend having about 6.4 percent fewer congested miles than the Preliminary Plan.

  About 27.4 percent (73 miles) of the Region's existing freeway system is congested. The proportion of the Region's freeway system that is congested would decrease under both the Trend—25.0 percent (71 miles)—and the Preliminary Plan—24.4 percent (70 miles)—with the Preliminary Plan having about 1.4 percent fewer congested freeway miles than the Trend. Congestion on the freeway system would vary during an average weekday, with the worst congestion occurring during the morning (from about 7:00 to 9:00 a.m.) and afternoon (from about 3:00 to 5:00 p.m.) rush hour periods. Table H.49 shows the number of hours of extreme, severe, and moderate congestion occurring on the Region's freeways during an average weekday.

- **Severe and Extreme Congestion:** Vehicle traffic is particularly impacted by severe and extreme congestion on the arterial system. Under severe congestion, there is virtually no ability for vehicles to maneuver and change lanes on freeways and surface arterials. Under extreme congestion, vehicles experience stop-and-go traffic on freeways, as well as slow speeds and long delays at intersections along surface arterials. Comparing only the most congested arterial streets and highways in the Region, about 3.8 percent (127.2 miles) of the Region's existing arterial system is severely or extremely congested. The proportion of the Region's arterial system that is severely or extremely congested would decrease under both the Trend—2.9 percent (106.3 miles)—and the Preliminary Plan—3.2 percent (117.7 miles)—with the Trend having about 9.7 percent fewer miles of severely or extremely congested arterials than the Preliminary Plan.

  About 19.7 percent (52 miles) of the Region's existing freeway system is severely or extremely congested. The proportion of the Region's freeway system that is severely or extremely congested would decrease under both the Trend—14.8 percent (42 miles)—and the Preliminary Plan—14.9 percent (43 miles)—with the Trend having about 2.3 percent fewer freeway miles operating under severe or extreme congestion than the Preliminary Plan.

[54] Under moderate congestion, average freeway speeds are 1 to 2 mph below free-flow speeds, and average surface arterial speeds are 40 to 50 percent of free-flow speeds. Under severe congestion, average freeway speeds are up to 10 mph below free-flow speeds, and average surface arterial speeds are 33 to 40 percent of free-flow speeds. Under extreme congestion, average freeway speeds are 20 to 30 mph or less, and average surface arterial speeds are 25 to 33 percent of free-flow speeds.

Table H.48
Average Weekday Congestion on Arterial Streets and Highways

Existing (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

Trend (2050)

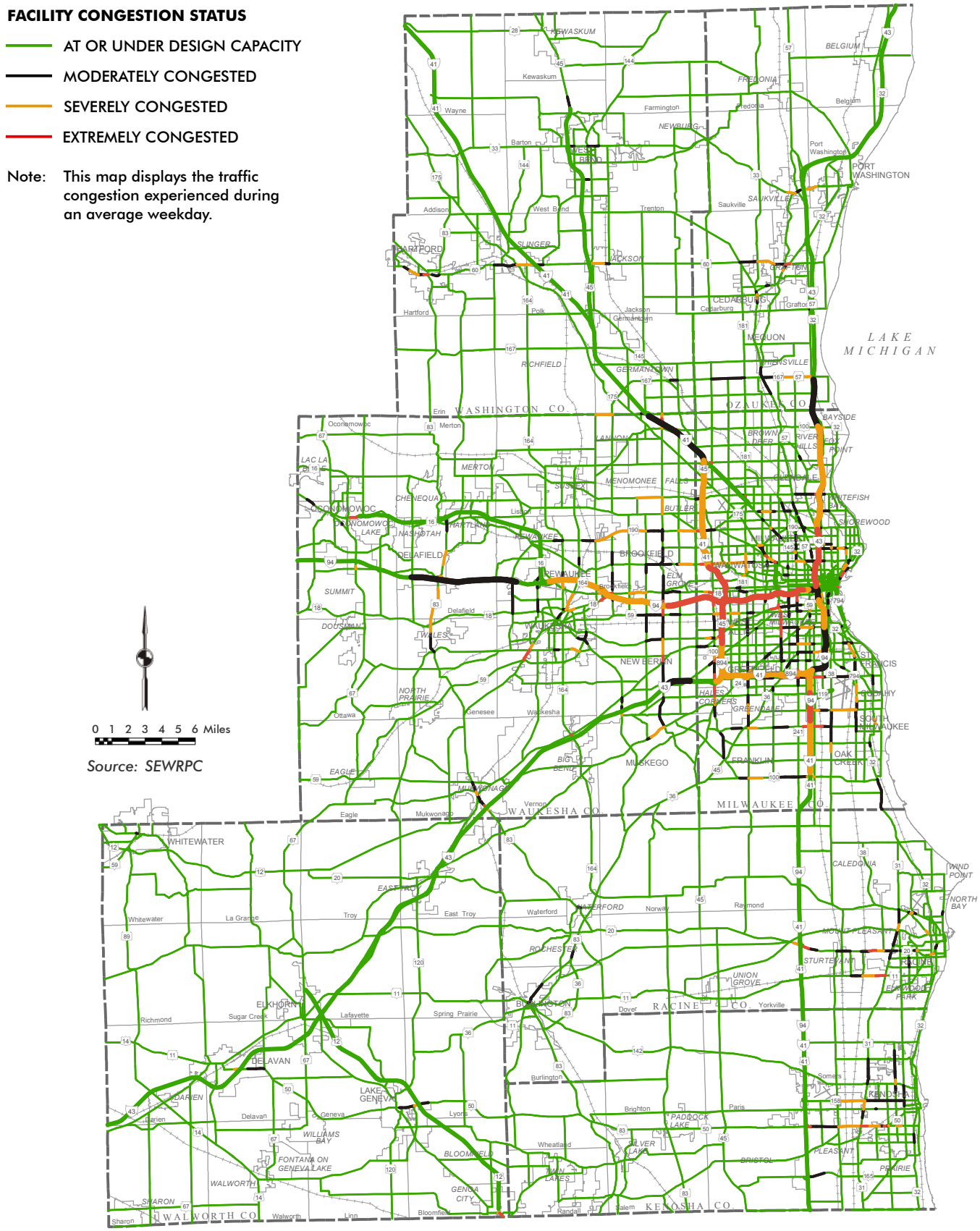
County	Under or At Design Capacity		Over Design Capacity						Total Mileage
			Moderate Congestion		Severe Congestion		Extreme Congestion		
	Mileage	Percent of Total	Mileage	Percent of Total	Mileage	Percent of Total	Mileage	Percent of Total	
Kenosha	339.2	93.0	18.1	5.0	7.1	1.9	0.5	0.1	364.9
Milwaukee	665.1	82.6	59.7	7.4	53.7	6.7	26.8	3.3	805.3
Ozaukee	306.5	98.8	1.7	0.5	1.7	0.5	0.3	0.1	310.2
Racine	433.7	96.6	12.6	2.8	1.9	0.4	0.6	0.1	448.8
Walworth	485.4	99.2	2.7	0.6	1.2	0.2	0.2	0.0	489.5
Washington	448.1	98.1	6.7	1.5	1.7	0.4	0.2	0.0	456.7
Waukesha	756.9	95.8	22.6	2.9	8.2	1.0	2.2	0.3	789.9
Region	3,434.9	93.7	124.1	3.4	75.5	2.1	30.8	0.8	3,665.3

Preliminary Plan (2050)

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	339.8	93.1	17.4	4.8	7.1	1.9	0.6	0.2	364.9
Milwaukee	656.2	81.5	60.7	7.5	56.7	7.0	31.7	3.9	805.3
Ozaukee	302.4	97.5	4.7	1.5	2.1	0.7	1.0	0.3	310.2
Racine	432.1	96.3	12.6	2.8	3.5	0.8	0.6	0.1	448.8
Walworth	485.9	99.3	2.3	0.5	1.3	0.3	0.0	0.0	489.5
Washington	445.8	97.6	8.0	1.8	2.6	0.6	0.3	0.1	456.7
Waukesha	757.0	95.8	22.7	2.9	8.7	1.1	1.5	0.2	789.9
Region	3,419.2	93.3	128.4	3.5	82.0	2.2	35.7	1.0	3,665.3

Source: SEWRPC

Map H.99
Congestion on the Arterial Street and Highway System: 2011

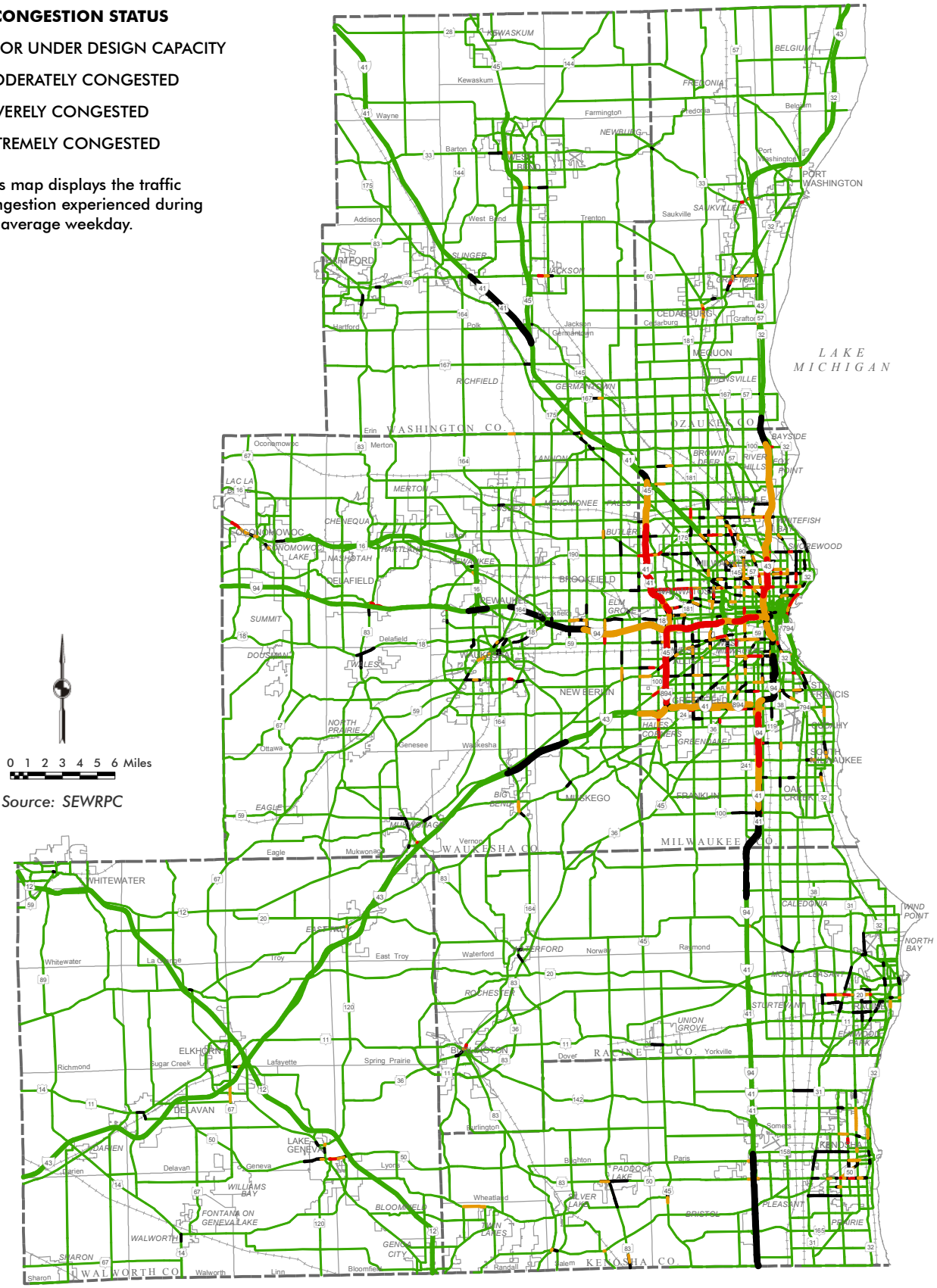


Map H.100
Congestion on the Arterial Street and Highway System: Trend

FACILITY CONGESTION STATUS

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

Note: This map displays the traffic congestion experienced during an average weekday.



Map H.101
Congestion on the Arterial Street and Highway System: Preliminary Recommended Plan

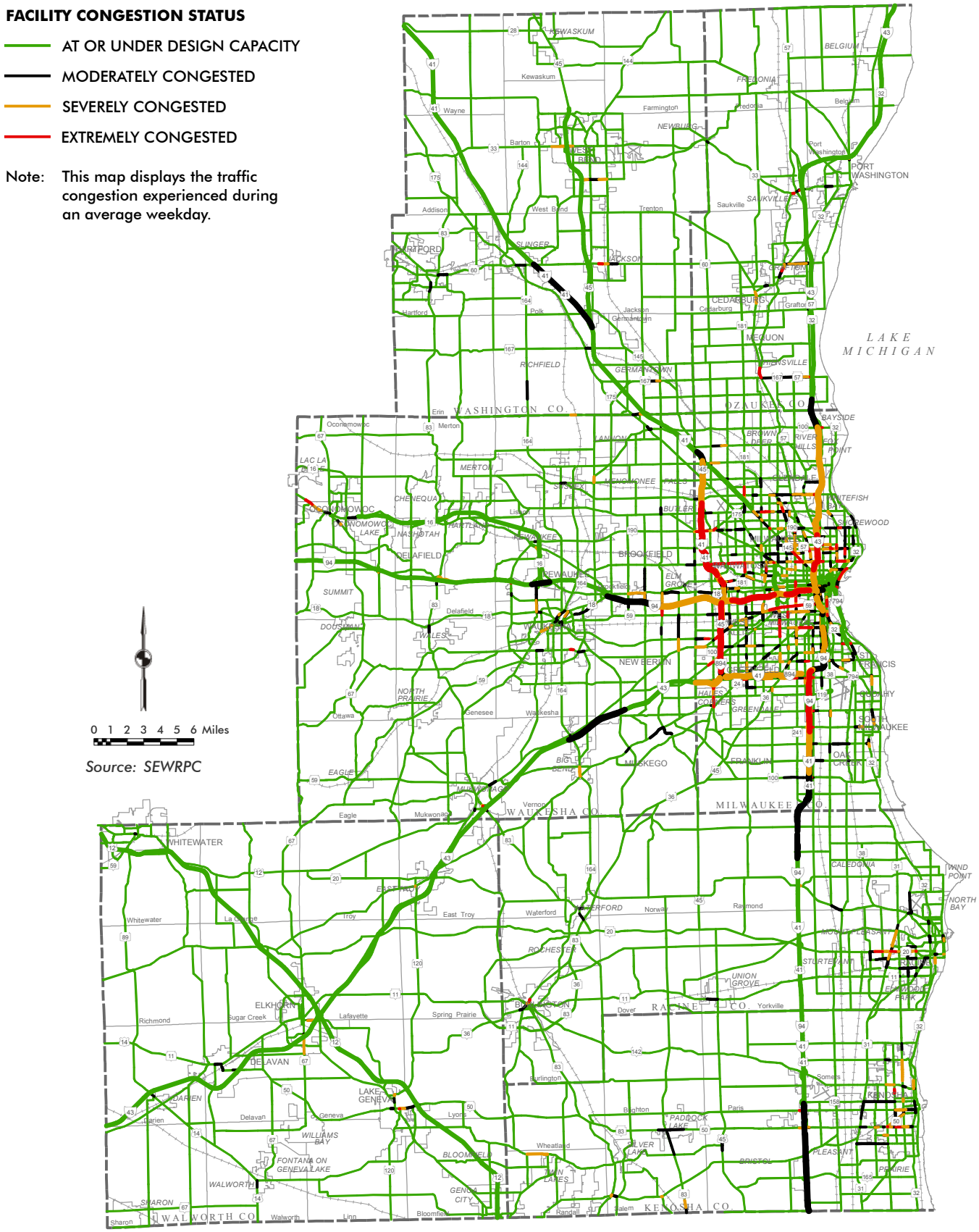


Table H.49
Average Hours of Congestion on an Average Weekday

Plan	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
Existing - 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	--	--	--	--
Trend - 2050	Extreme	14	5.0	1.2	2.7	3.7	7.6
	Severe	28	9.8	--	1.4	2.4	3.8
	Moderate	29	10.2	--	--	1.6	1.6
	Total	71	25.0	--	--	--	--
Plan - 2050	Extreme	15	5.1	1.2	2.6	3.6	7.4
	Severe	28	9.8	--	1.4	2.4	3.8
	Moderate	27	9.5	--	--	1.8	1.8
	Total	70	24.4	--	--	--	--

Source: SEWRPC

CRITERION 4.4.2: TRAVEL TIME DELAY

Table H.50 presents a comparison of estimated minutes of travel time delay (both on an average weekday and on an average annual basis[55]), for automobile, transit, and commercial travel under existing conditions, the Trend, and the Preliminary Plan. Both the Trend and Preliminary Plan would be expected to result in higher average annual minutes of travel time delay for total personal and commercial travel. The Trend would be expected to result in lower average annual minutes of travel time delay for total personal and commercial travel in the Region (1,613 million minutes), about 6.8 percent lower than the Preliminary Plan (1,731 million minutes). The lower average annual delay is a result of the Trend proposing slightly more arterial street and highway expansion than the Preliminary Plan, even though the Preliminary Plan proposes more compact land use development and transit service expansion than the Trend. It is also partially a result of the additional household and employment growth envisioned under the Preliminary Plan compared to the Trend. Much of this additional growth is in the urban areas of the Region, which inherently experience higher delay on average, particularly in the Milwaukee area.

The Trend would also be expected to result in lower average annual delay for total personal travel on a per capita basis (575 minutes)—about 6.0 percent lower than the Preliminary Plan (612 minutes)—although both the Trend and Preliminary Plan would result in lower per capita delay than existing conditions. Automobile delay per capita would be slightly lower under the Preliminary Plan than the Trend, however, with the difference in delay per capita for total personal travel entirely due to the additional delay for transit travel under the Preliminary Plan. The Preliminary Plan would be expected to result in significantly higher average annual delay for transit travel than the Trend due to the substantial increase in transit service and transit ridership under the Preliminary Plan. The increased transit travel under the Preliminary Plan would utilize both transit service operating in mixed traffic and fixed-guideway transit service operating in medians, transit-only lanes, or rail corridors. The transit travel in mixed traffic would be subject to traffic congestion and associated travel time delay, while fixed-guideway transit would mostly be unaffected by traffic congestion.

[55] Average annual delay is calculated by multiplying average weekday delay by the number of weekdays in a year.

Table H.50
Travel Time Delay

Plan	Average Weekday Minutes of Delay[a] (Millions)			
	Personal Travel		Commercial Travel	Total
	Automobile	Transit		
Existing - 2011	4.94	0.29	0.86	6.09
Trend - 2050	5.07	0.26	1.00	6.33
Plan - 2050	5.14	0.63	1.03	6.81

Plan	Average Annual Minutes of Delay[b] (Millions)			
	Personal Travel		Commercial Travel	Total
	Automobile	Transit		
Existing - 2011	1,259	66	224	1,549
Trend - 2050	1,295	58	260	1,613
Plan - 2050	1,310	151	270	1,731

Plan	Average Annual Minutes of Delay per Capita[c]			
	Personal Travel		Commercial Travel	Total
	Automobile	Transit		
Existing - 2011	623	33	--	656
Trend - 2050	550	25	--	575
Plan - 2050	548	63	--	612

[a] *Travel time delay is defined as the difference in travel time between congested and uncongested conditions.*

[b] *Average annual delay is calculated by multiplying average weekday delay by the number of weekdays in a year.*

[c] *Existing population totals 2,020,000, Trend 2050 population totals 2,354,000, and Plan 2050 population totals 2,389,200.*

Source: SEWRPC

CRITERION 4.4.3: AVERAGE TRIP TIMES

This criterion compares average trip times for communities (counties and subareas of counties) by trip mode (auto and transit) and by trip purpose (work and other). This criterion uses overall travel time, which is the total door-to-door time for traveling between a trip origin and destination, including both in-vehicle and out-of-vehicle travel time. The trip times for this criterion represent average travel time during an average weekday.

Table H.51 presents average trip times by community, trip mode, and trip purpose under existing conditions. Tables H.52 and H.53 present the change in average trip times compared to existing conditions under the Trend and Preliminary Plan, respectively. Trip times that would increase by more than 20 percent compared to existing conditions are highlighted in red, while trip times that would decrease by more than 20 percent compared to existing conditions are highlighted in green.

Average auto trip times vary only slightly between the Trend and Preliminary Plan. Average transit trip times, however, would be significantly improved for most communities in the Region under the Preliminary Plan compared to the Trend. The Trend would result in the majority of communities experiencing increased transit trip times, with the City of Racine and the remainder of Racine County experiencing the most significant increases. Ozaukee, Walworth, and Washington Counties would be the exceptions, experiencing reductions in trip times under the Trend primarily due to expected traffic congestion levels being reduced on the commuter bus routes serving those counties. The only transit trip time increases under the Preliminary Plan would be slight increases in Racine County for residents living outside the City of Racine. All other areas of the Region would essentially maintain average transit trip times or experience reduced—sometimes significantly reduced—trip times under the Preliminary Plan. The most significant reductions in transit trip times would occur in Washington County (primarily due to the availability of bi-directional commuter bus service) and Walworth County (primarily due to the implementation of commuter bus service serving the County). Communities in Kenosha, Waukesha, and Ozaukee Counties would also experience significant trip time reductions.

In addition, there are noticeable reductions in average trip times in the City of Milwaukee and the rest of Milwaukee County under the Preliminary Plan. Those reductions, while not greater than 20 percent compared to existing conditions, would affect a far greater number of transit users than would be affected in other areas of the Region.

It should also be noted that average trip lengths on transit trips tend to be higher under the Preliminary Plan due to the increased ability to travel longer distances in shorter periods of time. The higher average trip lengths tend to result in higher average trip times, which masks the fact that transit travel is faster on many trips.

Table H.51
Average Travel Times in Minutes by Residents of the Region by Community, Mode, and Purpose: 2011

Community	Auto			Transit			Total		
	Work	Other	Total	Work	Other	Total	Work	Other	Total
City of Kenosha	16	9	12	50	40	44	17	10	12
Remainder of Kenosha County	22	12	16	59	47	52	22	12	16
Kenosha County	18	11	13	51	41	45	19	11	14
City of Milwaukee	19	15	16	46	41	43	20	16	18
Remainder of Milwaukee County	18	12	14	56	45	50	19	13	15
Milwaukee County	18	14	15	48	42	45	20	14	16
City of Racine	17	10	13	50	34	42	19	10	13
Remainder of Racine County	23	13	16	53	37	45	23	13	16
Racine County	21	12	15	51	35	43	21	12	15
City of Waukesha	18	12	14	49	36	42	19	12	15
Remainder of Waukesha County	20	13	16	57	43	51	20	13	16
Waukesha County	20	13	15	54	40	47	20	13	16
Ozaukee County	21	12	15	60	47	56	21	12	15
Walworth County	22	11	15	88	91	88	22	11	15
Washington County	21	12	15	79	77	78	22	12	15
Region	19	13	15	49	41	45	20	13	16

Source: SEWRPC

Table H.52
Change in Average Travel Times in Minutes: Trend Compared to 2011

Community	Auto			Transit			Total		
	Work	Other	Total	Work	Other	Total	Work	Other	Total
City of Kenosha	--	1	--	2	--	1	--	--	--
Remainder of Kenosha County	-1	--	-1	5	2	3	-1	--	-1
Kenosha County	1	--	--	3	--	1	--	--	--
City of Milwaukee	--	--	--	3	2	3	1	--	--
Remainder of Milwaukee County	--	--	--	6	4	4	--	--	--
Milwaukee County	--	--	--	4	3	3	--	--	--
City of Racine	1	--	--	15	15	14	--	1	1
Remainder of Racine County	-1	--	--	13	13	12	--	--	--
Racine County	--	--	--	14	14	13	1	--	1
City of Waukesha	--	--	--	-5	-6	-6	--	--	-1
Remainder of Waukesha County	--	--	-1	-2	--	-2	--	--	-1
Waukesha County	-1	--	--	-4	-3	-4	--	--	-1
Ozaukee County	-1	-1	-1	-4	-6	-4	-1	-1	--
Walworth County	--	--	--	-10	-12	-10	--	--	--
Washington County	--	--	--	-9	-18	-10	--	--	--
Region	--	--	--	4	3	3	--	--	-1

Source: SEWRPC

Table H.53
Change in Average Travel Times in Minutes: Preliminary Recommended Plan Compared to 2011

Community	Auto			Transit			Total		
	Work	Other	Total	Work	Other	Total	Work	Other	Total
City of Kenosha	--	1	--	-8	-12	-10	--	--	--
Remainder of Kenosha County	-1	--	-1	2	-2	1	-1	--	-1
Kenosha County	--	--	--	-4	-9	-6	--	--	--
City of Milwaukee	--	--	--	--	--	--	1	1	--
Remainder of Milwaukee County	--	--	--	-4	-2	-3	--	--	--
Milwaukee County	--	--	--	--	--	-1	--	1	1
City of Racine	1	--	--	-5	-4	-5	--	1	1
Remainder of Racine County	-1	--	--	4	2	3	--	--	--
Racine County	--	--	--	-1	-1	-1	1	--	--
City of Waukesha	--	--	--	-7	-2	-4	--	1	--
Remainder of Waukesha County	-1	--	-1	-9	-3	-7	--	--	-1
Waukesha County	-1	-1	--	-7	-1	-5	--	--	-1
Ozaukee County	-1	-1	-1	-2	-10	-9	--	-1	--
Walworth County	--	--	--	-21	-53	-36	--	--	--
Washington County	--	-1	--	-20	-41	-31	-1	--	--
Region	--	-1	--	-1	-1	-1	--	--	--

Source: SEWRPC

CRITERION 4.5.1: ACCESS TO TRANSIT

Access to transit service provides choices to residents of the Region, allowing them to travel farther distances than they could by walking or biking, and providing an alternative to driving. In addition to giving residents an additional choice for travel, there are numerous other benefits associated with transit, which were discussed as part of the alternatives evaluation.

The Preliminary Plan proposes extensive transit service and a compact land use development pattern, which would result in improved access to transit for the Region's residents, and improved access to jobs via transit (as shown in Table H.54). A higher proportion of the Region's population would have access to fixed-route transit and a much higher proportion of the Region's jobs would be accessible by transit under the Preliminary Plan than in 2015. In contrast, under the Trend, transit service would decline due to the limitations of reasonably expected future funds to support transit. Therefore, the Trend would result in slight decreases in people with transit access and jobs accessible via transit despite the expected growth in the Region's population and jobs.

Table H.54
Access to Transit

Plan	Population Served	Total Population in the Region	Percent of Population Served	Jobs Accessible	Total Jobs in the Region	Percent of Jobs Accessible
Existing - 2010/2015	1,104,000	2,020,000	54.7	734,000	1,176,600	62.4
Trend - 2050	1,042,000	2,354,000	44.3	727,000	1,386,900	52.4
Plan - 2050	1,396,000	2,389,200	58.4	1,010,000	1,405,700	71.9

Source: SEWRPC

CRITERION 4.5.2: ACCESS TO FIXED-GUIDEWAY TRANSIT

Access to fixed-guideway transit, such as commuter rail, light rail, or bus rapid transit, produces significant benefits for riders in reduced travel time and improved reliability when compared to transit services operating in mixed traffic lanes. The alternatives evaluation discussed the benefits of fixed-guideway transit in more detail.

Table H.55 shows the number and percentage of people and jobs in the Region that would be within a short walk (one-half mile) of fixed-guideway transit under the Preliminary Plan. Currently, there are no transit services in the Region that combine fixed-guideway technology with an exclusive lane or right-of-way, station spacing of at least one-half mile, and frequent service over a large span of the day (a limited commuter rail is currently provided to Kenosha from northeastern Illinois on Metra's Union Pacific North Line). The transit system included in the Trend would not add any fixed-guideway transit services. The Preliminary Plan envisions an extensive fixed-guideway transit system of eight rapid transit corridors and two commuter rail lines, and therefore 487,200 people (20 percent) and 444,100 jobs (32 percent) would be within walking distance of fixed-guideway transit.

Table H.55
Access to Fixed-Guideway Transit

Plan	Population Served	Total Population in the Region	Percent of Population Served	Jobs Accessible	Total Jobs in the Region	Percent of Jobs Accessible
Existing - 2010/2015	5,500	2,020,000	0.3	3,500	1,176,600	0.3
Trend - 2050	5,800	2,354,000	0.2	3,700	1,386,900	0.3
Plan - 2050	487,200	2,389,200	20.4	444,100	1,405,700	31.6

Source: SEWRPC

CRITERION 4.5.3: TRANSIT SERVICE QUALITY

Measuring access to transit (see Criterion 4.5.1) is important, but does not provide information about the speed or frequency of transit service, or any information about how useful transit service is to the people who have access to it. Transit level of service quantifies the amount and speed of transit service each area of the Region receives under each alternative. Also included under this criterion is an analysis that goes a step further, measuring the number of jobs accessible via transit within 30 minutes as a proxy for what residents can get to in a reasonable amount of time via transit under each alternative. Combined, these two measures help compare the quality and effectiveness of transit under each alternative.

- **Transit Level of Service:** The level of service provided by the transit system under each alternative is measured by comparing the number of buses or trains that can be reached via a short walk (10 minutes or less) throughout an average weekday. Buses or trains that travel faster, such as those that are part of a bus rapid transit or light rail line (rapid transit line), are valued higher than buses that are part of a standard local bus route. Level of service is categorized into four groups:

    - **Excellent:** If a part of the Region receives "Excellent" transit service, it is typically within walking distance of at least one rapid transit station, and also is within walking distance of multiple frequent local or express bus services. A resident living in an area of the Region with Excellent transit service has a high likelihood of not needing to own a car.

    - **Very Good:** Areas with "Very Good" transit service typically include parts of the Region that are within walking distance of a rapid transit or commuter rail station, but may have fewer local or express bus routes nearby than an area with Excellent service. Alternatively, areas with Very Good service may not be within walking distance of a rapid transit or commuter rail station, but may instead be near multiple frequent local and express bus routes.

    - **Good:** In order to have "Good" transit service, an area is within walking distance of one local or express bus route that provides service at least every 15 minutes all day, or may be near three or more local bus routes that do not provide frequent, all-day service. An area with Good transit service typically would not have access to a rapid transit line.

    - **Basic:** If a part of the Region is served by "Basic" transit service, it is within walking distance of at least one local bus route, but generally not more than two routes. The routes are not likely to have service better than every 15 minutes all day.

Although accessible shared-ride taxi services are an important part of the transit system under each alternative, they are not included in this analysis as their amount of service is directly related to the number of rides requested by users. The Preliminary Plan proposes a 24-hour advance reservation shared-ride taxi service available in all parts of the Region that would not be served by local bus service. Under the Trend, shared-ride taxi service would be provided in Ozaukee County, Washington County, and the City of Whitewater.

Table H.56
Transit Level of Service

Plan	Excellent		Very Good		Good		Basic		Regional Population
	People	Percent	People	Percent	People	Percent	People	Percent	
Existing - 2011	3,000	0.1	118,000	5.8	403,000	20.0	580,000	28.7	2,020,000
Trend - 2050	8,000	0.3	26,000	1.1	227,000	9.6	781,000	33.2	2,354,000
Plan - 2050	118,000	4.9	352,000	14.7	344,000	14.4	582,000	24.4	2,389,200

Source: SEWRPC

Table H.57
Access to Jobs Within 30 Minutes by Transit

Plan	100,000 or More Jobs		50,000 or More Jobs		10,000 or More Jobs		Regional Population
	People	Percent	People	Percent	People	Percent	
Existing - 2011	45,000	2.2	139,000	6.9	643,000	31.8	2,020,000
Trend - 2050	36,000	1.5	101,000	4.3	498,000	21.2	2,354,000
Plan - 2050	279,000	11.7	618,000	25.9	1,356,000	56.8	2,389,200

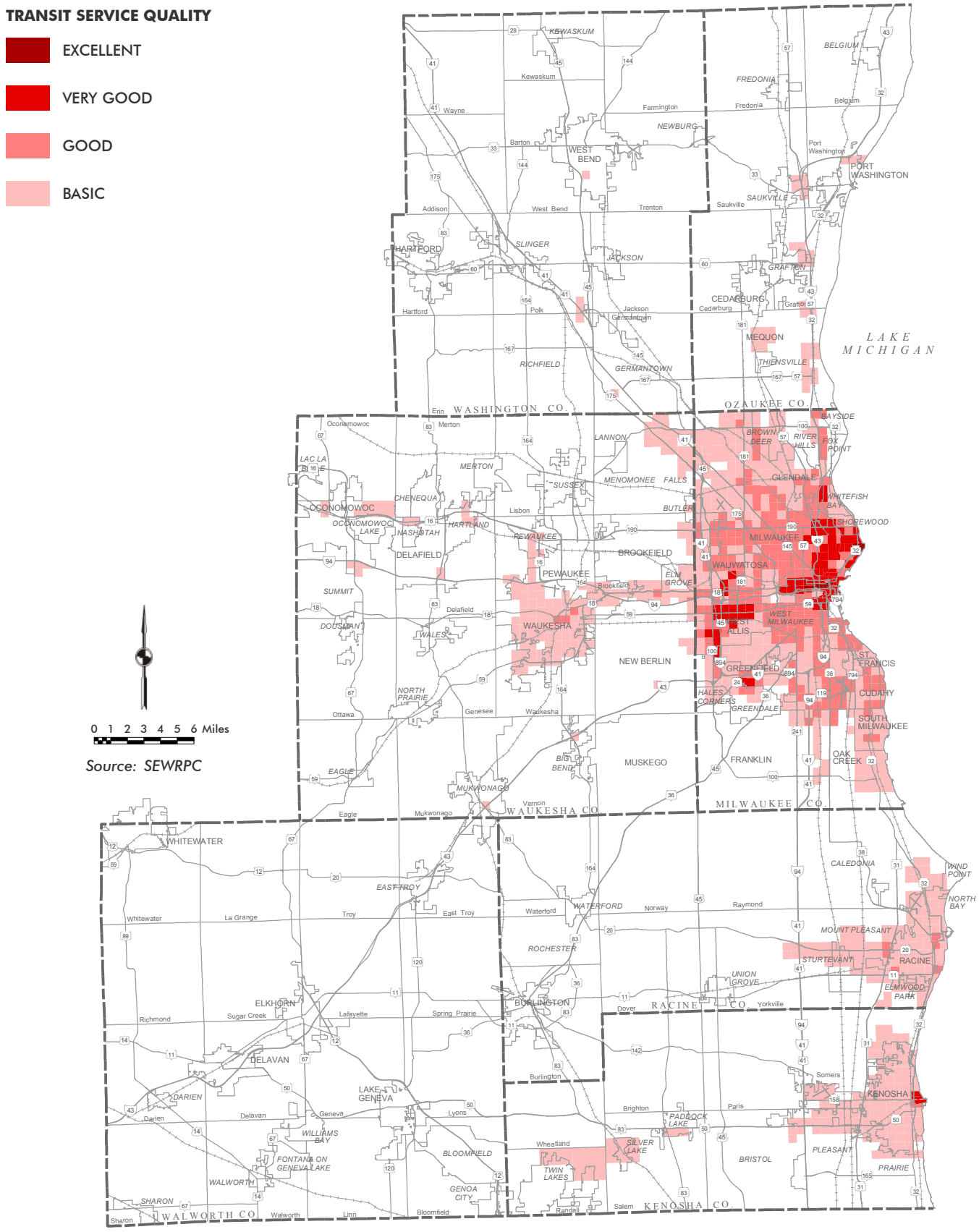
Source: SEWRPC

As shown in Table H.56, about 23 percent of the Region has access to Excellent or Very Good transit service under the Preliminary Plan, significantly better than the Trend. Overall, about 53 percent of the Region's residents would see their transit level of service at least one grade higher under the Preliminary Plan than the Trend. Maps H.102 through H.104 show the level of service provided by the existing transit system and under the Trend and Preliminary Plan.

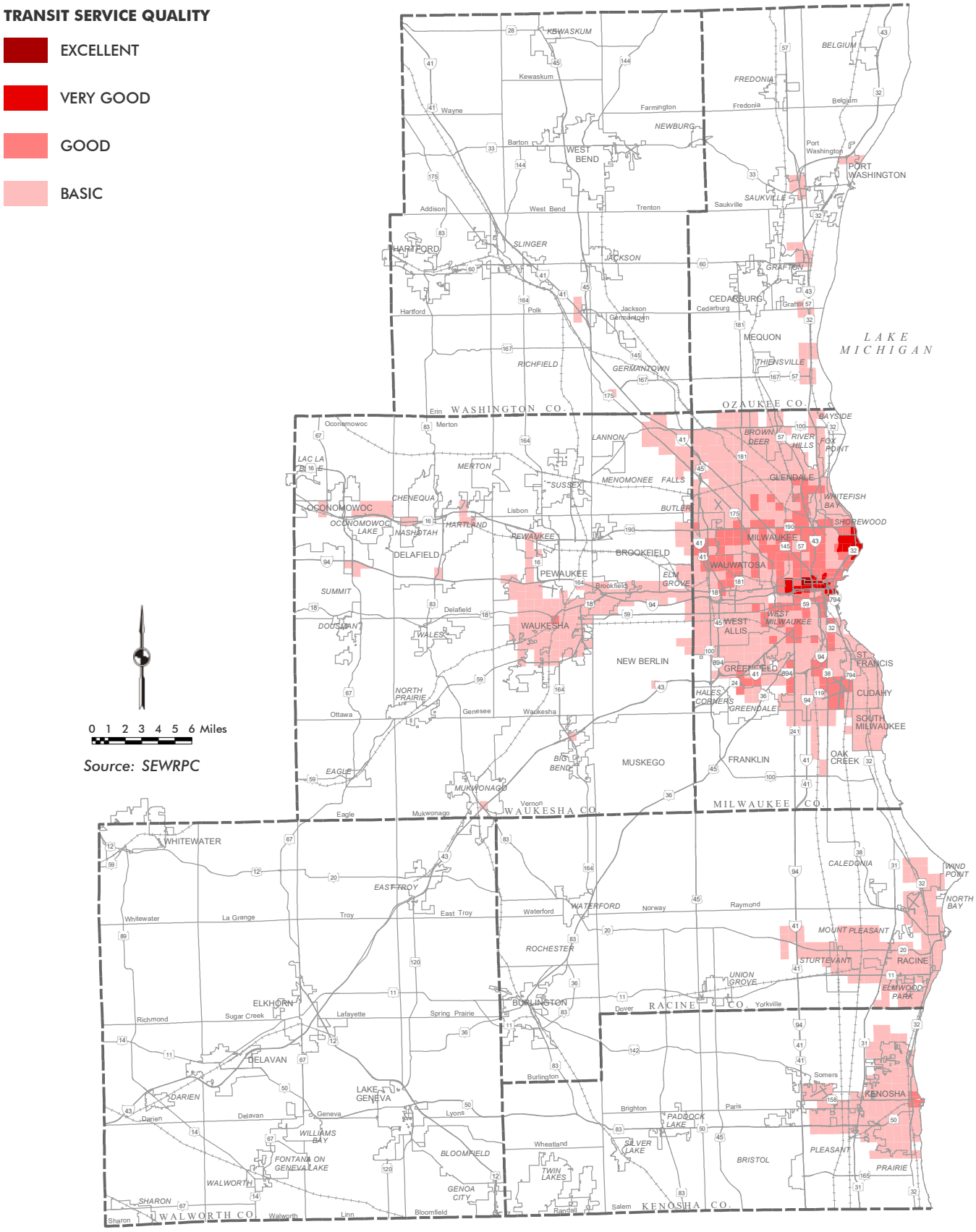
- **Jobs Accessible Within 30 Minutes via Transit:** One of the major goals of providing higher-quality transit service is to provide access to jobs, education, healthcare, and other needs for those without access to a car. How much access is provided by a transit system is not only determined by the level of transit service provided, but also by the land use served by transit service. Denser areas, with more people, jobs, and activity centers, make it easier to provide access to more destinations within a reasonable travel time on transit, especially if the transit service is separated from traffic congestion.

  In order to measure this element of transit service quality, the number of jobs accessible within 30 minutes via transit was measured for each alternative and is shown on Maps H.105 through Maps H.107. The coordinated land use pattern and transit system proposed for the Preliminary Plan would result in significant increases in access to jobs within 30 minutes compared to the Trend, as shown in Table H.57. Approximately 12 percent of residents would have access to at least 100,000 jobs within 30 minutes under the Preliminary Plan, compared to 2 percent of residents under the Trend.

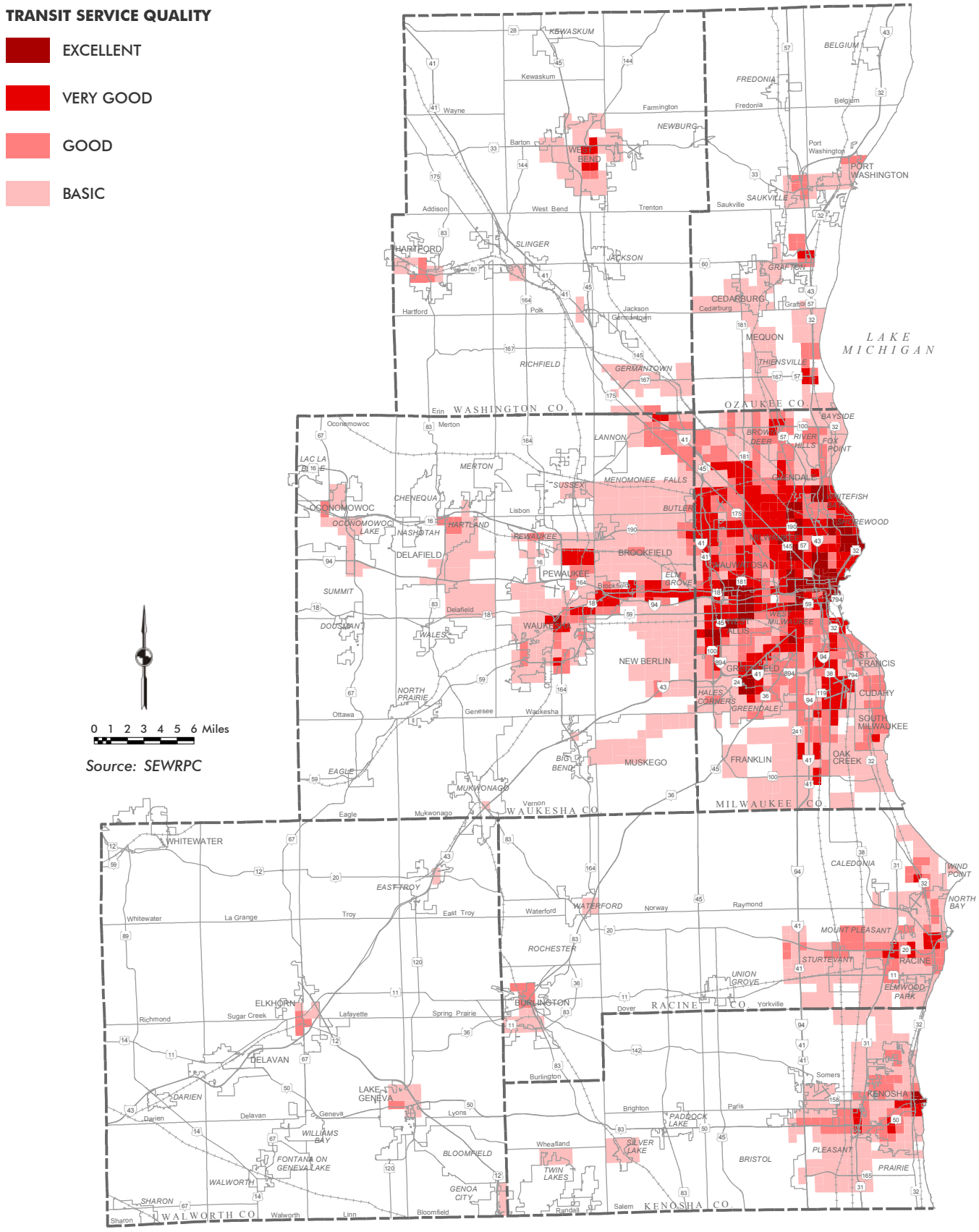
Map H.102
Transit Service Quality: Existing



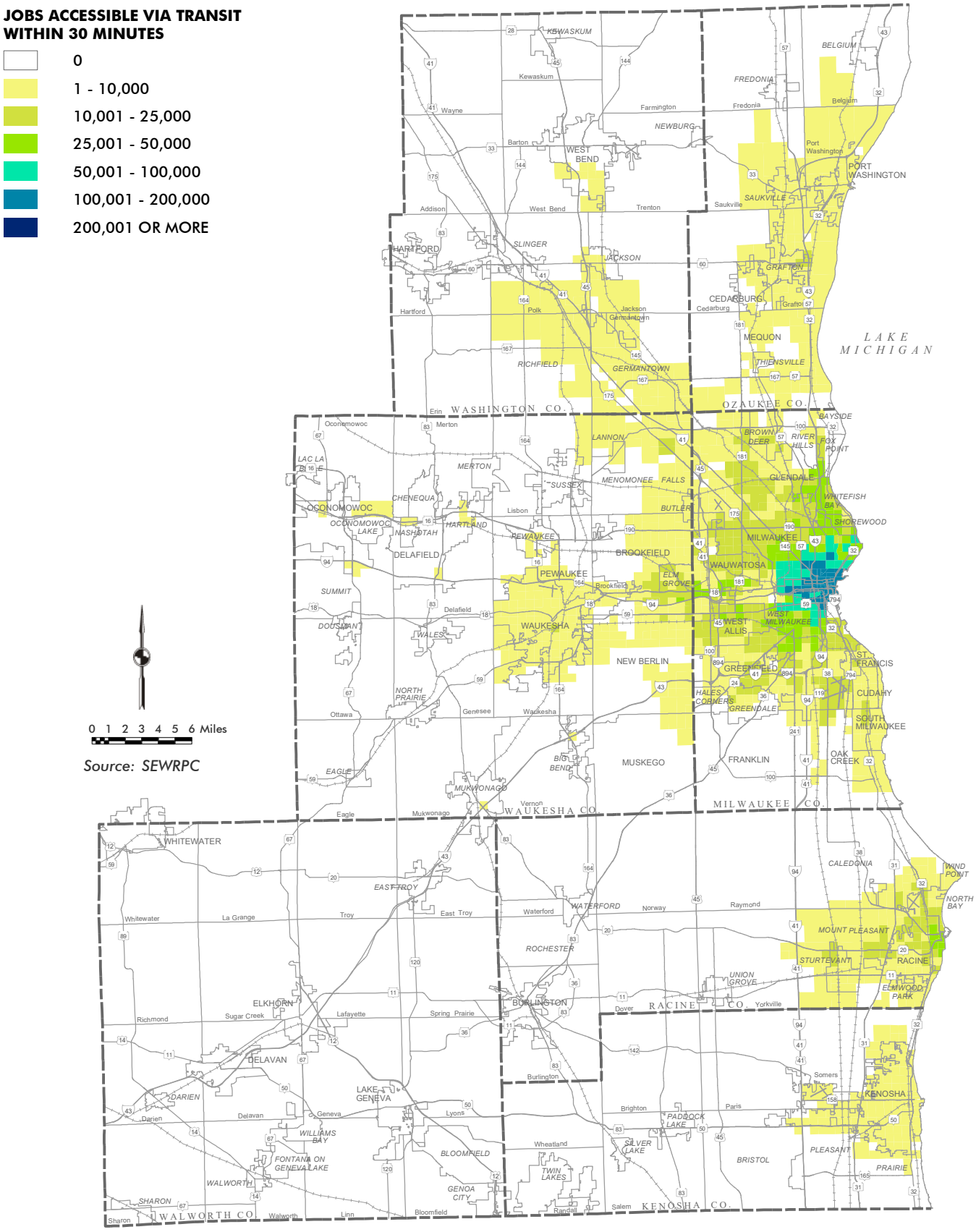
Map H.103
Transit Service Quality: Trend



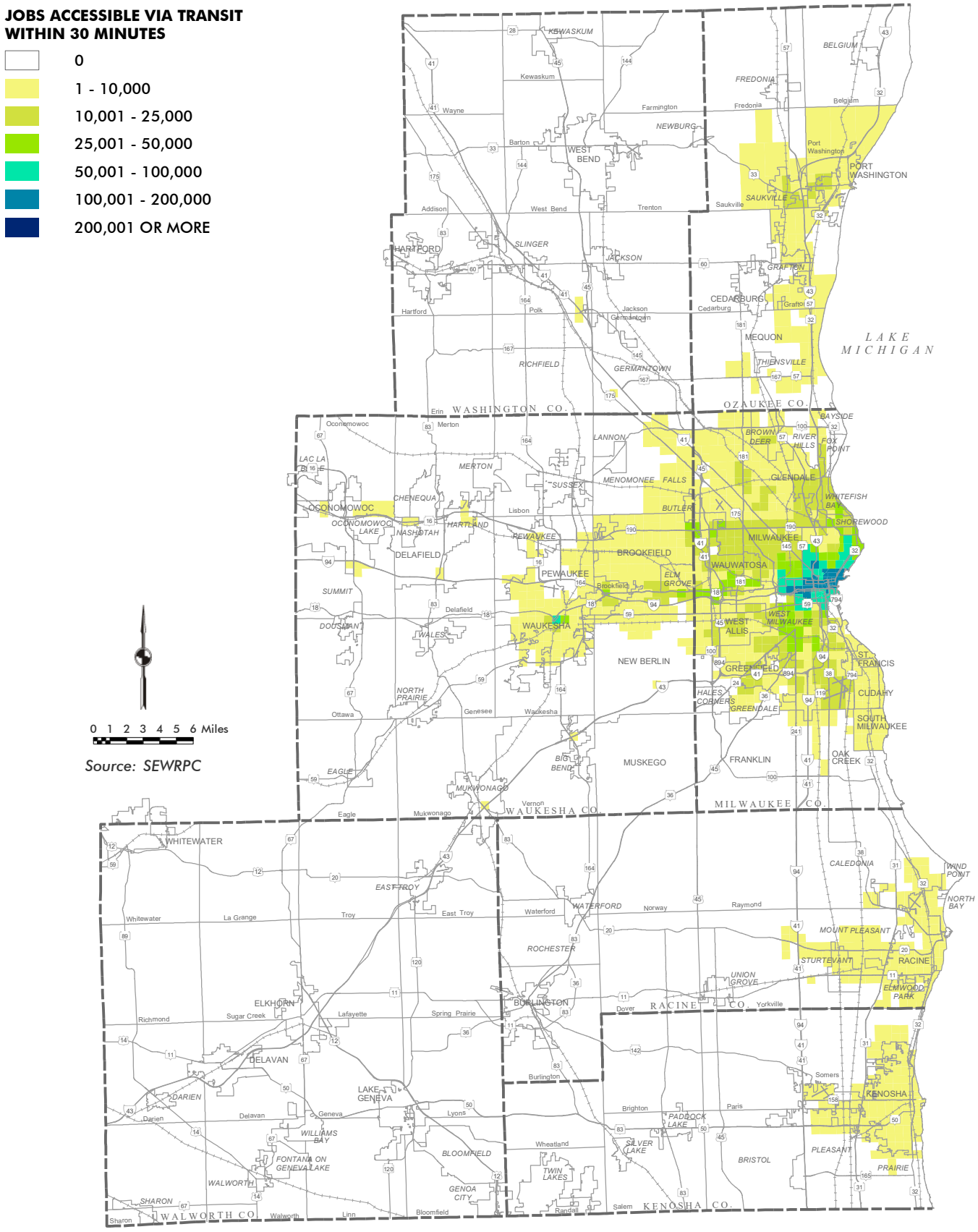
Map H.104
Transit Service Quality: Preliminary Recommended Plan



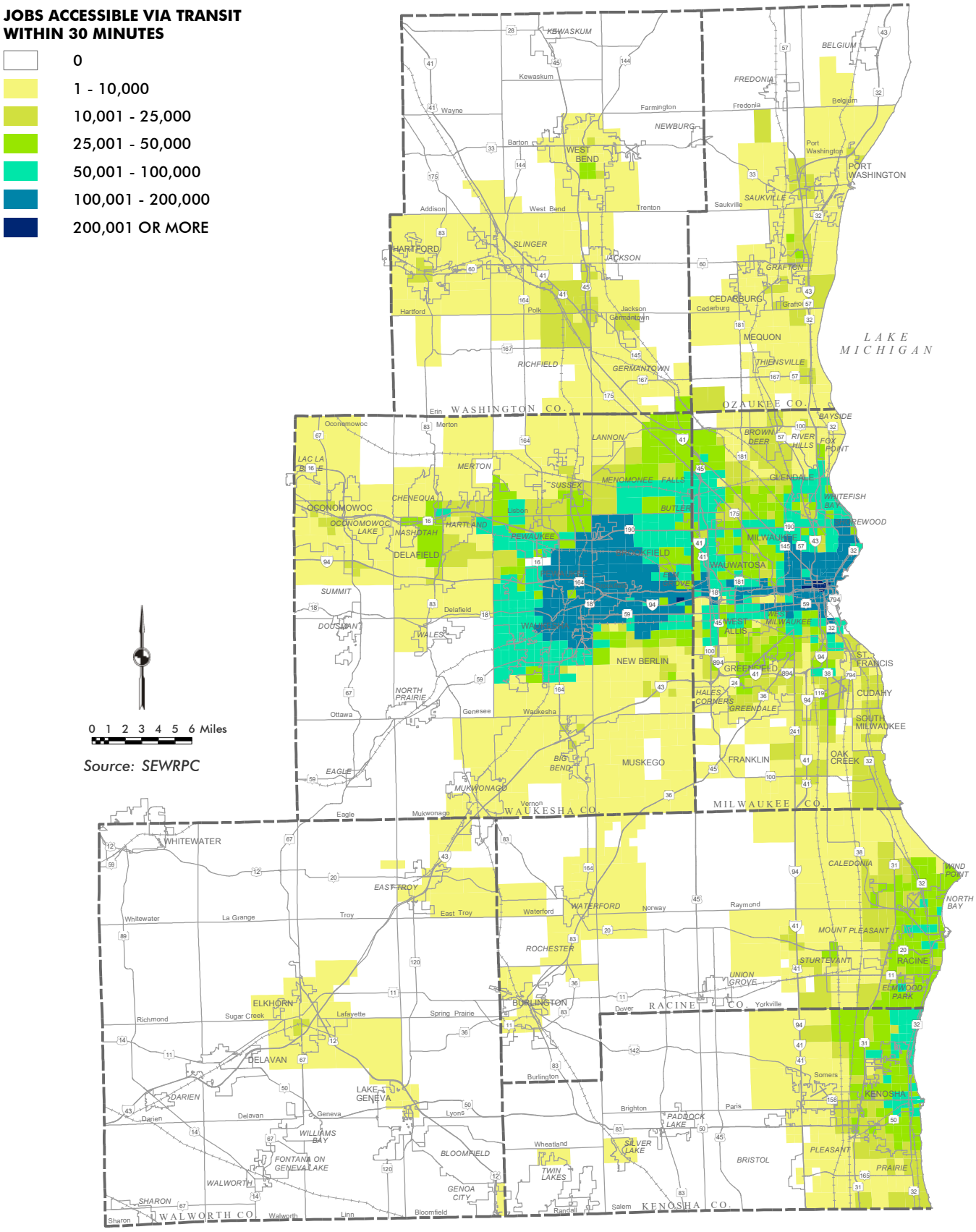
Map H.105
Access to Jobs Within 30 Minutes by Transit: Existing



Map H.106
Access to Jobs Within 30 Minutes by Transit: Trend



Map H.107
Access to Jobs Within 30 Minutes by Transit: Preliminary Recommended Plan



CRITERION 4.6.1: TRANSPORTATION RELIABILITY

The VISION 2050 alternatives evaluation described the importance to Southeastern Wisconsin travelers of being able to reach their destinations safely and on time, and compared the alternatives with respect to several factors affecting transportation reliability. The Preliminary Recommended Plan would perform similarly to Alternative Plans I and II in that regard.

- **Total Congestion and Delay:** About 8.2 percent (274.1 miles) of the Region's existing arterial system operates over its design capacity (moderate, severe, or extreme congestion) for at least part of an average weekday. The proportion of the Region's arterial system that is congested would decrease under both the Trend—6.3 percent (230.4 miles)—and the Preliminary Plan—6.7 percent (246.1 miles)—with the Trend having about 6.4 percent fewer congested miles than the Preliminary Plan (see Criterion 4.4.1).

  Existing average annual minutes of delay for total personal and commercial travel in the Region is about 1,549 million minutes. Compared to existing conditions, both the Trend (1,613 million minutes) and the Preliminary Plan (1,731 million minutes) would be expected to result in higher average annual minutes of travel time delay, with the Trend having about 6.8 percent fewer minutes of delay (see Criterion 4.4.2).

- **Congestion on the Regional Highway Freight Network:** About 12.8 percent (210.9 miles) of the Region's existing regional highway freight network operates over its design capacity (moderate, severe, or extreme congestion) for at least part of an average weekday. The proportion of the Region's freight network that is congested would decrease under both the Trend—10.0 percent (166.4 miles)—and the Preliminary Plan—10.7 percent (177.8 miles)—with the Trend having about 6.4 percent fewer congested miles than the Preliminary Plan (see Criterion 4.6.2).

- **Non-Recurring Congestion:** Implementation of the Preliminary Plan would influence non-recurring congestion through reduction in vehicular crashes on arterial streets and highways. As well, a number of the transportation systems management (TSM) measures proposed in the Preliminary Plan are intended to reduce the impact of non-recurring congestion. While vehicle-miles of travel may be expected to increase by 25 percent by the year 2050, total vehicular crashes are estimated to increase by only 16 to 22 percent with full implementation of the Plan (see Criterion 1.6.1). The projected number of total crashes under the Trend and the Preliminary Plan are very similar, varying by less than 3 percent.

- **Alternative Routes and Modes:** Alternative routes and modes that could provide an opportunity for travelers to avoid congestion include transit service, bicycle facilities, and arterial streets and highways that serve as alternate routes. People living in walkable areas would also have a greater opportunity to avoid congestion when making shorter distance trips.

  As described in more detail in Criterion 4.5.3 (Transit Service Quality), the Preliminary Plan would best support transit as an alternative to driving on congested arterial streets and highways by providing the most

residents of the Region with high-quality transit service. In particular, the Preliminary Plan would include fixed-guideway transit that would offer attractive alternatives to traveling on congested freeways. The fixed-guideway transit routes would be parallel to freeways and would mostly be unaffected by traffic congestion by operating in medians, transit-only lanes, or rail corridors.

As described in more detail in Criterion 1.2.1 (Bicycle Level of Service) and Criterion 1.2.2 (Bicycle Connectivity), the Preliminary Plan would best support bicycling as an alternative to driving on congested arterial streets and highways by providing the highest comfort level for bicyclists riding on roadways as well as the most extensive bicycle facility network.

As described in more detail in Criterion 1.1.1 (Number of People Living in Walkable Areas), the Preliminary Plan would best support walking as an opportunity to avoid congestion when making shorter distance trips. The Preliminary Plan would result in the most people living in walkable areas, as well as the most developed land in walkable areas.

- **Resilience to Inclement Weather:** Fixed-guideway transit (such as commuter rail, light rail, and bus rapid transit) would be impacted to a lesser degree by inclement weather, as it would typically operate in a median, dedicated lane, or rail corridor, and would be able to avoid non-recurring congestion on arterials caused by weather-related crashes and reduced travel speeds. In particular, commuter rail and light rail, which have vehicles with steel wheels operating on steel rails, would be more resilient to winter conditions. As noted above, the Preliminary Plan would add fixed-guideway transit service, while the Trend would not.

CRITERION 4.6.2: CONGESTION ON THE REGIONAL HIGHWAY FREIGHT NETWORK

As the alternatives evaluation discussed, the safe and efficient movement of raw materials and finished products to, from, and within Southeastern Wisconsin is essential for maintaining and growing the Region's economy. When segments of the arterial street and highway system that comprise the regional highway freight network[56] operate over their design capacity, the resulting congestion and associated truck travel delays can increase freight transportation costs for the Region's manufacturers and businesses. Table H.58 presents a comparison of the average weekday congestion on the regional highway freight network for the Region and for each county in the Region under existing conditions, the Trend, and the Preliminary Plan. Maps H.108 through H.110 illustrate the average weekday congestion on the regional highway freight network.

- **Total Congestion:** About 12.8 percent (210.9 miles) of the Region's existing regional highway freight network operates over its design capacity (moderate, severe, or extreme congestion[57]) for at least part of an average weekday. The proportion of the Region's freight network that is congested would decrease under both the Trend—10.0 percent (166.4 miles)—and the Preliminary Plan—10.7 percent (177.8 miles)—with the Trend having about 6.4 percent fewer congested miles than the Preliminary Plan.

- **Severe or Extreme Congestion:** Truck traffic is particularly impacted by severe and extreme congestion on the highway freight network. Under severe congestion, there is virtually no ability for vehicles to maneuver and change lanes on freeways and surface arterials. Under extreme congestion, vehicles experience stop-and-go traffic on freeways, as well as slow speeds and long delays at intersections along surface arterials. Comparing only the most congested arterial streets and highways in the Region, about 6.8 percent (111.9 miles) of the Region's existing highway freight network is severely or extremely congested. The proportion of the Region's highway freight network that is severely or extremely congested would decrease under both the Trend—5.0 percent (82.6 miles)—and the Preliminary Plan—5.4 percent (90.7 miles)—with the Trend having about 8.9 percent fewer miles of severely or extremely congested arterials than the Preliminary Plan.

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[56] The regional highway freight network is based on the National Highway System (NHS) and the State of Wisconsin's designated routes for long trucks. Subsequent to the evaluation of the VISION 2050 alternatives, the regional highway freight network was updated based on the Wisconsin Department of Transportation's (WisDOT) recent proposed changes to the NHS. These proposed changes mostly involved removing stub ends of NHS routes that were added as part of MAP-21 and that serve areas already served by other NHS routes, and removing NHS routes no longer functionally classified as a principal arterial. The base year 2011 regional highway freight network in the Preliminary Plan evaluation includes about 1,646.6 highway miles, compared to about 1,658.1 highway miles in the base year 2011 regional highway freight network included in the alternatives evaluation.

[57] Under moderate congestion, average freeway speeds are 1 to 2 mph below free-flow speeds, and average surface arterial speeds are 40 to 50 percent of free-flow speeds. Under severe congestion, average freeway speeds are up to 10 mph below free-flow speeds, and average surface arterial speeds are 33 to 40 percent of free-flow speeds. Under extreme congestion, average freeway speeds are 20 to 30 mph or less, and average surface arterial speeds are 25 to 33 percent of free-flow speeds.

Table H.58
Average Weekday Congestion on the Regional Highway Freight Network

Existing (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	134.4	94.2	6.6	4.6	1.5	1.1	0.2	0.1	142.7
Milwaukee	240.4	68.6	35.7	10.2	39.6	11.3	34.6	9.9	350.3
Ozaukee	97.9	85.7	11.1	9.7	3.9	3.4	1.4	1.2	114.3
Racine	184.2	95.4	6.4	3.3	2.1	1.1	0.4	0.2	193.1
Walworth	221.3	98.4	1.5	0.7	1.7	0.8	0.3	0.1	224.8
Washington	198.8	98.5	1.9	0.9	1.2	0.6	0.0	0.0	201.9
Waukesha	358.7	85.5	35.8	8.5	18.2	4.3	6.8	1.6	419.5
Region	1,435.7	87.2	99.0	6.0	68.2	4.1	43.7	2.7	1,646.6

Trend (2050)

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	127.4	89.2	12.7	8.9	2.7	1.9	0.0	0.0	142.8
Milwaukee	256.6	72.0	36.6	10.3	40.0	11.2	23.4	6.6	356.6
Ozaukee	110.5	96.8	1.7	1.5	1.7	1.5	0.3	0.3	114.2
Racine	184.5	95.5	6.3	3.3	1.8	0.9	0.6	0.3	193.2
Walworth	233.5	98.5	2.2	0.9	1.1	0.5	0.2	0.1	237.0
Washington	193.8	96.0	6.2	3.1	1.7	0.8	0.2	0.1	201.9
Waukesha	393.5	93.6	18.1	4.3	7.4	1.8	1.5	0.4	420.5
Region	1,499.8	90.0	83.8	5.0	56.4	3.4	26.2	1.6	1,666.2

Plan (2050)

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	127.1	89.0	13.2	9.2	2.5	1.8	0.0	0.0	142.8
Milwaukee	252.0	70.7	35.3	9.9	41.6	11.7	27.7	7.8	356.6
Ozaukee	106.4	93.2	4.7	4.1	2.1	1.8	1.0	0.9	114.2
Racine	183.2	94.8	6.0	3.1	3.4	1.8	0.6	0.3	193.2
Walworth	233.9	98.7	2.1	0.9	1.0	0.4	0.0	0.0	237.0
Washington	192.0	95.1	7.5	3.7	2.1	1.0	0.3	0.1	201.9
Waukesha	393.8	93.7	18.3	4.4	6.9	1.6	1.5	0.4	420.5
Region	1,488.4	89.3	87.1	5.2	59.6	3.6	31.1	1.9	1,666.2

Source: SEWRPC

Map H.108
Congestion on the Regional Highway Freight Network: 2011

FACILITY CONGESTION STATUS

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

Note: This map displays the traffic congestion experienced during an average weekday.

The regional highway freight network is based on the National Highway System (NHS) and the State of Wisconsin's designated routes for long trucks. The network may be revised upon completion of two freight planning efforts now underway, the U.S. Department of Transportation's *National Freight Strategic Plan* and the Wisconsin Department of Transportation's *Wisconsin State Freight Plan*.

Source: SEWRPC

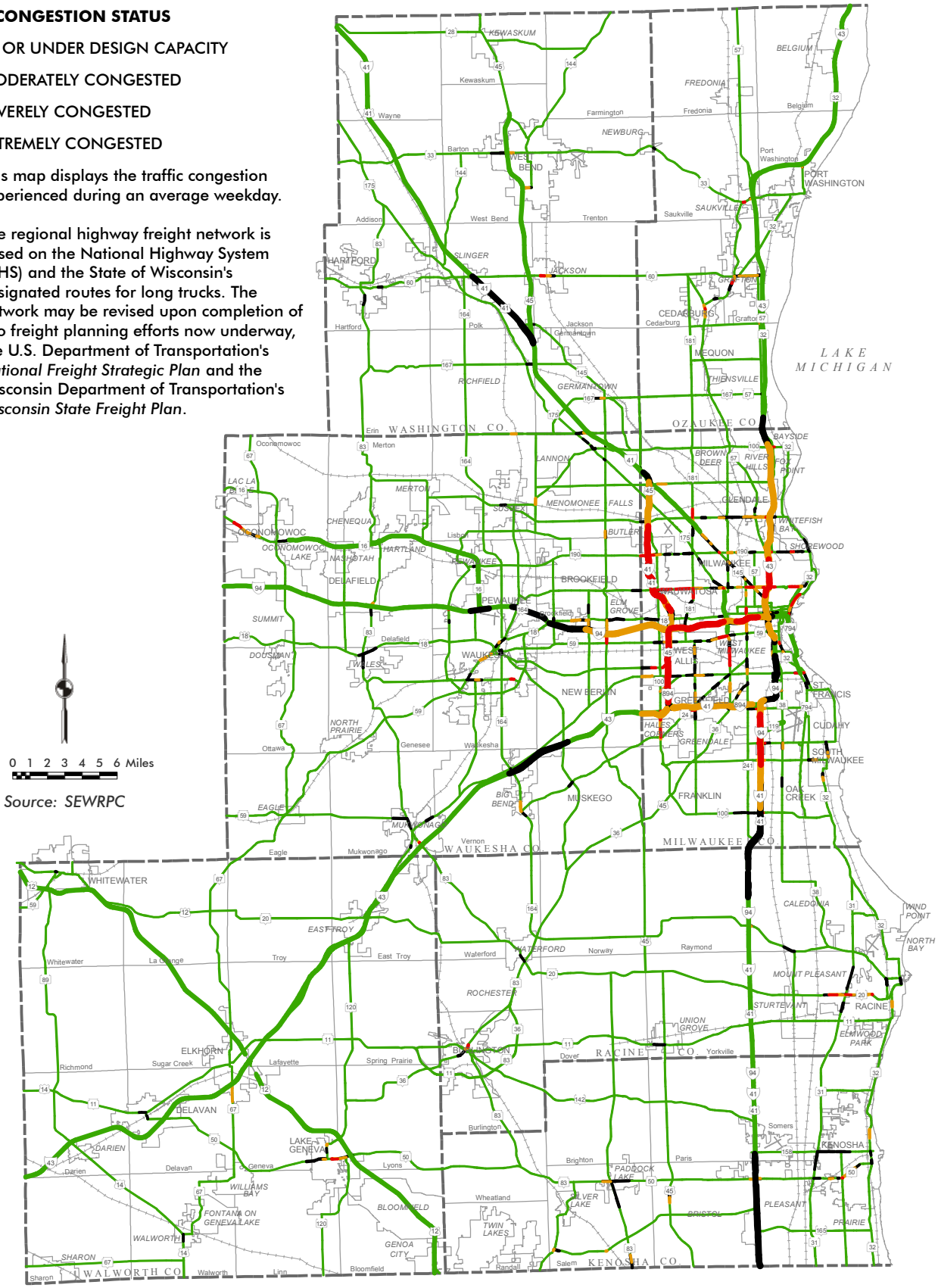
Map H.109
Congestion on the Regional Highway Freight Network: Trend

FACILITY CONGESTION STATUS

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

Note: This map displays the traffic congestion experienced during an average weekday.

The regional highway freight network is based on the National Highway System (NHS) and the State of Wisconsin's designated routes for long trucks. The network may be revised upon completion of two freight planning efforts now underway, the U.S. Department of Transportation's *National Freight Strategic Plan* and the Wisconsin Department of Transportation's *Wisconsin State Freight Plan*.



Source: SEWRPC

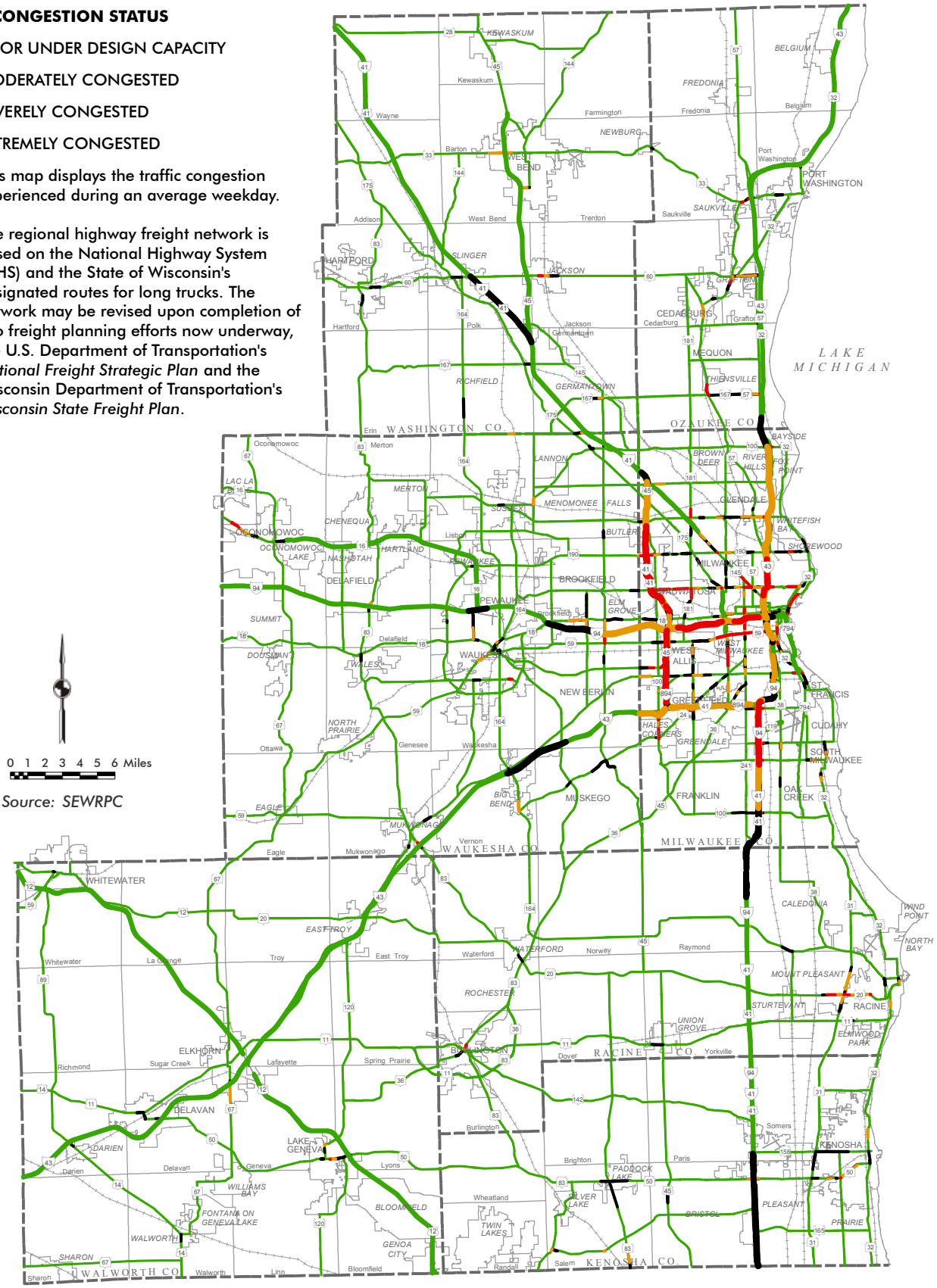
Map H.110
Congestion on the Regional Highway Freight Network: Preliminary Recommended Plan

FACILITY CONGESTION STATUS

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

Note: This map displays the traffic congestion experienced during an average weekday.

The regional highway freight network is based on the National Highway System (NHS) and the State of Wisconsin's designated routes for long trucks. The network may be revised upon completion of two freight planning efforts now underway, the U.S. Department of Transportation's *National Freight Strategic Plan* and the Wisconsin Department of Transportation's *Wisconsin State Freight Plan*.



Source: SEWRPC

CRITERION 4.6.3: IMPACTS TO FREIGHT TRAFFIC

The evaluation of the VISION 2050 alternatives noted the importance of freight transportation to Southeastern Wisconsin's economy, and compared the alternatives in terms of their potential impacts on the movement of goods in the Region. The Preliminary Recommended Plan would perform similarly to Alternatives I and II in that regard.

- **Congestion on the Regional Highway Freight Network:** Southeastern Wisconsin's regional highway freight network is comprised of arterial streets and highways in the Region intended to carry a higher percentage of truck traffic. Higher levels of congestion on the freight network can result in increased shipping delays and higher shipping costs, negatively impacting businesses and manufacturers in the Region. About 12.8 percent (210.9 miles) of the Region's existing regional highway freight network operates over its design capacity (moderate, severe, or extreme congestion) for at least part of an average weekday. The proportion of the Region's highway freight network that is congested would decrease under both the Trend—10.0 percent (166.4 miles)—and the Preliminary Plan—10.7 percent (177.8 miles)—with the Trend having about 6.4 percent fewer congested miles than the Preliminary Plan (see Criterion 4.6.2).

- **Transportation Reliability:** Businesses and manufacturers in the Region benefit when the travel times of their freight shipments are predictable. In particular, the "just-in-time" business model requires carefully coordinated shipping schedules, since freight shipments that arrive late or early can increase the cost of doing business. Compared to today, both the Trend and Preliminary Plan would result in less congestion on the Regional arterial street and highway system—with the Trend having slightly fewer congested miles than the Preliminary Plan—and would improve the ability of the arterial system to accommodate truck travel via alternative routes (see Criterion 4.6.1). The annual number of crashes on the arterial street and highway system would be expected to be about the same under both the Trend and the Preliminary Plan (see Criterion 1.6.1).

- **Access to Intermodal Shipping Options:** In many cases, freight shipments to and from other countries or other regions of the United States are most effectively transported using more than one mode of transportation. These intermodal freight shipments typically involve using a ship, airplane, or train for the longer portion of a trip and a truck for the shorter last mile or first mile trip to or from a port, an airport, or a truck-rail intermodal facility. The Region's arterial street and highway system is essential for allowing trucks to provide last mile and first mile trips to and from the Port of Milwaukee, General Mitchell International Airport, O'Hare International Airport in Chicago, and truck-rail intermodal facilities located in Chicago, western Wisconsin, and Minneapolis-St. Paul. Given the importance of reducing unexpected delays experienced by last mile and first mile freight shipments, the Preliminary Plan would improve access to intermodal shipping options for the Region's businesses and manufacturers since it would result in a more reliable arterial street and highway system (see Criterion 4.6.1).

  The Preliminary Plan also proposes that the State, in cooperation with local governments, the Commission, local manufacturers and

shippers, and freight railroads, pursue development of a new truck-rail intermodal facility in or near the Region. Locating a truck-rail intermodal facility in or near Southeastern Wisconsin could provide transportation benefits to the Region's manufacturers and shippers, including lower shipping costs.

- **Oversize/Overweight Truck Impediments:** Unusually large or heavy goods shipped within or through the Region require that specific oversize/overweight (OSOW) truck routes be used. These routes may consist of streets and highways under State, county, or local jurisdiction. The Preliminary Plan proposes that State and local governments work with the Commission and local manufacturers, shippers, and utilities to improve the accommodation of OSOW shipments on the Region's arterial street and highway network—and in particular on routes to and from the Port of Milwaukee.

- **Congestion on the Freight Rail Network:** The proposed additional commuter rail service included in the Preliminary Plan would operate over privately owned freight rail lines and share track infrastructure with freight trains. The proposed commuter rail service operating between Kenosha and Milwaukee in would use track owned by Union Pacific Railroad (UP) and Canadian Pacific Railway (CP), and the proposed commuter rail service operating between Oconomowoc and Milwaukee would use track owned by CP. The Preliminary Plan envisions that the costs of implementing new commuter rail service would include the costs of infrastructure improvements necessary to keep commuter train operations from negatively affecting freight train operations.

APPENDIX I

EVALUATION OF POTENTIAL BENEFITS AND IMPACTS OF RECONSTRUCTING WITH WIDENING AND NOT WIDENING IH 43 BETWEEN HOWARD AVENUE AND SILVER SPRING DRIVE

INTRODUCTION

The Advisory Committee on Regional Transportation Planning requested, for their review of the Preliminary Plan, an evaluation comparing the potential benefits and impacts associated with widening and not widening IH 43, upon its reconstruction, between Howard Avenue and Silver Spring Drive in Milwaukee County. The 10-mile segment of IH 43 between Howard Avenue and Silver Spring Drive is an important element of the Region's freeway network, moving people and goods to and through the downtown Milwaukee area. Both the current and forecast future year 2050 traffic volumes substantially exceed the existing design capacity of this segment of IH 43, even with the implementation of the proposed fixed-guideway transit lines parallel to this freeway and other substantial improvements in transit service under the Preliminary Plan. However, input from the public and some members of the Advisory Committees guiding the VISION 2050 planning effort indicated opposition, particularly in Milwaukee County, to the widening of freeways, as well as surface arterials, especially in corridors where fixed-guideway transit service is proposed.

There has been opposition expressed over the years by the City of Milwaukee and Milwaukee County to widening the freeway system in Milwaukee County, particularly within the City of Milwaukee. Specifically, during the development of the regional freeway reconstruction plan completed in 2003, there was opposition expressed by the City and County of Milwaukee to the reconstruction with additional lanes of 19 miles of freeway in Milwaukee County, including this 10-mile segment of IH 43. In determining the final regional freeway reconstruction plan in 2003, the Commission staff had recommended to the Advisory Committee guiding the effort that the final plan not include a recommendation for these segments of freeway. How these segments would be reconstructed—either with the existing number of lanes or with additional lanes—would be determined at the conclusion of the preliminary engineering for the reconstruction of each segment of freeway. However, the Advisory Committee guiding that effort determined that the final regional freeway reconstruction plan should recommend the widening of these segments of freeway. The final plan did, however, specifically note that all 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 be required to undergo preliminary engineering and environmental impact study by the Wisconsin Department of Transportation. The plan further recommended that during preliminary engineering, alternatives 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, upon detailed corridor-level consideration

of alternatives including environmental impacts, would a determination be made as to how the freeway would be reconstructed. If the preliminary engineering concluded that the freeway segment would be reconstructed without widening, the regional transportation plan would be amended to incorporate the conclusions of the preliminary engineering study.

Table I.1 summarizes the potential benefits and impacts associated with widening and not widening IH 43 upon its reconstruction between Howard Avenue and Silver Spring Drive. The data presented in Table I.1 indicate that the cost of reconstructing this 10-mile segment of IH 43 with additional lanes represents an estimated 17 percent increase in the cost of reconstructing to modern design standards, and that the additional lanes can largely be built within the existing right-of-way. The additional lanes would provide a 33 percent increase in traffic carrying capacity that would be expected to reduce traffic congestion, travel delay, and the diversion of freeway traffic to surface arterial streets. Also, traffic safety would be improved with the widening of these 10 miles of freeway, as congestion-related crashes would be reduced and traffic would be diverted from surface arterial streets to the freeway (a safer facility).

Reconstructing IH 43 with additional traffic lanes would not be expected to require any acquisition of additional right-of-way, and, therefore, no acquisition of homes or businesses, or impacts on environmental corridor or natural resources, would be expected. However, reconstructing this segment of IH 43 with additional lanes would be expected to increase impervious area by 30 acres (12-foot lane in each direction for 10 miles), with resulting impacts on storm water absorption and water quality. These 30 acres of impervious area would represent about 0.6 percent of the total estimated increase in impervious area under the Preliminary Plan within the Milwaukee, Menomonee, and Kinnickinnic watersheds that this 10-mile segment of IH 43 freeway is located.

This 10-mile segment of IH 43 (along with the segment of IH 94 between the Zoo and Marquette Interchanges) is unique among the 270 miles of freeways in the Region and the 111 total miles proposed for reconstruction with widening in the Preliminary Plan in that densely populated residential neighborhoods are located along much of this segment of freeway. The concern and opposition to the widening of these segments of freeway is in part due to the perceived negative impacts on the neighborhoods immediately adjacent to the freeways. While analyses indicate that the populations that reside near this 10-mile segment of IH 43 would benefit from the improved accessibility and traffic safety resulting from its widening upon reconstruction, these populations would as well experience the impacts of being located adjacent to a heavily traveled freeway. A total of 73,800 residents live within one-half mile, and a total of 33,900 residents live within one-quarter mile, of this segment of IH 43. About 74 percent of residents within one-half mile and about 76 percent of residents within one-quarter mile are minorities, which exceeds the 29 percent minority population of the Region and the 54 percent minority population of Milwaukee County. A total of 14,700 families reside within one-half mile, and a total of 6,400 families reside within one-quarter mile, of this segment of IH 43. About 32 percent of the families within one-half mile and about 34 percent of the families within one-quarter mile are families in poverty, which exceeds the 10 percent families in poverty in the Region and 16 percent families in poverty in Milwaukee County.

As a result, when considering all freeway widening upon reconstruction proposed in the Preliminary Plan—including this segment of IH 43—the

proportions of minority population within one-half mile and one-quarter mile of a freeway widening exceed that of the non-minority population: 14 percent minority and 9 percent non-minority within one-half mile and 7 percent minority and 4 percent non-minority within one-quarter mile. Similar conclusions are reached for families in poverty. If the widening of IH 43 is not included in the plan, then the proportions of non-minority population within one-half mile and one-quarter mile of a freeway widening exceed that of the minority population: 7 percent non-minority and 5 percent minority within one-half mile and 3 percent non-minority and 2 percent minority within one-quarter mile. Similar conclusions are reached for families in poverty.

Table I.1
Costs and Benefits of Widening and Not Widening the IH 43 Freeway from Six to Eight Lanes Between Howard Avenue and Silver Spring Drive

Construction Cost

The estimated cost for the reconstruction of this segment of IH 43 to modern design standards without widening is $818 million (excluding the Marquette Interchange). The estimated cost to widen upon reconstruction of IH 43 between Howard Avenue and Silver Spring Drive (excluding the Marquette Interchange) from six to eight travel lanes is approximately $985 million, representing an additional cost of about $168 million, or a 17 percent increase, over the cost to reconstruct to modern design standards only.

Traffic Carrying Capacity

Widening IH 43 from six to eight lanes will expand traffic carrying capacity of the freeway by 33 percent.

Traffic Congestion

Year 2050 Average Hours of Freeway Congestion on an Average Weekday[a]

IH 43 Between Howard Avenue and the Marquette Interchange	Total	Extreme	Severe	Moderate
With Widening	4	--	1	3
Without Widening	6	1	2	3

IH 43 Between the Marquette Interchange and Silver Spring Drive	Total	Extreme	Severe	Moderate
With Widening	6	1	2	3
Without Widening	11	2	4	5

[a] *Extreme traffic congestion is characterized by stop-and-go bumper-to-bumper traffic operating at speeds of 20 to 30 miles per hour or less. Severe congestion is characterized by traffic operating at speeds of 5 to 15 miles per hour below free-flow speed and no gaps in traffic for lane changing. Moderate traffic congestion is characterized by traffic operating at speeds of 1 to 5 miles per hour below free-flow speed and substantial restrictions on the ability to change lanes.*

Congestion on Surface Arterials

While freeway traffic would be diverted to surface arterial streets without widening upon reconstruction of the 10-mile segment of IH 43, most of the affected segments of arterial streets would have adequate capacity for the increased traffic. However, the increased traffic would be expected to trigger congestion or worsen the level of congestion on a few of the adjacent arterial streets:

- Teutonia Avenue between North Avenue and Silver Spring Drive
- 20th Street between Locust Street and Hopkins Street
- 27th Street between Center Street and Capitol Drive
- 35th Street between Lisbon Avenue and Vliet Street
- 27th Street between Burnham Street and St. Paul Street
- Cesar Chavez Drive between Burnham Street and Clybourn Street
- 6th Street between Lincoln Street and Lapham Boulevard
- Lincoln Memorial Drive between Michigan Street and Lafayette Hill Road

Travel Times

Year 2050 Peak Hour Travel Time (minutes)

Segment of Freeway	With IH 43 Widening	Without IH 43 Widening
IH 43 between Howard Avenue and Marquette Interchanges (free flow travel time of 6 minutes)	8	9
IH 43 between Marquette Interchange and Silver Spring Drive (free flow travel time of 7 minutes)	10	13

Table continued on next page.

Table I.1 (Continued)

Additional Traffic on Surface Streets Without Widening of IH 43[b]

Between Downtown and Silver Spring Drive:

- Martin Luther King, Jr. Drive (north of McKinley Avenue) – 200 to 4,000 vehicles per weekday
- 6th Street/7th Street/Halyard Street (McKinley Avenue-North Avenue) – 200 to 2,000 vehicles per weekday
- Holton Street (Brady Street-Capitol Drive) – 400 to 1,300 vehicles per weekday
- Lincoln Memorial Drive/Lake Drive – 300 to 700 vehicles per weekday
- Port Washington Road – 1,000 to 1,700 vehicles per weekday
- Roosevelt Drive – 700 to 1,500 vehicles per weekday
- Teutonia Avenue/12th Street (north of Highland Avenue) – 500 to 2,700 vehicles per weekday
- Hopkins Street (Locust Street-Capitol Drive) – 100 to 1,700 vehicles per weekday
- 20th Street – 100 to 1,800 vehicles per weekday
- 27th Street (North of IH 94) – 200 to 1,600 vehicles per weekday
- 35th Street/Hopkins Street (IH 94-Sherman Boulevard) – 300 to 800 vehicles per weekday
- Fond du Lac Avenue (IH 43-Capitol Drive) – 100 to 1,300 vehicles per weekday

Between Downtown and Howard Avenue:

- Lake Parkway (south of Carferry Drive) – 500 to 2,000 vehicles per weekday
- Kinnickinnic Avenue – 100 to 400 vehicles per weekday
- Water Street/1st Street/Chase Avenue/Howard Avenue (south of IH 94) – 400 to 1,200 vehicles per weekday
- 6th Street (south of IH 94) – 100 to 1,200 vehicles per weekday
- 11th Street/Windlake Avenue/20th Street (south of National Avenue) – 200 to 900 vehicles per weekday
- 16th Street/Cesar Chavez Drive (south of IH 94) – 200 to 800 vehicles per weekday
- 27th Street (south of IH 94) – 700 to 1,400 vehicles per weekday
- 35th Street (south of IH 94) – 200 to 1,600 vehicles per weekday
- Forest Home Avenue – 200 to 800 vehicles per weekday
- Muskego Street – 100 to 300 vehicles per weekday
- Loomis Road (43rd Street-27th Street) – 200 to 800 vehicles per weekday
- 43rd Street – 200 to 1,300 vehicles per weekday

[b] *The forecast additional traffic on surface streets would be expected during periods of extreme and severe congestion on the freeway system.*

Vehicular Crashes

The widening of IH 43 from six to eight lanes as part of freeway reconstruction will provide some traffic safety improvement by reducing traffic congestion and shifting travel from adjacent surface arterials to the freeway (a safer facility), resulting in a reduction of about 200 crashes per year.

Impacts to Natural Resource Areas

It is not anticipated that there would be any impacts to environmental corridors and other natural resource areas with widening IH 43 between Howard Avenue and Silver Spring Drive, as additional lanes can largely be built within the existing right-of-way.

Homes, Businesses, Land, and Parkland Acquired

It is not anticipated that there would be any acquisition of homes and businesses with widening IH 43 between Howard Avenue and Silver Spring Drive, as additional lanes can largely be built within the existing right-of-way.

Impervious Surface

The increase in impervious area associated with the widening of IH 43 between Howard Avenue and Silver Spring Drive with two additional travel lanes is estimated to be about 30 acres over the 10.2-mile length of freeway. This increase would represent only about 0.6 percent of the estimated increase in impervious area of about 5,280 acres by the year 2050 within the three watersheds that this segment of IH 43 is located within—Kinnickinnic River, Menomonee River, and Milwaukee River watersheds—based on the planned development and highway improvements (widenings as part of reconstruction of existing facilities or new facilities) proposed in the Preliminary Plan.

Greenhouse Gas Emissions and Other Air Pollutants

There is almost no difference in system-wide greenhouse gas and other air pollutant emissions between widening and not widening IH 43, as similar levels of vehicle traffic are expected with or without additional lanes—more will be on freeways with added lanes and more will be on parallel surface arterials without new lanes. Transportation-generated ozone-related air pollutant emissions have been declining, and are projected to continue to decline by the year 2050 by about 65 to 90 percent (along with about a 30 percent decline in transportation-generated greenhouse gas emissions), even with increasing traffic, due primarily to cleaner fuels and more stringent emission standards for new motor vehicles.

Table continued on next page.

Table I.1 (Continued)

Benefits and Impacts to Minority Populations and Families in Poverty Residing in Proximity to IH 43 Between Howard Avenue and Silver Spring Drive[c]

Proportion of Trips by Traffic Analysis Zone (TAZ) that Would Utilize IH 43 Between Howard Avenue and Silver Spring Drive

Map I.1 shows the percentage of automobile trips within each TAZ that would utilize the 10-mile segment of a widened IH 43. Comparing this map to locations of current concentrations of minority populations and low-income populations (as shown on Maps I.2 and I.3) indicates that this 10-mile segment of IH 43 would directly serve areas of minority populations and low-income populations, particularly those residing adjacent to this freeway segment. Thus, the population that resides near this 10-mile segment of IH 43 would be expected to benefit from the improved accessibility and traffic safety resulting from its widening upon reconstruction. However, these residents would also experience the impacts of being located adjacent to a heavily traveled freeway.

Minority Population and Families in Poverty Residing in Proximity to IH 43 Between Howard Avenue and Silver Spring Drive

Distance	Non-Minority Population	Minority Population		Families Not in Poverty	Families in Poverty	
		Population	Percent of Total Population		Families	Percent of Total Families
Within One-Half Mile	19,100	54,700	74.1	10,000	4,700	32.0
Within One-Quarter Mile	8,200	25,700	75.8	4,200	2,200	34.4

Percent of Total Minority/Non-Minority Population and Families in Poverty/ Families Not in Poverty Residing in Proximity to a Freeway Widening

Population and Families Within One-Half Mile

Preliminary Plan	Minority Population	Non-Minority Population	Families in Poverty	Families Not in Poverty
With IH 43 Widening	14	9	14	10
Without IH 43 Widening	5	7	5	8

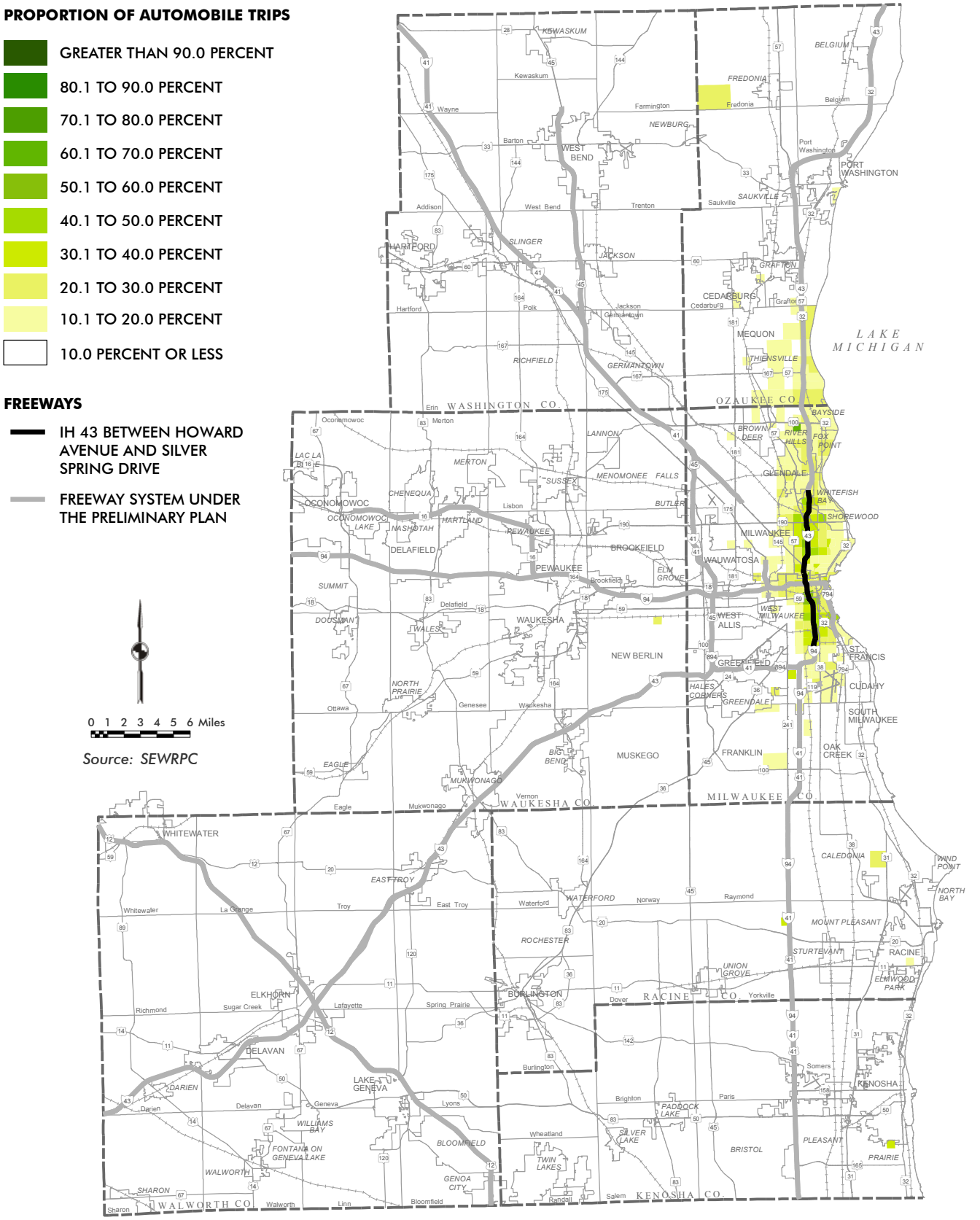
Population and Families Within One-Quarter Mile

Preliminary Plan	Minority Population	Non-Minority Population	Families in Poverty	Families Not in Poverty
With IH 43 Widening	7	4	7	5
Without IH 43 Widening	2	3	3	4

[c] *Minority and non-minority population are based on the 2010 U.S. Census and families in poverty and families not in poverty are based on the 2008-2012 American Community Survey.*

Source: U.S. Bureau of the Census, U.S. Census and American Community Survey; and SEWRPC

Map I.1
Proportion of Automobile Trips Using IH 43 Between Howard Avenue and Silver Spring Drive Within Each Traffic Analysis Zone: Preliminary Plan



Map I.2
Concentrations of Total Minority Population in the Region (2010) in Relation to IH 43 Between Howard Avenue and Silver Spring Drive

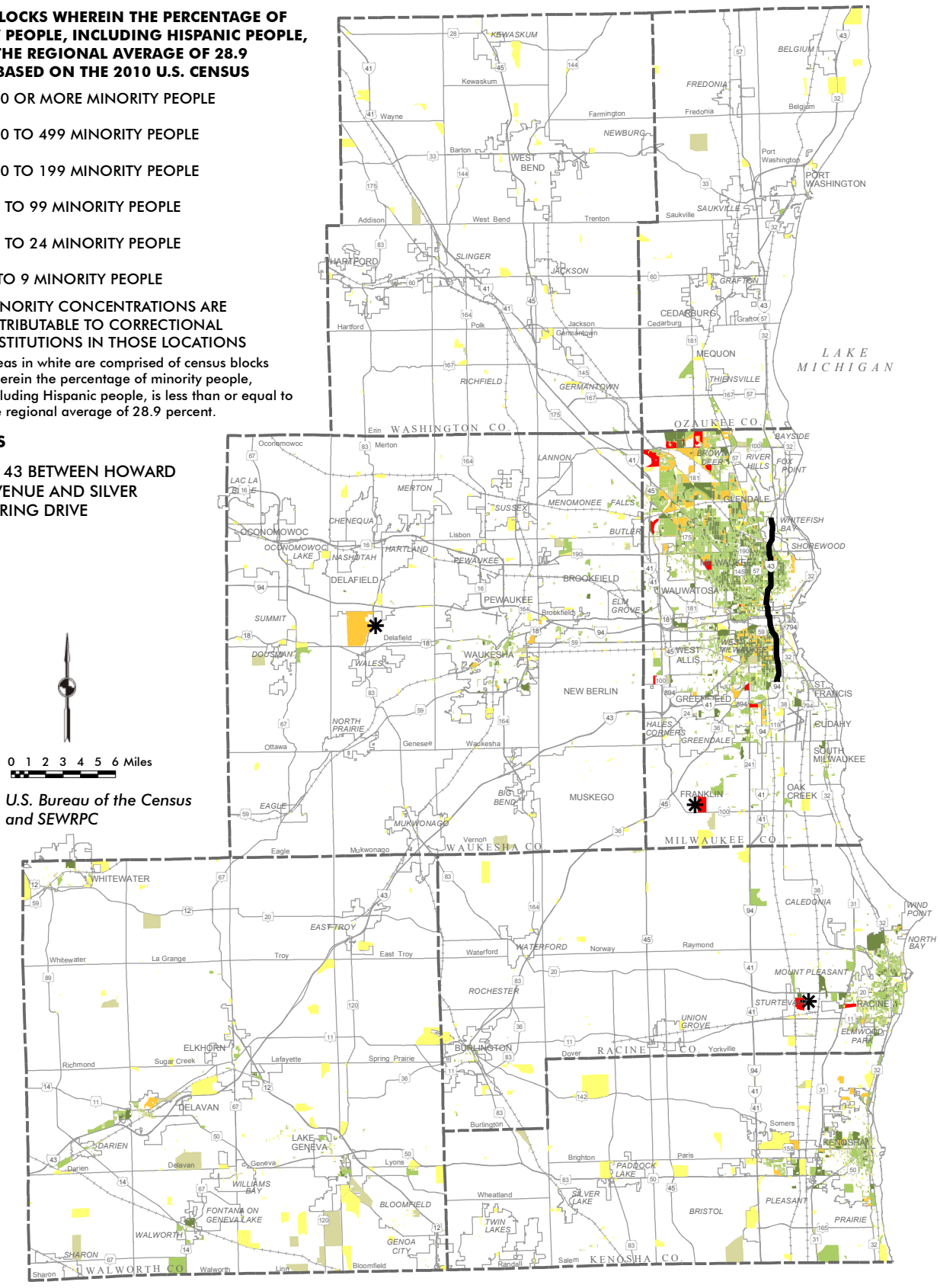
CENSUS BLOCKS WHEREIN THE PERCENTAGE OF MINORITY PEOPLE, INCLUDING HISPANIC PEOPLE, EXCEEDS THE REGIONAL AVERAGE OF 28.9 PERCENT BASED ON THE 2010 U.S. CENSUS

- 500 OR MORE MINORITY PEOPLE
- 200 TO 499 MINORITY PEOPLE
- 100 TO 199 MINORITY PEOPLE
- 25 TO 99 MINORITY PEOPLE
- 10 TO 24 MINORITY PEOPLE
- 1 TO 9 MINORITY PEOPLE
- * MINORITY CONCENTRATIONS ARE ATTRIBUTABLE TO CORRECTIONAL INSTITUTIONS IN THOSE LOCATIONS

Note: Areas in white are comprised of census blocks wherein the percentage of minority people, including Hispanic people, is less than or equal to the regional average of 28.9 percent.

FREEWAYS

- IH 43 BETWEEN HOWARD AVENUE AND SILVER SPRING DRIVE



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

Map I.3
Concentrations of Families in Poverty in the Region (2008-2012) in Relation to IH 43 Between Howard Avenue and Silver Spring Drive

CENSUS TRACTS WHEREIN THE PERCENTAGE OF FAMILIES IN POVERTY EXCEEDS THE REGIONAL AVERAGE OF 10.3 PERCENT BASED ON THE 2008-2012 U.S. CENSUS AMERICAN COMMUNITY SURVEY

- FEWER THAN 100 FAMILIES IN POVERTY
- 100-199 FAMILIES IN POVERTY
- 200-299 FAMILIES IN POVERTY
- 300 OR MORE FAMILIES IN POVERTY

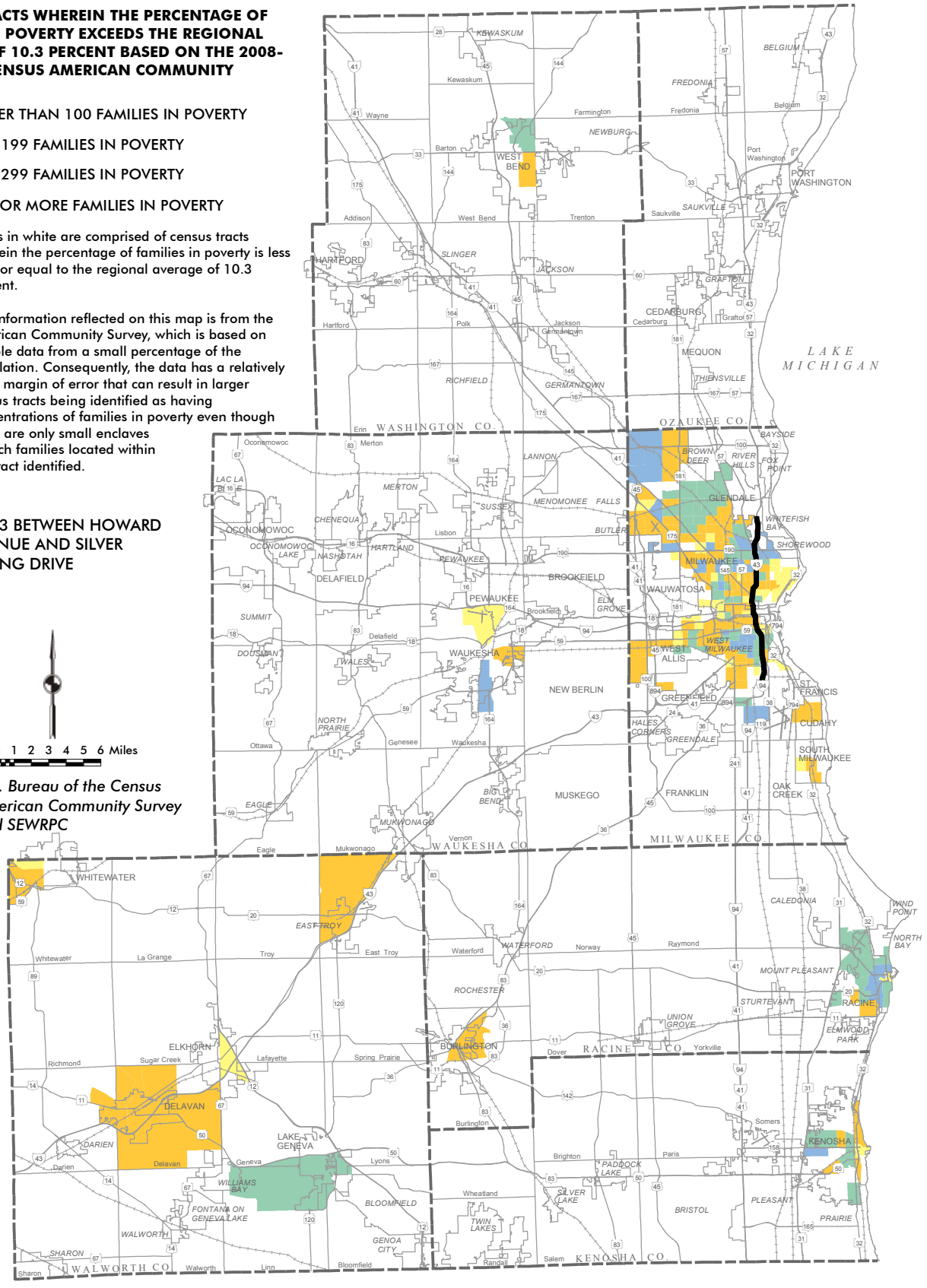
Notes: Areas in white are comprised of census tracts wherein the percentage of families in poverty is less than or equal to the regional average of 10.3 percent.

The information reflected on this map is from the American Community Survey, which is based on sample data from a small percentage of the population. Consequently, the data has a relatively large margin of error that can result in larger census tracts being identified as having concentrations of families in poverty even though there are only small enclaves of such families located within the tract identified.

FREEWAYS

- IH 43 BETWEEN HOWARD AVENUE AND SILVER SPRING DRIVE

Source: U.S. Bureau of the Census American Community Survey and SEWRPC



APPENDIX J
PUBLIC FEEDBACK ON PRELIMINARY RECOMMENDED PLAN

INTRODUCTION

Five rounds of interactive workshops open to the general public were held across the Region during the VISION 2050 process to provide information on, and obtain input into, the development of VISION 2050. For each round, the Commission's eight partner organizations, representing minority populations, people with disabilities, and low-income individuals, held a workshop for their constituents during the same periods as the public workshops. This appendix presents the feedback received on the Preliminary Recommended Plan, which was the focus of the fifth and final round of workshops in the spring of 2016. The workshop activities and their results are summarized in Chapter 4 of Volume II.

The fifth round of public workshops was held throughout the Region (one workshop in each of the seven counties) between April 25 and May 4, 2016. The Commission's eight partner organizations held individual workshops for their constituents between April 19 and May 3, 2016. Staff also held one individual workshop requested by a local government. The focus of the fifth round of workshops was reviewing the Preliminary Recommended Plan and the funding and benefits associated with the Preliminary Plan. Each workshop was held in an interactive open house format. Attendees received a brief orientation presentation and a 20-page summary booklet then had the opportunity to engage with staff at six stations. Attendees were able to provide feedback on station-specific comment cards, which included questions specific to the station's topic. Attendees at each of the seven public workshops could also provide oral comment to a court reporter. Staff also made available an interactive website dedicated to exploring the Preliminary Plan and its evaluation through May 6, 2016, particularly for those who were unable to attend one of the spring 2016 workshops.

The feedback during this round of public involvement was considered as staff prepared a final recommended year 2050 land use and transportation plan, which is presented in Chapter 1 of Volume III.

SUMMARY OF PARTNER WORKSHOPS

VISION 2050 included extensive public outreach to ultimately shape a final year 2050 land use and transportation plan. This outreach included partnering with eight community organizations serving and representing minority populations, low-income populations, and people with disabilities. The eight organizations are: Common Ground, Ethnically Diverse Business Coalition, Hmong American Friendship Association, Independence*First*, Milwaukee Urban League, Southside Organizing Committee, Urban Economic Development Association of Wisconsin, and Urban League of Racine and Kenosha.

The fifth set of VISION 2050 partner workshops was conducted concurrently with SEWRPC's VISION 2050 workshops for the general public, held in each of the seven counties in the Southeastern Wisconsin Region. Partner and public workshops during the period included the same presentation, materials, and activities. The schedule for Visioning Workshops was as follows:

Workshop #1	October – November 2013
Workshop #2	December 2013 – January 2014
Workshop #3	September – October 2014
Workshop #4	October – December 2015
Workshop #5	April – May 2016

PARTNER WORKSHOP ATTENDANCE

Attendance for the fifth round of partner Visioning Workshops (identified as Workshop #5 throughout this report) in spring 2016 totaled 195 participants, as indicated in the following table:

Table J.1
Partner Visioning Workshops 1-5

	Workshop Attendance						Workshop Date				
Organization	#1	#2	#3	#4	#5	Total	#1	#2	#3	#4	#5
Common Ground	47	33	44	18	20	162	11/20/13	1/23/14	10/1/14	12/2/15	5/2/16
Ethnically Diverse Business Coalition	22	15	21	37	21	116	11/18/13	1/8/14	9/22/14	11/5/15	4/21/16
Hmong American Friendship Association	23	55	30	21	56	185	11/14/13	1/16/14	9/23/14	11/17/15	4/28/16
Independence*First*	21	23	20	19	20	103	11/7/13	12/12/13	10/2/14	12/3/15	4/25/16
Milwaukee Urban League	33	23	23	22	19	120	11/13/13	2/10/14	9/29/14	11/4/15	4/27/16
Southside Organizing Committee	25	30	10	20	20	105	11/21/13	1/14/14	10/6/14	11/10/15	4/19/16
Urban Economic Development Association of Wisconsin	22	17	15	10	10	74	11/14/13	1/9/13	9/24/14	11/3/15	5/3/16
Urban League of Racine and Kenosha	27	13	19	22	29	110	11/12/13	12/16/13	9/25/14	10/27/15	4/20/16
Total Attendance	220	209	182	169	195	975					

WORKSHOP #5 ACTIVITIES

The presentation, materials, and activities for the fifth and final series of VISION 2050 community partner workshops were consistent with the spring 2016 SEWRPC public workshops and included:

- Each meeting was held in an interactive open house format. An orientation presentation was given by SEWRPC staff throughout each meeting as new attendees arrived.
- Each participant received a 20-page booklet that summarized the preliminary recommended plan ("Draft Plan") for VISION 2050. The booklet included information about the land use component and transportation component of the Draft Plan, including each of the transportation elements: 1) Public Transit, 2) Bicycle and Pedestrian, 3) Transportation Systems Management (TSM), 4) Travel Demand Management (TDM), 5) Arterial Streets & Highways, and 6) Freight Transportation. The booklet also included information on funding for the Draft Plan, including a funding gap for the Public Transit element, and identified benefits of implementing the Draft Plan and addressing the transit funding gap.
- Each venue was set up with interactive stations, including display boards, comment cards, and staff available to answer questions. The stations and comment cards were color-coded to match the sections of the Draft Plan booklet. There were six stations in total: 1) VISION 2050 Overview, 2) Land Use, 3) Public Transit, 4) Bicycle and Pedestrian, 5) Arterial Streets and Highways (including TSM, TDM, and Freight), and 6) Funding and Benefits of the Draft Plan.

WORKSHOP #5 PARTNER RESULTS

Throughout the VISION 2050 process, feedback from participants at all partner workshops was incorporated with the input provided by the participants at public workshops, as well as the feedback provided by the public through the VISION 2050 website, SEWRPC surveys, U.S. mail, and email. Combined results from the fifth set of partner and public workshops can be found at http://vision2050sewis.com/Vision2050/The-Process/Draft-Plan.

All public comment on the Draft Plan presented in spring 2016 was considered as the Commission staff prepared a final recommended plan for VISION 2050. Public comment and the final recommended plan was considered by the Advisory Committees guiding VISION 2050 in mid-2016.

WORKSHOP #5 PARTNER REPORTS

Leaders and participants from the partner organizations consistently reported positive experiences regarding the VISION 2050 Workshop #5 content, process, planning, communication, and responsiveness of Commission staff.

Excerpts from the Workshop #5 reports submitted by VISION 2050 community partners follow:

Common Ground

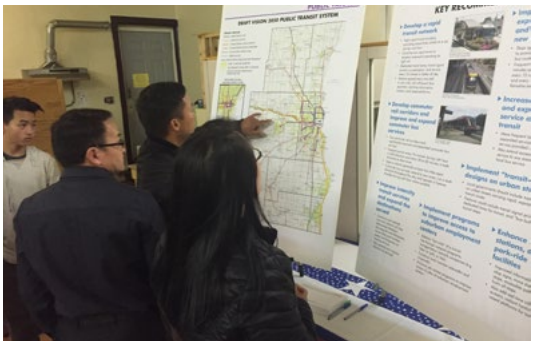
"Twenty people attended this session. This included 6 people from UUCW, 5 CG staff members, 5 from other CG organizations and 4 from organizations other than CG. At least 6 attendees hadn't attended any of the preceding workshops. The previous CG workshop turned out 18 people. A few previous attendees indicated they planned to attend one of the county wide sessions… This turnout could be considered a success."

Ethnically Diverse Business Coalition

"The attendees were engaged, attentive and welcomed the opportunity to assist in the planning for the region."

"Based on the attendees demographics, which were business owners, chambers of commerce and residents, their participation provided SEWRPC with opinions of an individual that wears different hats (resident, employer, vendor, parent, community leader, taxpayer)."

"Our group looks forward to working with the SEWRPC staff again in the future when invited to do so. Thank you again for allowing the EDBC to be a part of planning for the year 2050."



Hmong American Friendship Association

"The model used in this final workshop was very effective and friendly. There were 6 stations set-up. The stations allowed the attendants to walk around and look at the final results. They enjoyed talking with the SEWRPC staff."

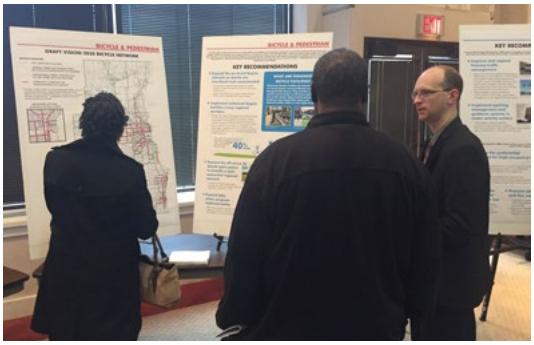
"Working with the SEWRPC team has been a great experience. They are very organized and always willing to help our people understand the process and finding creative ways to get everyone to participate, whether it is a push of a button or intense discussion in groups. They help shape this "incredibl[y] hard process" into a fun educational learning process for everyone."

Independence*First*

"Given that much of the information was covered as part of the alternatives in the previous round of VISION 2050 workshop on December 3, the open house format worked very well. This way, past participants did not have to sit through the same information again."

"The presentation at the start was a good idea in providing summary and background information for both past participants and first-timers. After the presentation, people were free to browse at their leisure and ask follow up questions. I saw quite a few SEWRPC staff in deep discussion with some participants."

"IndependenceFirst has enjoyed our collaboration with SEWRPC for the duration of the VISION 2050 workshops. Please keep us in mind for future opportunities for collaboration."



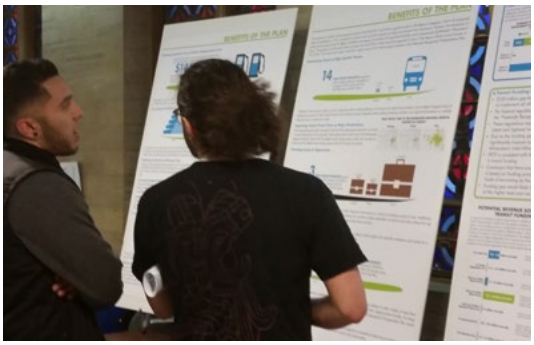
Milwaukee Urban League

"Everyone really liked the Open House format…Everyone was in favor of the "land use" recommendations… Everyone was in favor of the "multiple transportation" options. Especially the options that would help central city residents get to jobs in outlying areas… Most were ok with the recommendations regarding "bicycle and pedestrian". It should be noted that our participants are not big bicycle users…While everyone was in favor of most elements of the draft plan, everyone felt funding the plan would be a big challenge. When looking at the potential revenue sources, people had mixed feelings about what were the best options."

"I would like to thank all of the people at SEWRPC; especially Steve Adams and Nikki Payne, for giving MUL the opportunity to participate in this important multi-year planning process. As I said before, all too often our community is not included when planning efforts like this occur."

Southside Organizing Committee

"SOC recruited 20 neighborhood participants from the following neighborhoods and neighborhood stakeholders: Kinnickinnic River Neighbors in Action, Layton Boulevard West, Muskego Way, Forest Hills and South 5th Place Neighbor's Group, South of the Tracks, Bradley Tech High School, and Public Allies."



"Many of the conversations were those of public transportation and its effectiveness. One conversation that was discussed among the groups was concerning the usage of bike sharing stations. The concern was that they would deter the use of public transportation and there are better use of resources. Other participants were concerned about bike paths and how they would be improved to complement their recreational activities. Participants were also concerned about the cost, effectiveness and accessibility of the streetcar, if implemented."

"There was positive feedback with the open house style of the workshop because it accommodated our participants work and personal schedules."

Urban Economic Development Association of Wisconsin

"Initially, a group of participants gathered around the "Land Use" station and discussed how the outreach for VISION 2050 public input sessions has been very impressive and inclusive."

"Though 24 individuals registered for the workshop, a total of ten attended. Of the individuals that did attend, the majority spent at least 30 to 45 minutes walking around, visiting stations and talking with SEWRPC staff. While participation was low, this seemed to be a great way for the public to examine the draft plan and provide candid input."

"Lastly, the majority of open house attendees indicated that they went to most, if not all, previous VISION 2050 public input sessions - some with UEDA, some through other entities."

Urban League of Racine and Kenosha

"The 30 attendees at our April 20, 2016 Open House included three board members, 6 interns/trainees from Urban League programs and community residents from Kenosha and Racine. The demographics of the 30 participants (not including the SEWRPC staff): 6 African Americans, 7 Hispanics, 14 European-Americans, and 3 unknown (13 males; 17 females). Of the 30 participants, we know that 12 were low-income, 9 were moderate income or above, and the income of the other 9 is unknown."

"As has occurred in the past, the positive comments and feedback from attendees at the conclusion of the open house reflected the great job done by the SEWRPC team of experts."

Copies of the partner Workshop #5 reports follow:

SEWRPC Vision 2050 Open House
Hosted By Common Ground
At Capitol Drive Lutheran Church
5305 Capitol Drive
Observations
Monday, May 2, 2016

Twenty people attended this session. This included 6 people from UUCW, 5 CG staff members, 5 from other CG organizations and 4 from organizations other than CG. At least 6 attendees hadn't attended any of the preceding workshops. The previous CG workshop turned out 18 people. A few previous attendees indicated they planned to attend one of the county wide sessions.
This turnout could be considered a success.
Submitted by D. Briley – 5/12/16

Ethnically Diverse Business Coalition

Vision 2050 Planning Session
April 21, 2016

The event was attended by approximately 21 small business owners, chamber of commerce and business association executives. The attendees participated in activities to gauge their opinions about the drafted alternatives to-date for a 2050 blueprint of transit as well as the cost. The alternatives presented were created based on the feedback that was gleaned from the community at the past four SEWPRC planning sessions that took place in 2013, 2014 and 2015.

The SEWRPC team engaged the attendees in small groups of no more than 6 to obtain their feedback of the alternatives. The themes for the presentation of the final alternatives and cost was the interactive Open House. The small groups discussed what the plans looked like to enhance transportation in the southeastern Wisconsin region around traffic patterns and amenities, housing density and cost. At the end, all attendees voted on the options they liked the best.

The attendees were engaged, attentive and welcomed the opportunity to assist in the planning for the region. They were impressed with the clarity of the alternatives as they were presented which made it easy to quantify the information presented and vote at the end. Great questions were asked by the attendees, and many are looking forward to seeing what SEWPRC will now work to implement moving forward. Based on the attendees demographics, which were business owners, chambers of commerce and residents, their participation provided SEWRPC with opinions of an individual that wears different hats (resident, employer, vendor, parent, community leader, taxpayer).

Our group looks forward to working with the SEWRPC staff again in the future when invited to do so. Thank you again for allowing the EDBC to be a part of planning for the year 2050.

c/o The Business Council, Inc. 756 North Milwaukee Street Milwaukee, WI 53202

Hmong American Friendship Association, Inc.
SEWRPC
Workshop
April 28, 2016 Report

A total of 54 individuals attended the SEWRPC final workshop on April 28, 2016. Many of those who attended are Hmong community clan leaders. They have attended a number of SEWRPC workshops in the past.

The model used in this final workshop was very effective and friendly. There were 6 stations set-up. The stations allowed the attendants to walk around and look at the final results. They enjoyed talking with the SEWRPC staff.

Working with the SEWRPC team has been a great experience. They are very organize and always willing to help our people understand the process and finding creative ways to get everyone to participate, whether it is a push of a bottom or intense discussion in groups. They help shape this "incredible hard process" into a fun educational learning process for everyone.

IndependenceFirst
The Resource For People With Disabilities

December 17, 2015

SEWRPC
c/o Ben McKay
W239 N1812 Rockwood Drive
POB 1607
Waukesha, WI 53187-1607

Dear Mr. McKay;

Independence*First* was pleased to collaborate with SEWRPC to host the fifth and final VISION 2050 workshop on April 25th. There were 21 people in the audience.

Given that much of the information were covered as part of the alternatives in the previous round of VISION 2050 workshop on December 3, the open house format worked very well. This way, past participants did not have to sit through the same information again.

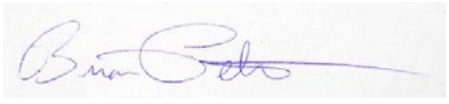
The presentation at the start was a good idea in providing summary and background information for both past participants and first-timers. After the presentation, people were free to browse at their leisure and ask follow up questions. I saw quite a few SEWRPC staff in deep discussion with some participants.

Personally, I was a bit surprised there was a separate comment card for each station, but it seems to have been effective.

Independence*First* has enjoyed our collaboration with SEWRPC for the duration of the VISION 2050 workshops. Please keep us in mind for future opportunities for collaboration.

Enclosed is the invoice for the workshop, including interpreter costs. Please contact me if you have any questions.

Sincerely,



Brian Peters
Community Access & Policy Specialist

Mr. Eric Lynde
Vision 2050 Project Manager
SEWRPC P.O. Box 1607
W239 N1812 Rockwood Drive
Waukesha, WI 53187-1607

April 29, 2016

Re: Final Session - Vision 2050 Workshop Report & Invoice

Dear Mr. Lynde:

On April 27, 2016, the Milwaukee Urban League (MUL) held its final Vision 2050 workshop. I am disappointed that our attendance was down from previous workshops: 18 people attended on the 27th but I am pleased that most of the 18 had participated in Vision 2050 workshops previously.

Below is some brief feedback based on my "exit poll" of those in attendance:

- Everyone really liked the Open House format.
- Everyone was in favor of the "land use" recommendations.
- Everyone was in favor of the "multiple transportation" options. Especially the options that would help central city residents get to jobs in outlying areas.
- Most were ok with the recommendations regarding "bicycle and pedestrian". It should be noted that our participants are not big bicycle users.
- While everyone was in favor of most elements of the draft plan, everyone felt funding the plan would be a big challenge. When looking at the potential revenue sources, people had mixed feelings about what were the best options.

In summary, I would like to thank all of the people at SEWRPC; especially Steve Adams and Nikki Payne, for giving MUL the opportunity to participate in this important multi-year planning process. As I said before, all to often our community is not included when planning efforts like this occur.

If there are questions or a need for more information, feel free to contact me.

Please see the following attachments:

- Copy of Attendance Sheets
- April 27, 2016 Invoice

Sincerely,

Ralph E. Hollmon
President & CEO

Cc: Steve Adams

GO BLUE: Grassroots Organizing Building Leadership, Unity & Engagement

Summary Report: Near South Side Vision 2050 Session IV
May 4, 2016

The Southside Organizing Committee (SOC) held its 5th VISION 2050 workshop on April 19, 2016. It was held at Ascension Lutheran Chapel located at 1300 South Layton Boulevard.

SOC recruited 20 neighborhood participants from the following neighborhoods and neighborhood stakeholders: Kinnickinnic River Neighbors in Action, Layton Boulevard West, Muskego Way, Forest Hills and South 5th Place Neighbor's Group, South of the Tracks, Bradley Tech High School, and Public Allies. Most of the outreach was face-to-face through resident meetings using the postcard invitations that were provided to us by SEWRPC. Inviting residents through the neighborhood associations and neighborhood stakeholders ensured representation from across the district. In addition to have wide representation of associations, SOC ensured a wide representation of age groups.

Many of the conversations were those of public transportation and its effectiveness. One conversation that was discussed among the groups was concerning the usage of bike sharing stations. The concern was that they would deter the use of public transportation and there are better use of resources. Other participants were concerned about bike paths and how they would be improved to complement their recreational activities. Participants were also concerned about the cost, effectiveness and accessibility of the street car, if implemented.

There was positive feedback with the open house style of the workshop because it accommodated our participants work and personal schedules.

Thank you for the 5th and final session.

Sincerely,

Clarissa Morales
Community Organizer

Southside Organizing Committee – SOC
1300 South Layton Boulevard, 2nd Fl., Milwaukee, WI 53215
(414) 672-8090 SOC@SOCmilwaukee.org www.SOCmilwaukee.org

UEDA Vision 2050 Open House: Public Meeting Draft Plan

Southeastern Wisconsin Regional Planning Commission (SEWRPC) Vision 2050

Workshop Date: May, 3 2016
Location: YWCA Southeast Wisconsin (1915 N. Martin Luther King Drive, Milwaukee)
Time: 3:00pm- 5:00pm

Summary

The interactive public meeting began with Steve Adams providing a brief opening presentation on the Vision 2050 Draft Plan for groups of two to three attendees at a time. The presentation covered what information, data and feedback was used to compile the draft plan. Following the presentation, participants explored six stations that focused on different aspect of the plan. SEWRPC staff members were posted at each of the six stations to answer questions and provide clarity.

Initially, a group of participants gathered around the "Land Use" station and discussed how the outreach for Vision 2050 public input sessions has been very impressive and inclusive. During the open house, individuals trickled into the room slowly and moved around to stations conversing with UEDA and SEWRPC staff, all of whom encouraged them to fill out feedback and comment cards before leaving.

Though 24 individuals registered for the workshop, a total of ten attended. Of the individuals that did attend, the majority spent at least 30 to 45 minutes walking around, visiting stations and talking with SEWRPC staff. While participation was low, this seemed to be a great way for the public to examine the draft plan and provide candid input. Interestingly, one participant who has attended most of UEDA's Vision 2050 workshops was there for this open house and continued to provide feedback on the Bicycle& Pedestrian Plan.

Lastly, the majority of open house attendees indicated that they went to most, if not all, previous Vision 2050 public input sessions - some with UEDA, some through other entities.

Additional comments that participants left on feedback cards:

- **Land Use- "**The focus on urban development and redevelopment is essential for the region's economic vitality. With population remaining stable, it's important to measure density so there is enough people to pay for replacement infrastructure."

  "Glad to see a focus on TOD, and walkable community."

- **Public Transit-** "Excellent overall. I appreciate the focus on transit. I really appreciate recommendation 2.10 for an integrated user interface between transit types"

  "Include bike share in this."

- **Funding the Plan- "**The UMT fee should be considered but at a lower rate (e.g. $.005) UMT. Also you might mention that state funds on highway expansion to exurbs would be better spent on maintaining existing infrastructure and transit."

SEWRPC VISION 2050 – Urban League of Racine and Kenosha, Inc. **April 20, 2016**

Urban League Outreach Efforts – SEWRPC VISION 2050 PROCESS

Workshop #5 was hosted by Yolanda Adams, the Chief Executive Officer of the Urban League on Wednesday, April 20, 2016 from 5:00 p.m. to 7:00 p.m. at Gateway Technical College, Racine Lakeside campus, 901 Pershing Drive in Racine, WI. There were 30 participants who signed in and participated in the open house style format.

Facilitate meetings at underrepresented populations: Mr. Ben McKay (Principal Planner), Nikki Payne (Public Involvement & Outreach Specialist), Eric Lynde (Transportation Planner/Engineer) and several other SEWRPC staff facilitated the Open House where attendees learned about the Draft Plan and visited interactive stations to provide feedback to SEWRPC. Yolanda Adams, CEO of the Urban League, was present to assist and keep visitors moving from station to station. The Urban League provided two volunteers to greet visitors, ensure they signed and received copies of the SEWRPC Vision 2050 Newsletter. Refreshments and snacks were provided by the Urban League. The Open House concluded at approximately 7:15 p.m.

Attend Commission-facilitated meetings/workshops: At 2:30 pm on Tuesday, April 12, 2016, Ms. Adams met with Ben McKay and Nakeisha Payne at the Urban League's Racine office to to plan the April 20th Open House event in Racine. Ms. Adams sent Urban League representatives to the April 25th and April 26th sessions at Gateway Technical College in Racine and Kenosha. Both the Urban League's Kenosha and Racine offices distributed the VISION 2050 postcards listing the April and May schedule of workshops to Kenosha and Racine churches, nonprofit organizations and elected officials in an effort to get the word out and increase the level of community participation.

Promote attendance and participation at targeted meetings: Our responsibility was to ensure a minimum of 20 of our constituents attended our 5th targeted meeting/workshop. To accomplish this, Ben McKay of SEWRPC created a postcard in both English and Spanish for the April 20, 2016 event. The postcard was sent via U.S. Mail and/or personally delivered to all of the Urban League's contacts, including our current members. In addition, Urban League staff made telephone calls and reminder calls to Racine and Kenosha's minority-owned businesses, the Black churches, the Hispanic churches and community organizations. We also informed our contacts they could visit the website (www.vision2050sewis.org) to view results of the previous workshops, as well as sign up to receive the Vision 2050 Newsletter.

The 30 attendees at our April 20, 2016 Open House included three board members, 6 interns/trainees from Urban League programs and community residents from Kenosha and Racine. The demographics of the 30 participants (not including the SEWRPC staff): 6 African Americans, 7 Hispanics, 14 European-Americans, and 3 unknown (13 males; 17 females). Of the 30 participants, we know that 12 were low-income, 9 were moderate income or above, and the income of the other 9 is unknown.

SEWRPC VISION 2050 – Urban League of Racine and Kenosha, Inc**.** **April 20, 2016**

Ensure meaningful results: Yolanda Adams, agency CEO, assisted in engaging the meeting participants so they would provide ideas and suggestions in a way that would be effectively combined with the results of the four previous general public meetings conducted by SEWRPC staff.

As this was our 5th and final workshop, Ben McKay, Nikki Payne and the other SEWRPC staff provided technical assistance and materials that included easels with maps, a video presentation and copies of the VISION 2050 April and May schedule of sessions. As has occurred in the past, the positive comments and feedback from attendees at the conclusion of the open house reflected the great job done by the SEWRPC team of experts.

Provide results of meetings to Commission staff: This document serves as our written report conveying the process and results of the 5th targeted meeting/workshop.

Budget: The Outreach Grant is $5,000; $1,000 per successfully completed targeted meeting. Attached is our invoice number #201620 dated 04/20/16 for $1,000.00 for the April 20, 2016 Open House/workshop held in Racine. It is our understanding the grant funds have been expended upon receipt of the reimbursement check. Please make the check payable to the Urban League of Racine and Kenosha Inc. and mailed to 718 N Memorial Drive, Racine WI 53404.

SUMMARY OF FEEDBACK

The following is a summary of all public feedback received on the Preliminary Recommended Plan ("Draft Plan") for VISION 2050, which was presented to the public for review during the spring of 2016. Feedback was received at public workshops (one held in each county), workshops held by eight community organizations, a workshop held by request, and via an interactive website.

The feedback was considered as Commission staff prepared a final recommended land use and transportation plan.

SUMMARY OF COMMENTS RECEIVED

The comments in this section were received via individual comment forms completed at a workshop, orally to Commission staff members or a court reporter during a workshop, via email or mail, or through the interactive website. Only 10 individuals provided feedback through the website for the Draft Plan, but there were 163 unique visitors to the Draft Plan site during the comment period (ended May 6, 2016). This is considerably less than the 514 unique visitors to the scenarios site during the comment period for the scenarios (ended October 31, 2014) and the 551 unique visitors to the alternatives site during the comment period for the alternatives (ended December 18, 2015). The primary reason for the lower number of visitors is likely that the period during which the website was available for commenting was shorter than the period for the scenarios and alternatives. The website, however, remained available for informational purposes and many more residents visited the site in the weeks following the end of the comment period.

Land Use

The Land Use comment card at each workshop included questions intended to guide feedback on the land use component of the Draft Plan, which were also asked on the Draft Plan website. The comment card first indicated that the Draft Plan proposes a compact development pattern intended to preserve natural and agricultural resources and support active lifestyles, high-quality public transit, and a variety of housing options. It then posed two questions:

- Do you think the proposed development pattern will promote the long-term economic and environmental health of the Region?
- Do you have any other comments on the Draft Plan's proposed land use component?

A summary of the responses to these two questions and other comments on the land use component is presented below, along with Commission staff responses to comments, as appropriate.

Comments in Support

General

- Several commenters thought the proposed development pattern will promote the long-term economic and environmental health of the Region. (7)
- A commenter supported quality of life amenities to compete for workers with other Regions.

Environmental

- Several commenters supported preserving farmland. (7)
- Several commenters supported protecting primary environmental corridors. (6)
- A commenter stated that the plan will conserve energy and natural resources.
- A commenter stated that preserving land in its natural state will have numerous environmental and quality of life benefits.
- A commenter stated that the Region's natural resources attract tourists and residents.

Water Resources

- A commenter supported minimizing low-density development to minimize roadways/impervious surfaces.
- A commenter supported protecting groundwater.

Affordable Housing

- Several commenters supported a variety of housing options throughout the Region. (5)

Redevelopment

- A few commenters supported redevelopment/infill to preserve agricultural and natural resources. (2)
- A commenter supported redeveloping existing neighborhoods while preserving historical character.
- A commenter supported redevelopment/infill in areas with existing public infrastructure (sewer and water) instead of development in areas without existing public infrastructure.
- A commenter supported the reuse of vacant residential and industrial properties.
- A commenter supported redevelopment/infill because it is efficient.
- A commenter stated that urban development and redevelopment is essential for the Region's economic vitality, because density is important to support enough population to fund replacement infrastructure.
- A commenter noted that strip malls and large shopping malls may become mixed-use and large houses may become multifamily buildings with more accessory housing units in the future.

Compact Development

- Several commenters supported walkable neighborhoods. (6)
- Several commenters supported compact development because it supports public transit. (5)
- Several commenters supported limiting urban sprawl. (4)
- Several commenters supported transit-oriented development (TOD). (4)
- A few commenters believed mixed-use development with access to public transit will attract people to the Region. (2)
- A commenter suggested that TOD can promote transportation without widening arterials.
- A commenter supported the economic benefits of compact development, including greater access to jobs.
- A commenter stated that the compact development pattern will result in pedestrian friendly communities that will help the Baby Boom generation remain active and independent as they age.
- A commenter supported compact development because it can be efficiently served with public infrastructure.

Comments in Opposition

General

- A few commenters expressed concern about government policy influencing the preservation of farmland, which would result in circumventing the free market demand/supply economy and individual property rights. (2)

  Response: The land use component of the Draft Plan proposes preserving the farmlands that are recommended for preservation in adopted county farmland preservation plans. In this manner, VISION 2050 is consistent with county plans. The Draft Plan further proposes that, between now and 2050, local governments consider preserving, if possible, additional agricultural lands that have the highest quality soils (Class I and Class 2 soils as rated by the U.S. Natural Resources Conservation Service). Given the amount of growth expected to occur within the Region by the year 2050, substantial portions of the Region may be expected to remain undeveloped. This proposal encourages local governments in the Region to consider avoiding development on the most productive farmlands that remain in the Region.
- A few commenters stated that the population growth assumed by the Draft Plan appears to be much greater than current projections that show very limited growth. (2)
- A commenter stated that Draft Plan includes too much population and household growth in Walworth County.

  Response: Planned population levels included in the Draft Plan are based on detailed projections developed by the Commission. Those projections include a range of future population levels – high, intermediate, and low. The 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.[58] 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-, intermediate-, and low-growth scenarios. The projections differ primarily in terms of assumed future migration. The Advisory Committees on Regional Land Use Planning and Regional Transportation Planning determined that the intermediate projection is considered the most likely to be achieved and serves as the basis of the "forecast" for VISION 2050.

Water Resources

- A commenter stated that there should be no more growth in Waukesha or other areas where demand for water may be bad for the environment. The commenter stated that shallow wells are damaging and growth that results in converting to use of Lake Michigan water is irresponsible.

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

  The year 2035 regional land use plan served as the basis for the regional water supply plan. It was indicated at the beginning of the water supply planning effort that the land use plan would be amended if water resource constraints were identified due to the development pattern recommended under the land use plan. The water supply planning effort found that water supply would not be a limiting factor within the Region with respect to the recommended development pattern either east or west of the subcontinental divide. The water supply plan also found that implementation of the recommended development pattern would have benefits, such as preserving areas with high groundwater recharge potential. This is due to the focus of the year 2035 land use plan on infill, redevelopment, and compact development within planned urban service areas, which has been carried forward in VISION 2050. It should be noted that the forecast population under the year 2035 plan of 2,276,000 residents is about 95 percent of the forecast population under VISION 2050 (2,389,200 residents) and the forecast employment under the year 2035 plan of 1,368,300 jobs is about 97 percent of the forecast employment under VISION 2050 (1,405,700 jobs). Therefore, the regional water supply plan conclusion that water supply would not be a limiting factor within the Region with respect to the development pattern recommended under the year 2035 regional land use plan also applies to VISION 2050.

[58] *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.*

Comments Requiring a Clarifying Response

General

- A few commenters supported investing in the Region's workforce through affordable education and training. (3)

  Response: While recognizing the importance of workforce education and training, the Commission is charged by law with "the function and duty of making and adopting a master plan for the physical development of the Region." The permissible scope and content of this plan, as outlined in the enabling legislation, extend to all phases of regional development, implicitly emphasizing, however, the preparation of spatial designs for the use of land and for supporting transportation and utility facilities.

- A commenter noted that the Mixed-Use City Center area shown in Shorewood may be incorrect.

  Response: The Mixed-Use City Center land use category is delineated based primarily on residential density. The area shown as Mixed-Use City Center in the Village of Shorewood encompasses a mix of land uses, including commercial, government and institutional, recreational, and residential. A significant portion of the residential land is developed with high-density, multifamily buildings. This brings the overall density of the area delineated as Mixed-Use City Center over 17.9 dwelling units per net acre. Surrounding areas in the Village of Shorewood also have a mix of uses, including commercial and residential; however, the overall residential density is below 17.9 dwelling units per net acre.

- A commenter suggested incorporating Mixed-Use City Center in the downtowns of rural cities and villages because millennials and Baby Boomers may demand rental properties with a mix of uses.

  Response: VISION 2050 recognizes the importance of walkable neighborhoods in cities and villages throughout the Region. The Draft Plan proposes focusing residential development within urban service areas across the Region under the Small Lot Traditional Neighborhood, Mixed-Use Traditional Neighborhood, and Mixed-Use City Center land use categories, each of which would support the development and redevelopment of walkable neighborhoods by allowing a variety of housing types in proximity to a mix of uses, such as parks, schools, and businesses.

- A commenter expressed concern about food deserts in urban areas.

  Response: Recommendation 1.15 proposes developing a regional food system, which focuses on providing access to healthy foods in areas of the Region identified as food deserts by the U.S. Department of Agriculture.

- A commenter suggested undertaking a Title VI/environmental justice/ equity analysis of land use and related housing and job issues, noting that affordable/multifamily housing options throughout the Region would likely benefit communities of color, while the Trend would not.

  Response: An equity analysis of the VISION 2050 land use component can be found in Appendix L to this report. That analysis was reviewed by the Commission's Advisory Committees on Regional Land Use Planning and Regional Transportation Planning and Environmental Justice Task Force.

- A commenter stated that more public information on the plan is needed.

  Response: The process for VISION 2050 occurred between September 2013 and mid-2016 with five rounds of public input, including initial visioning (two rounds), conceptual scenarios, alternative plans, and the Draft Plan. Each round included opportunities to provide input through a series of workshops held throughout the Region as well as the VISION 2050 website (dedicated websites were also developed for the scenarios, alternative plans, and the Draft Plan). Each series of workshops included one public workshop in each of the seven counties in the Region and eight workshops hosted by the VISION 2050 partner community organizations for their constituents. Summary materials were developed throughout the VISION 2050 process, including the *Guiding the Vision* booklet (which presented an initial vision for land use and transportation system development to guide the planning process), materials regarding the scenarios and their evaluation, a booklet on the alternative plans and their evaluation, and a booklet on the Draft Plan and its evaluation.

Environmental

- Several commenters suggested including recommendations for the expansion and connection of environmental corridors, as well as the creation of new areas of natural vegetation in urban and rural areas to enhance wildlife movement and add valuable green space in developing areas. (8)
- A commenter stated that urban farming collectively owned by working class communities is freedom.

  Response: Design guidelines in Appendix K include recommendations for use of native vegetation/natural landscaping in urban and rural developments and redevelopment areas. The design guidelines also include recommendations for urban farming, in addition to those presented under Recommendation 1.15 of the plan.
- A commenter suggested including a discussion of landfill space in a section of the plan on environmental quality that would include some of the environmental considerations under land use.

  Response: Closed landfill sites can and have been reserved for other uses in the Region. Environmentally responsible reuse of these sites involves remediation of and extensive monitoring of environmental concerns by the Wisconsin Department of Natural Resources. The regional plan recognizes the potential conversion of extractive and landfill areas to other uses.
- A commenter suggested an overall analysis of carbon emissions, including analyses of trash, food, landfill space, and electricity demand.

  Response: The potential impacts of land use and transportation recommendations on energy use and greenhouse gas emissions and other air pollutants were evaluated for the Draft Plan. This included evaluating the development pattern of the Region, which has an impact on energy use and emissions through building type and the distance people travel from their homes to important destinations, and the mode and technology used for transportation. Discussions of energy use and emissions can be found under Criteria 1.4.3 and 1.4.4 in Appendices F (alternative plans) and H (Draft Plan).

- A commenter expressed concern about individual homeowners maintaining open space in cluster subdivisions.

  Response: Most developments that include common open space involve detailed landowner covenants that provide for long-term maintenance of the open space land.

Water Resources

- A commenter expressed concern about the impact of development on the recharge of shallow wells for individual residences.
- A commenter expressed concern about converting large areas of farmland to urban development. The commenter stated that even office parks having green space in the Cities of Brookfield and Oconomowoc could eventually jeopardize the recharge of wells, including those tapping the deep aquifer.
- A commenter expressed concern about the impacts of industrial agriculture on aquifers, wells, and surface waters.

  Response: See the previous response under Comments in Opposition to the Plan regarding the findings of the regional water supply plan.

Affordable Housing

- A few commenters expressed concern about gentrification. (3)

  Response: A number of mixed-income housing strategies for TOD are discussed in the Draft Plan in response to concerns regarding gentrification (see Table 4.5 in Chapter 4 of Volume II). Additional discussion regarding mixed-income TOD strategies is included in the VISION 2050 design guidelines in Appendix K. In addition, there are extensive affordable housing analyses, findings, and recommendations for the Region presented in the regional housing plan.

- A commenter expressed concern about the concentration of affordable and subsidized housing in urban areas and suggested that all communities in the Region should have a fair share of affordable housing. The commenter stated that affordable housing is buried deep in the details of the plan.

  Response: VISION 2050 recognizes the need for affordable housing throughout the Region. The Draft Plan proposes focusing residential development within urban service areas across the Region under the Small Lot Traditional Neighborhood, Mixed-Use Traditional Neighborhood, and Mixed-Use City Center land use categories, each of which would support the development of multifamily housing and single-family homes on smaller lots (one-quarter acre or less). In addition, the mixed-income housing strategies for TOD set forth in Table 4.5 discuss strategies for Low-Income Housing Tax Credit development in TOD. There are also extensive subsidized and tax credit housing analyses, findings, and recommendations for the Region presented in the regional housing plan.

Redevelopment

- A commenter expressed concern about maintaining existing housing stock in urban areas.

  Response: Infill development and neighborhood revitalization (particularly through TOD) is a focus of VISION 2050. In addition, there are a number of best housing practices focused on the maintenance of existing housing stock and revitalization of foreclosed and substandard

residential properties administered by government agencies in the Region. Many of these programs are documented in the regional housing plan.

- A commenter expressed concern about large detached Rural Estate housing being converted to multifamily housing in the future.

  Response: Rural Estate housing is located outside of urban service areas. These areas do not have public sanitary sewer service and cannot support higher-density housing, such as multifamily housing.

Compact Development

- A commenter expressed concern that high-density development may result in increased crime.

  Response: Commission staff cannot conclude that high-density development directly correlates to an increase in crime. The Draft Plan does propose infill development and redevelopment in areas of the Region that have concentrations of vacant properties and families experiencing poverty. The proposed development in these areas would include a mix of uses, including employment-supporting uses. This, coupled with improved and expanded public transit service, would significantly increase access to job opportunities and promote strong neighborhoods.

- A commenter expressed concern that high-density development may put stress on natural resources.

  Response: The Draft Plan does not propose any new urban development in areas with significant natural resource features, including primary environmental corridors, secondary environmental corridors, and isolated natural resource areas. In addition, the Draft Plan does not propose any new urban development on other wetlands, woodlands, natural areas, critical species habitat sites, or park and open space sites outside of environmental corridors.

Implementation

- A few commenters supported the Draft Plan, but expressed concern about support from elected officials. (2)
- A commenter suggested recommendations to communities to eliminate setback and parking requirements to encourage compact development and pedestrian activity.
- A commenter did not support funding for acquiring environmental corridors.
- A commenter expressed concern about changes in the authority counties have regarding shoreland ordinances that are more restrictive than the State shoreland zoning standards.
- A commenter suggested a recommendation regarding zero stormwater runoff regulations.

  Response: VISON 2050 is an advisory plan intended to provide a guide, or overall framework, for land use development in the Region. VISION 2050 is intended to be refined by local governments within the Region through the local comprehensive planning process.

- A commenter suggested VISION 2050 should identify strategies that would encourage developers to implement TOD.

Response: Strategies that would encourage developers to implement TOD are presented in Table 4.5 and are discussed in more detail in the design guidelines in Appendix K.

Public Transit

The Public Transit comment card at each workshop included questions to direct feedback on the public transit element of the Draft Plan, which were also asked on the Draft Plan website. The comment card first indicated that the Draft Plan proposes significantly improving and expanding public transit in the Region. It then posed two questions:

- How well does the Draft Plan meet your vision for public transit?
- Do you have any other comments on the Draft Plan's proposed public transit system?

A summary of the responses to these two questions and other comments on the public transit element is presented below, along with Commission staff responses to comments, as appropriate.

Comments in Support

- Numerous commenters expressed support for all of the recommendations included in the public transit element of the Draft Plan. (40)
- Numerous commenters particularly supported implementing the rapid transit network in the Milwaukee metro area. (14)
- Numerous commenters were particularly supportive of implementing commuter rail in the Region, with many of these stating that the Kenosha-Racine-Milwaukee Commuter Rail line should be implemented in the near future. (13)
- Numerous commenters indicated that expanding and enhancing intercity and commuter rail services that connect the Region to other areas should be a high priority. (13)
- Numerous commenters stated that they believed that expanded transit service was necessary for the Region to be economically competitive with its peers and attract new, especially younger, residents. (11)
- Several commenters supported expanding transit services that particularly focus on enabling residents to access more jobs. (7)
- A few commenters thought that transit services that allowed seniors and people with disabilities to age in place should be a high priority for implementation. (3)
- A few commenters supported providing transit services in the Region that travel across county and municipal borders seamlessly. (3)
- A few commenters supported the recommendation that rapid transit, commuter rail, and intercity rail vehicles allow for bicycles on-board. (3)
- A few commenters expressed support for improving public transit to partially address the Region's racial and economic inequities. (3)
- A commenter indicated that they believed that increasing access to jobs and other resources via transit would decrease the amount of funds the Region's governments dedicate to social services.
- A commenter indicated support for improving public transit to reduce the Region's greenhouse gas emissions.

- A commenter supported the Draft Plan's recommendation for better coordination of transit services with transportation network companies such as Uber or Lyft.
- A commenter supported the Draft Plan's recommendation to implement a universal fare card within the Region.
- A commenter supported the Draft Plan's recommendation for "transit-first" designs on urban streets.

Comments Suggesting Changes or Additions to the Draft Plan

- A few commenters thought that the Public Transit Element of the Draft Plan did not provide enough service to the rural parts of the Region. (3)

  Response: The Draft Plan includes shared-ride taxi service throughout the rural parts of the Region, connecting rural residents and businesses to the urban areas of the Region. Residents who wish to travel anywhere in Southeastern Wisconsin will be able to use the proposed shared-ride taxi service to travel between two rural areas or connect to the fixed-route transit service in the urban areas. Generally, local fixed-route bus services are not cost-effective in areas with less than four households per acre, and even higher densities are needed to justify relatively frequent service. Commuter bus services are provided in some rural areas of the Region, and are cost-effective in those areas because they rely on riders driving themselves or carpooling to a park-ride lot.

- A few commenters encouraged subway or metro rail service in the Milwaukee metro area be added to the final plan. (2)

  Response: Currently, subway and metro rail service is generally provided in metropolitan areas of the United States with higher population, congestion, and density than the Milwaukee area. Given the significant cost of $800 million to $2.8 billion per mile for subways currently under construction in the United States, and the ridership forecast for the rapid transit lines included in the Draft Plan (no line is expected to draw more than 32,000 riders per day by 2050), it would be difficult to justify the additional expense required to provide subway or metro rail service rather than light rail or bus rapid transit.

- A few commenters stated that the final plan should include streetcar expansions in Kenosha, particularly connecting downtown Kenosha to Carthage College and the former Chrysler plant in Uptown. (2)

  Response: At this time, the City of Kenosha has indicated that they are not interested in pursuing additional streetcar expansion. Should that change, VISION 2050 could be amended to include streetcar expansion within the City of Kenosha.

- A few commenters indicated that the final plan should include commuter rail service into Ozaukee County. (2)

  Response: Commuter rail service connecting downtown Milwaukee to communities in Ozaukee County was studied earlier in the development of VISION 2050, and it was determined that it would not attract a significant number of riders. However, Map 4.9 in Chapter 4 of Volume II shows corridors that could be considered for commuter rail in the future, including those that are not included in the Draft Plan. A corridor serving Ozaukee County is included on this map, and could be amended into VISION 2050 should concerned and affected local governments come forward to propose studying and implementing the service.

- A commenter indicated that the final plan should include light rail parallel to IH 94 in Kenosha and Racine Counties connecting communities to UW-Parkside.

  Response: Rapid transit, whether light rail or bus rapid transit, works best when it serves corridors of continuous, high-density development, which does not exist between Kenosha and Racine.

- A commenter believed that fares on existing paratransit and senior-oriented transit services in much of the Region were too expensive, and that the final plan should make recommendations ensuring that transit services are affordable for those on fixed incomes.

  Response: The Draft Plan proposes that transit operators not increase fares faster than the rate of inflation, but does not make specific recommendations about fare rates for different residents, such as people with disabilities, seniors, students, or low-income residents. Transit operators should consider different fares for different residents as they deem appropriate.

- A commenter believed that the final plan should support the elimination of transportation network companies such as Uber or Lyft.

  Response: Commission staff believe that transportation network companies have a role to play in the current and future transportation system in Southeastern Wisconsin, by providing relatively low-cost travel options for those who are unable or do not wish to drive.

- A commenter indicated that the final plan should include bus service between IH 43 and the City of Port Washington on STH 32 to provide service to the Ozaukee County Justice Center.

  Response: Given the relatively low density of development along STH 32 between IH 43 and the City of Port Washington, it would be difficult for a cost-effective fixed-route bus service to operate throughout the day. However, providing transit service to the Ozaukee County Justice Center could be efficiently accomplished through coordination between the Justice Center staff and the existing Shared-Ride Taxi service, so that a taxi is available to provide service to the Justice Center as needed.

- A commenter stated that the final plan should recommend Auto-train service within the Region and connecting to Chicago.

  Response: Auto-train service (where passengers can pay to drive their car onto a train and have it transported with them on their journey) has had limited success in the United States. The only surviving example of this type of service connects northeast Virginia with central Florida, which has national tourist destinations that require a car to access. Without the theme parks and associated destinations in and around Orlando, it is unlikely that this service would still exist. Therefore, it is difficult to justify such a service connecting Southeastern Wisconsin to other areas of the nation. Should Amtrak or another entity wish to pursue such a service, VISION 2050 could be amended as necessary.

- A commenter indicated that the final plan should include additional commuter rail stations in between Winthrop Harbor, IL and Kenosha on the existing Metra commuter rail line.

  Response: Although the distance between Winthrop Harbor and the existing Kenosha Metra station is relatively large (about 7.5 miles), the station locations included in the Draft Plan were selected based on the findings of the Kenosha-Racine-Milwaukee Commuter Rail Corridor Study. Should this commuter rail line once again progress

toward implementation, a revised corridor study will consider if any station locations should be modified, or if stations should be added or removed.

- A commenter believed the final plan should include additional improvements in transit service for the northwest side of Milwaukee County, beyond what is included in the Draft Plan.

  Response: Under the Draft Plan, the northwest side of Milwaukee County would receive significant transit improvement and expansion, including two rapid transit lines, an express bus route, and significantly expanded local bus service, providing access to all major employers in the area. Given the current and expected amount of development in that area, it would be difficult to justify additional transit service beyond what is included in the Draft Plan.

- A commenter stated that the final plan should focus more on flexible transit services that provide increased transit at the lowest possible cost.

  Response: More than 85 percent of service included in the Draft Plan would be provided via local, express, or commuter buses on routes that can be easily modified in response to changing development and travel patterns. The corridors identified for the investment in permanent infrastructure associated with commuter rail or rapid transit are long-standing transit corridors that have remained strong throughout the history of the Region's transit system, and generally serve well-established neighborhoods and major destinations. Investing in high-quality transit in these areas will also reinforce these neighborhoods and major destinations, increasing the cost-effectiveness of the transit service in those areas.

- A commenter stated that the final plan should include transportation to get people from the Villages of Slinger and Jackson to the City of Hartford, as Hartford has a larger number of jobs than working-age residents.

  Response: The Draft Plan includes a commuter bus route connecting the Richfield Park-Ride Lot to the Hartford industrial parks, with stops in the Village of Slinger and the City of Hartford. This route connects to a commuter bus route that provides service in both directions between West Bend and Milwaukee County, providing residents of Milwaukee County with access to jobs in the Hartford industrial parks. For the final plan, both routes were modified slightly, with the route to Hartford traveling on STH 60 to Jackson, rather than on IH 41 to the Richfield Park-Ride Lot, and the route between West Bend and Milwaukee was modified to meet the route to Hartford at the Jackson Park-Ride Lot.

Comments Requiring a Clarifying Response

- A few commenters were concerned that choosing bus rapid transit technology over light rail technology in the rapid transit corridors included in the Draft Plan would result in lower ridership in those corridors. (2)

  Response: Although there is not significant statistical evidence regarding the impact of rapid transit technology choices on ridership, it is generally accepted that light rail technology tends to provide a more comfortable ride for passengers due to the smoothness provided by steel wheel on steel rail operation. This increase in comfort may lead to more a more attractive service compared to bus rapid transit, and therefore more ridership. The Draft Plan does not make a

recommendation regarding rapid transit technology, and leaves the decision regarding the tradeoffs between the passenger comfort and cost of construction to the implementing unit of government.

- A commenter believed that the Draft Plan does not adequately take advantage of self-driving vehicle technology to provide more public transit service to more parts of the Region.

  Response: The Draft Plan does not make assumptions about the impacts of self-driving vehicle technology, partially because the technology has not advanced sufficiently to determine many of its impacts on the Region's land use and transportation system. Should the technology allow transit to be provided at significantly lower cost by removing a significant portion of the labor costs associated with providing transit, it may make sense to explore an expanded service area for fixed-route transit in the Region. However, a similar potential for vastly reduced costs associated with taxis may completely redefine the current understanding of transit service in some of the lower-density urban parts of the Region. More analysis of the impact of self-driving vehicles on the Region's future can be found under the discussion of Criterion 4.3.2 in Appendices F and H.

- A commenter believed that the Draft Plan does not adequately consider the possibility that self-driving vehicle technology will eliminate the need for public transit service in many areas of the Region.

  Response: The Draft Plan does not make assumptions about the impacts of self-driving vehicle technology, partially because the technology has not advanced sufficiently to determine many of its impacts on the Region's land use and transportation system. Should the technology allow many public transit services to be replaced with on-demand taxi services, some of the transit recommendations included in the Draft Plan would need to be reconsidered. More analysis of the impact of self-driving vehicles on the Region's future can be found under the discussion of Criterion 4.3.2 in Appendices F and H.

- A commenter believed that smaller buses should be incorporated into transit fleets to save money.

  Response: Previous analyses of this issue by the Commission staff have indicated that although smaller vehicles would save fuel, introducing them into a fleet that currently only has one type of vehicle could lead to increased costs associated with maintenance and the purchase of spare parts. In addition, a significant majority of the costs associated with operating a transit bus are related to the wages and benefits of the driver, which limits the ability of a smaller vehicle to positively impact operating costs. However, under the transit system proposed in the Draft Plan, there would be enough variety in route types and technologies that a transit fleet of multiple transit vehicles of different sizes would be appropriate.

- A commenter indicated concerns that implementing rapid transit would result in needing to widen roadways and/or remove a travel or parking lane.

  Response: In some cases, implementing rapid transit would result in either the removal of a travel or parking lane, or a widened roadway. In other cases, there is enough existing space in the median of a roadway that the rapid transit service could be constructed without increasing the roadway's width or removing existing parking or travel lanes.

Bicycle and Pedestrian

The Bicycle and Pedestrian comment card at each workshop included questions to direct feedback on the bicycle and pedestrian element of the Draft Plan, which were also asked on the Draft Plan website. The comment card first indicated that the Draft Plan proposes a well-connected bicycle network and accessible pedestrian facilities in the Region. It then posed two questions:

- How well does the Draft Plan meet your vision for biking and walking options?
- Do you have any other comments on the Draft Plan's proposed bicycle and pedestrian element?

A summary of the responses to these two questions and other comments on the bicycle and pedestrian element is presented below, along with Commission staff responses to comments, as appropriate.

Comments in Support

- Numerous commenters expressed general support for the Draft Plan's bicycle and pedestrian element, citing the following potential benefits: (25)
  - Improved public health and reduced healthcare costs. (5)
  - Reduced air pollution. (4)
  - Improved safety for bicyclists, pedestrians, and drivers. (4)
  - Provides more transportation options. (2)
  - Improved connectivity of the bicycle network. (2)
  - Makes bicycling more attractive and practical.
  - Saves residents money as bicycling and walking are less expensive than driving.
  - Makes the Region more attractive to young workers.
  - Reduced road maintenance costs as bicycles put minimal wear and tear on pavement.
  - Improved quality of life.
- Numerous commenters expressed specific support for expanding the off-street bicycle path network. (11)
- Several commenters expressed specific support for enhanced bicycle facilities. (8)
- A few commenters expressed specific support for more bike lockers. (3)
- A commenter expressed specific support for expanding bike sharing programs.
- A commenter expressed specific support for the proposed off-street bicycle path connecting the MRK Trail to the We Energies Trail in Racine County.
- A commenter expressed specific support for connecting Kenosha County bicycle facilities to Lake County and Chicago.
- A commenter noted that the more compact development pattern proposed in the Draft Plan would make bicycling and walking easier.
- A commenter noted that the proposed bicycle improvements would benefit both recreational users and commuters.
- A commenter noted that the public needs more education on bicycle facilities.

- A commenter noted that the increase in bicycle facilities has been the most visible transportation improvement in the Milwaukee area.
- A commenter noted that drivers in the City of Milwaukee need to change their behavior to make the City more pedestrian and bicycle friendly.
- A commenter expressed support for more accessible pedestrian facilities.
- A commenter expressed support for improving accommodations for pedestrians who take longer to cross wide roads, such as spacious medians where pedestrians can safely wait if they are unable to cross the entire road before the signal changes.
- A commenter expressed support for improving intersections to address pedestrian safety.

Comments in Opposition

- A commenter indicated that bicycle travel in Ozaukee County is predominantly recreational, and that bicycle facility planning should be addressed locally, rather than regionally.

  Response: The off-street bicycle paths proposed in the Draft Plan for Ozaukee County are identical to the off-street bicycle paths proposed in Ozaukee County's park and open space plan. Thus, this component of the regional plan is directly based upon local plans. With respect to bicycles, the Draft Plan also proposes that as arterial streets are reconstructed, consideration be given by the State and local government to providing bicycle accommodations, such as a partially paved shoulder, a slightly wider curb lane, a separate off-street path, or a marked bike lane. This is consistent with Federal law to provide such bicycle accommodations, if Federal funds are used to reconstruct an arterial street.

Comments Suggesting Changes or Additions to the Draft Plan

- A few commenters suggested encouraging Safe Routes to School programs to make it safer for children to bike and walk to school. (2)

  Response: For the final plan, Commission staff added a reference in Recommendation 3.6 to encouraging local governments and school districts to include Safe Routes to School programs in their local planning and programming efforts.

- A commenter suggested VISION 2050 should advocate for reinstating the State's Complete Streets law.

  Response: The Draft Plan proposes incorporating "complete streets" concepts for arterial streets and highways in Recommendation 6.2 under the arterial streets and highways element. Specifically, it proposes that complete street concepts be considered as part of the reconstruction of existing standard arterial roadways and the construction of new standard arterial roadways.

  The 2009 *State Statute* requiring WisDOT to provide bicycle and pedestrian accommodations in all new highway construction and reconstruction projects funded in whole or in part from State or Federal funds, if feasible, is still in place. However, it was modified in the 2015-2017 State budget to require that WisDOT give due consideration to establishing bicycle and pedestrian facilities in all new highway construction and reconstruction projects funded in whole or in part from State and Federal funds. *Administrative Code Trans*

75, which provided detail on the *Statute*, was repealed. The modified *Statute* further requires that after giving due consideration, if WisDOT determines bicycle and pedestrian facilities are required on a project funded in whole or in part by State funds, then WisDOT is authorized to include these facilities only if each municipality in which the project is located adopts a resolution authorizing WisDOT to establish the bicycle or pedestrian facility.

While the impact of these changes to State requirements is currently unknown, these changes will not affect Federally funded projects and the Commission staff anticipates that significant expansion of on-street accommodations will continue as proposed under the bicycle and pedestrian element of the Draft Plan.

Comments Requiring a Clarifying Response

- A few commenters expressed opposition to developing an off-street bicycle path along the Pike River between Birch Road and CTH E in the Village of Somers, recognizing that it was not included in the Draft Plan. (2)

  Response: This off-street bicycle path was not included in the Draft Plan nor was it included in the final plan.

- A commenter noted a need to make STH 32 between Racine and Kenosha more bicycle friendly.

  Response: The Draft Plan proposes bicycle accommodations on STH 32 between Racine and Kenosha. Given the speed and volume of traffic on the roadway, the bicycle accommodations could take the form of a separate path within the road's right-of-way. Final determination of the type and location of bicycle accommodations would be determined by WisDOT as part of designing and engineering the reconstruction of this segment of STH 32.

- A commenter suggested improving bicycle connections to Pike Lake State Park.

  Response: A separate path largely within the right-of-way of STH 60 already exists between the City of Hartford and Pike Lake State Park. For the final plan, Commission staff included a note that a bicycle facility along STH 60 between Pike Lake State Park and the Eisenbahn State Trail be considered an arterial connection to the off-street path system, and would desirably be provided as a separate path within the right-of-way of STH 60, to improve bicycle connections east of Pike Lake State Park.

- A commenter suggested making it easier to connect the Oak Leaf Trail from Veterans Park to Grant Park.

  Response: Due to the limited availability of linear stretches of land along the lake front between Veterans Park and Grant Park, it would be difficult to provide an off-street extension of the Oak Leaf Trail to connect these two segments of the Trail. However, Commission staff proposed a number of enhanced on-street bicycle facility corridors that provide this connection, and are intended to provide a similar level of comfort for bicyclists as experienced on off-street paths through physically separating bicyclists from moving vehicles with curbs, planters, and plastic bollards.

- A commenter suggested constructing a protected bike lane on Highland Avenue in Milwaukee.

Response: Although not shown as an enhanced bicycle facility in the Draft Plan, Highland Avenue likely has surplus automobile capacity between N. 12th Street and W. Vliet Street, and would make a good location for a protected bike lane that is shorter in length than those shown as enhanced bicycle facilities in the Draft Plan. The enhanced bicycle facilities shown in the Draft Plan are not intended to be an exhaustive list of streets where enhanced bicycle facilities could be implemented, and instead are intended to highlight corridors of Regional importance that cross neighborhood and municipal boundaries. The Draft Plan does propose that an on-street bicycle accommodation be provided on Highland Avenue, and that one of the possible types of accommodations to be considered is an enhanced bicycle facility.

- A commenter suggested adding a north-south enhanced bicycle facility corridor east of 6th Street in downtown Milwaukee.

  Response: The Draft Plan proposes that on-street bicycle accommodations be provided on nearly every north-south street east of 6th Street, and that one of the possible types of accommodations that should be considered is an enhanced bicycle facility. For the final plan, Commission staff added an enhanced bicycle facility corridor along Water Street and 1st Street from downtown Milwaukee south to National Avenue.

- A commenter noted a need to consider all ages of bicyclists when pursuing bicycle accommodations, citing that bicycle boulevards on nonarterial streets may be better for families and children than bike lanes or enhanced bicycle facilities on arterials.

  Response: A bicycle boulevard on a nearby local street is one option for providing an enhanced bicycle facility in the regional corridors identified in the Draft Plan. The implementing agency (such as WisDOT, a county, or a municipality) should determine the appropriate type of enhanced bicycle facility for each corridor identified in the Draft Plan.

- A commenter suggested encouraging bike co-ops instead of bike sharing because they are more affordable.

  Response: Bike co-ops and bike sharing serve slightly different intended purposes. Bike co-ops provide bikes at an affordable price so that those who would not otherwise be able to afford their own bike can afford one. Bike sharing allows people to temporarily use a bike for travel without needing to be responsible for purchasing, safely storing, and maintaining that bike. The Draft Plan includes a bike share recommendation because bike sharing is transportation infrastructure often located within public right-of-way and is partially funded through public dollars. In contrast, bike co-ops are typically entirely private entities, and often utilize private land and buildings for their locations.

- A commenter suggested the Draft Plan should include more information on the health benefits of encouraging active transportation.

  Response: The Draft Plan was evaluated in significant detail in Appendix H, which includes Criterion 1.2.3: Benefits and Impacts to Public Health. The active transportation elements (transit, bicycling, and walking) included in the Draft Plan would positively impact the health of the Region's residents, through increased physical activity, slightly improved water quality in rivers and streams, and slightly reduced air pollutant emissions. However, Commission staff were unable to find reliable research that would allow staff to measure the

quantitative impact on public health at a regional level, such as a reduction in obesity rates associated with increased physical activity. Therefore, the analysis within Criterion 1.2.3 is strictly qualitative.

- A commenter suggested that it may be safer for bicyclists to use sidewalks in the City of Milwaukee rather than use the street.

  Response: Generally, bicyclists over the age of 12 are not permitted to use sidewalks within the City of Milwaukee. This is for a number of reasons, including the safety of the pedestrians using sidewalks and the high differential between the speed of a person walking and a person on a bike. Bicycling on streets is exceptionally safe, with a very low crash rate relative to traveling by other modes, and allows all travel modes to best coexist within a corridor.

- A commenter suggested VISION 2050 should recommend encouraging accessible bikes for people with disabilities.

  Response: Commission staff do not disagree that bikes that are accessible to people with disabilities should be available. However, the Draft Plan does not propose any recommendations that specify a type of vehicle be available for any mode, including types of bicycles.

- A commenter suggested that houses should be allowed along the We Energies trails.

  Response: Specifying housing in a very narrow location, such as along the east side S. Chicago Road near the Oak Creek Power Plant, is beyond the scope of the VISION 2050 process, and could be discussed as part of each community's comprehensive planning process.

- A commenter noted a need for brighter street lights to make pedestrians easily visible to cars at night.

  Response: Implementing brighter street lights would be at the discretion of each responsible implementing agency, and is beyond the scope of VISION 2050.

- A commenter suggested that installing reflector pads along bicycle paths would help bicyclists and pedestrians navigate the paths at night.

  Response: Implementing reflectors along off-street paths would be at the discretion of each responsible implementing agency, and is beyond the scope of VISION 2050.

- A commenter noted a need to add lights that make cars stop for pedestrians in uncontrolled intersections (e.g., crossing Lincoln Memorial Drive near Ogden Avenue).

  Response: The specific location of advanced pedestrian accommodations will be determined by each responsible implementing agency, and is beyond the scope of VISION 2050.

- A commenter suggested more obvious markings for bike lanes.

  Response: Implementing agencies in the Region are currently experimenting with different types of markings for bicycle facilities, and the design guidelines associated with the final plan will make some recommendations regarding the use of green lanes to improve the visibility of bike lanes. However, the specific types of paint or tape that should be used to mark bike lanes will be determined by each responsible implementing agency, and is beyond the scope of VISION 2050.

Arterial Streets and Highways
(including TSM, TDM, and Freight Transportation)

The Arterial Streets and Highways comment card at each workshop included questions requesting feedback on the arterial streets and highways element of the Draft Plan, which were also asked on the Draft Plan website. The arterial streets and highways element was presented in conjunction with the TSM, TDM, and freight elements at each workshop and on the website. The comment card first indicated that the Draft Plan proposes an efficient, well-maintained arterial street and highway system in the Region. It then posed two questions:

- How well does the Draft Plan meet your vision for streets and highways?
- Do you have any other comments on the Draft Plan's proposed TSM, TDM, freight, and arterial streets and highways elements?

A summary of the responses to these two questions and other comments on the arterial streets and highways, TSM, TDM, and freight elements is presented below, along with Commission staff responses to comments, as appropriate.

In addition, the comment card noted that the Draft Plan proposes adding a travel lane to IH 43 between Howard Avenue and Silver Spring Drive during its reconstruction, but also analyzes the implications of not including the widening. It then posed the following question:

- After reviewing the analysis, what is your opinion on whether or not the Draft Plan should include this widening?

A summary of responses to this question and any other comments on adding a travel lane to IH 43 between Howard Avenue and Silver Spring Drive follows after the summary of comments on the TSM, TDM, arterial streets and highways, and freight elements.

Transportation Systems Management

Comments Requiring a Clarifying Response

- A commenter noted a need to include accessible parking when implementing demand-responsive pricing for parking.

  Response: Providing accessible parking is required as part of all off-street parking facilities, and would not be removed or reduced in any way as part of implementing demand-responsive pricing for parking.

Travel Demand Management

Comments in Support

- A few commenters expressed support for personal vehicle pricing/road user fees, specifically suggesting that: (3)
  - A VMT fee should be considered,
  - Tolling should be considered, and
  - The costs of constructing and maintaining county and local roads should not be paid through property taxes.
- A few commenters expressed support for parking pricing strategies to encourage using alternative modes of travel. (3)
- A few commenters expressed support for HOV preferential treatment. (2)
- A commenter expressed support for programs to promote telecommuting, compressed work weeks, and work-shift rescheduling.

Comments in Opposition

- A commenter expressed opposition to a VMT fee, suggesting it would negatively affect the average commuter and it may result in people turning down jobs because of the distance they would need to travel.

  Response: Current user fees primarily include Federal and State motor fuel taxes and vehicle registration fees. Federal and State motor fuel taxes have not been increased within the last decade, and there is substantial opposition at the Federal and State level to increase the current motor fuel tax rates. Additionally, technological advances, such as increased fuel efficiency and alternative fuels, have the potential to reduce the ability of the current motor fuel tax system to equitably serve as a user fee paying for the costs of constructing, maintaining, and operating the arterial street and highway facilities. There is merit in having the users of the transportation system pay the actual costs of the transportation system, and as travel behavior is affected by the cost of travel, user fees can encourage the use of alternative modes of travel, lessening the number of vehicles, and potentially the amount of congestion, on the arterial street and highway network. The Draft Plan supports the user fee concept, including potential increases in motor fuel taxes and consideration of alternative user fees (VMT fee, tolling, and/or congestion pricing) that either supplement or replace the motor fuel tax system.

Arterial Streets and Highways

Comments in Support

- Several commenters expressed support for constructing the USH 12 freeway between the City of Elkhorn and the City of Whitewater, because: (5)
  - It would improve safety and mobility, (2)
  - Widening the existing USH 12/67 route would have too many impacts to wetlands, agricultural land, and environmental corridors, (2)
  - Widening the existing USH 12/67 route would impact the nature of the area and the increasing residential and commercial development along the route, (2)
  - It is critical for economic development,
  - It would reduce travel times for transporting goods,
  - There is strong support from local businesses,
  - The University of Wisconsin-Whitewater lacks a major four-lane highway to campus, and
  - There is too much traffic, especially truck traffic, on the existing USH 12/67 route.
- Several commenters expressed general support for widening/adding freeways/highways to address congestion, specifically suggesting: (4)
  - It would improve travel times to jobs and encourage economic growth, and (2)
  - It would increase safety.
- A few commenters expressed support for the Lake Parkway extension (STH 794) to STH 100 in Milwaukee County, but added that: (3)

  - It should extend further south, curving southwest to meet IH 94 as part of the planned Elm Road Interchange, or (2)
  - It should extend further south to CTH K in Racine County.
- A few commenters expressed support for widening IH 94 in Waukesha County. (2)
- A commenter expressed general support for widening freeways/highways to address congestion, but not adding new freeways/highways.
- A commenter expressed support for widening IH 94 between 70th and 16th Streets in Milwaukee County.
- A commenter expressed support for constructing the West Waukesha Bypass.
- A commenter expressed support for the recommendation related to complete streets.

Comments in Opposition

- Numerous commenters expressed general opposition to widening/adding freeways/highways to address congestion, specifically stating that: (11)
  - The Region should focus instead on improving/encouraging alternative modes of travel, (9)
  - Adding capacity will not actually reduce congestion, (5)
  - People are driving less, (3)
  - Congestion levels in the Milwaukee area are not that high, (2)
  - Existing arterial streets and highways are already too extensive/wide, (2)
  - Projections of traffic in the Region are exaggerated,
  - WisDOT's traffic projections are inflated,
  - Millennials would prefer public transit over driving,
  - Widening increases noise pollution,
  - Widening will facilitate sprawl development,
  - Widening will have adverse effects on communities of color,
  - The Region should consider eliminating freeway spurs such as IH 794 in Milwaukee,
  - The amount of land and concrete used for recent WisDOT projects is excessive (e.g., Marquette Interchange and Watertown Plank Road Interchange),
  - Implementing future technologies will reduce the need to expand freeways, or
  - Expanded transit should alleviate the need to expand roadways.

  Response: As part of the development of the Draft Plan, more efficient land use, expanded public transit, bicycle and pedestrian facilities, and travel system and demand management measures were considered first to address existing and probable future congestion prior to any consideration given to arterial street and highway system improvement and expansion. With respect to land use, the Draft Plan proposes new development at higher densities focused in areas within or adjacent to existing urban development served by public sanitary sewer and water

systems, while avoiding development in the Region's environmentally sensitive areas and best remaining agricultural lands. The Draft Plan also proposes more than a doubling of transit service in the more densely developed areas of the Region, including the development of two commuter rail corridors and a network of eight rapid transit corridors (either bus rapid transit or streetcar extension operating as light rail). In addition, the Draft Plan proposes the development of a 713-mile network of off-street bicycle paths and the provision of bicycle accommodations on the 3,300-mile arterial street and highway system as it is resurfaced or reconstructed segment-by-segment. Arterial street and highway system improvement and expansion—widening of arterials upon their reconstruction and new arterial facilities—was then considered to address the residual highway traffic volume and traffic congestion that may not be expected to be alleviated by the other measures.

The arterial system capacity expansion proposed in the Draft Plan represents about an 8 percent expansion in arterial system lane-miles over the next 35 years. The year 2050 arterial street and highway system is designed to serve the expected 23 percent increase in VMT in the Region by the year 2050. That increase would be expected even though the Draft Plan would more than double transit and would provide for a more compact development pattern. Even with this expected growth in travel by the year 2050, implementation of the arterial highway improvements and expansion under the Draft Plan would be expected to maintain or slightly improve from current levels overall traffic congestion, travel time delay, and average trip times.

The evaluation of the Draft Plan included five criteria (Criteria 2.1.1 through 2.1.5) related to the benefits and impacts the highway and transit elements of the plan would have on minority populations and low-income populations, as provided in Appendix H. As the automobile is the dominant mode of travel for all population groups in the Region, maintaining or slightly improving accessibility to jobs and other activity areas through automobile travel under the Draft Plan—even with a 23 percent increase in VMT by the year 2050—would likely benefit significant portions of the minority populations and low-income populations of the Region. Should these improvements not be implemented, access to jobs and other activities using automobiles would be expected to decline for all residents of the Region, including minority populations and low-income populations. With respect to freeways, the segments of freeway proposed to be widened under the Draft Plan would directly serve areas of minority populations and low-income populations, particularly in Milwaukee County. As a result, it is expected that minority populations and low-income populations, particularly those residing adjacent to the freeway widenings, would be utilizing, and benefitting from, the expected improvement in accessibility associated with the proposed widenings. With respect to safety, rear-end collision rates have historically been 5 to 20 times higher on congested freeways (with the highest rear-end crash rates on the most extremely congested freeways). By improving safety through the reduction in congestion along the freeway segments that would be widened, there would also be direct benefits to the existing minority populations and low-income populations that would use the widened freeway segments under the Draft Plan.

Proposed surface arterial improvements are largely located outside areas of minority populations and low-income populations, and therefore their widening, new construction, and subsequent operation

would be expected to have minimal negative impacts on minority populations and low-income populations. With respect to proposed freeway widenings and new construction, some segments are located adjacent to existing minority populations and low-income populations, but most segments are not. With respect to the effect of exposure to higher levels of transportation-related air pollutants, the analysis found that within each county the percentage of existing total minority and non-minority people, and the percentage of existing families in poverty and families not in poverty, that reside in proximity to a freeway (within one-half mile or one-quarter mile) are generally similar (equal or within a few percent lower or higher). It should be noted that, due in large part to past, current, and future Federal fuel and vehicle fuel economy standards and improved emissions controls, transportation-related air pollutant emissions in the Region have been declining, and are expected to continue to decline in the future, even with the projected 23 percent increase in VMT under the Draft Plan. Thus, it is expected that by the year 2050 there would be a lower amount of exposure of these pollutants to residents of the Region, including minority populations and low-income populations.

- A commenter expressed opposition to widening IH 94 between 70th and 16th Streets in Milwaukee County.

  Response: The preliminary engineering and environmental impact studies for the reconstruction of IH 94 between 70th Street and 16th Street have been nearly completed by WisDOT, and they have selected a preferred alternative that includes the widening of this segment of IH 94 from six to eight traffic lanes. As part of the preliminary engineering conducted, WisDOT analyzed the benefits and impacts of a number of alternatives, including with and without the widening of IH 94, and conducted extensive public involvement to develop and select the preferred alternative. As such, the Draft Plan recognizes the widening upon the reconstruction of IH 94 between 70th Street and 16th Street as a committed project.

Comments Suggesting Changes or Additions to the Draft Plan

- Several commenters suggested improving the IH 94 interchange at Moorland Road rather than constructing a new IH 94 interchange at Calhoun Road. (4)

  Response: The need for an additional interchange between the Barker Road interchange and Moorland Road interchange was first identified in a study of the Bluemound Road corridor that was conducted by the Commission in 1987 at the request of WisDOT and the City of Brookfield. The Calhoun Road Interchange has been included in regional transportation plans for over 20 years. The Calhoun Road Interchange was recommended because it provided improved travel safety, reduced travel costs, and reduced travel time, and traffic capacity relief to the Moorland Road Interchange, Moorland Road between Bluemound Road and Greenfield Avenue, and Bluemound Road between Moorland Road and Barker Road. The Calhoun Road Interchange may be considered when WisDOT conducts preliminary engineering and environmental impact studies for the reconstruction of IH 94 west of the Zoo Interchange. In that study, WisDOT will examine alternatives including whether or not the proposed Calhoun Road Interchange should be constructed. At the conclusion of that study, the determination will be made by WisDOT whether the Calhoun Road Interchange would be built. Similarly, at the time WisDOT conducts

preliminary engineering for the reconstruction of the existing IH 94 interchange at Moorland Road, a number of alternatives would be considered for addressing future traffic demand and improving traffic flow in the interchange.

- A few commenters suggested moving the alignment for the proposed arterial from N. River Road to STH 144 in Washington County east of Lake Lenwood so it does not go through the Lac Lawrann Conservancy. (3)

  Response: The extension of N. River Road is proposed to provide the desirable spacing of arterial roadways for planned future development in the northeastern portion of the West Bend area. The proposed extension of N. River Road was reevaluated, reconsidered, and reaffirmed during the preparation of the Washington County jurisdictional highway system plan in 2008, and is included in the City of West Bend comprehensive plan completed in 2004. The proposed alignment shown in the Draft Plan is conceptual, indicating the need for an arterial to be provided along the general route shown as urban development occurs within this area, and is consistent with the alignment in the City of West Bend comprehensive plan. The City of West Bend comprehensive plan and the regional transportation plan recognize that a preliminary engineering study should be undertaken by the City of West Bend, in cooperation with the Towns of Barton and Trenton, to establish the centerline alignment for the extension. The alternatives considered should include N. River Road alignments both east and west of Lake Lenwood. The alignment shown in VISION 2050 would be amended upon revision of the City of West Bend comprehensive plan, or the conduct of preliminary engineering.

- A commenter suggested there is a need for a four-lane limited access highway between the City of Racine and City of Milwaukee east of IH 94.

  Response: An extension of the Lake Parkway (STH 794) as a four-lane standard arterial facility between Edgerton Avenue and STH 100 was added by amendment to the year 2035 regional transportation plan in 2012. This amendment was formally requested by the Milwaukee County Board of Supervisors and Executive based on the results of a 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. During the study, there was support by local residents for implementing the Lake Parkway (STH 794) extension to STH 100. A study could be conducted to further extend the Lake Parkway extension into Racine County. However, studying this further extension would require interest and support from affected local governments in Racine County.

- A commenter suggested there is a need for a four-lane limited access highway between the City of Racine and IH 94.

  Response: The City of Racine Common Council adopted a resolution requesting that Commission staff work with the City of Racine, concerned and affected municipalities in Racine County, and Racine County to consider ways to improve highway access to the City of Racine from IH 94 as part of VISION 2050. Commission staff has completed an analysis of six potential routes between IH 94 and the City of Racine downtown area (defined as Main Street between State Street and 7th Street): Four Mile Road/STH 32, CTH K/STH 38, CTH C/STH 38, STH 20/STH 32, STH 11/STH 32, and CTH KR/STH 32. Based

on the results of the analysis, Commission staff identified three routes for further study: STH 20/STH 32, CTH K/STH 38, and CTH KR/STH 32. Commission staff is working with affected local units of government and WisDOT to identify potential recommended improvements along these three routes. Any additional functional improvements identified would be amended into VISION 2050.

- A commenter suggested widening Moorland Road (CTH O) between Greenfield Avenue and Bluemound Road.

  Response: Moorland Road (CTH O) is a six-lane divided roadway between Bluemound Road and Greenfield Avenue. The existing and forecast future year 2050 traffic volumes are below the design capacity of Moorland Road between Bluemound Road and IH 94, and at the design capacity of Moorland Road between IH 94 and Greenfield Avenue. A significant amount of the traffic traveling on Moorland Road between Bluemound Road and Greenfield Avenue is generated from the IH 94 interchange at that roadway. The Draft Plan proposes the construction of an IH 94 interchange at Calhoun Road that is intended, in part, to alleviate traffic along Moorland Road between Bluemound Road and Greenfield Avenue.

- A commenter suggested that when Pilgrim Parkway (CTH YY) is widened at North Avenue (CTH M), the intersection should be redesigned to better address issues related to its proximity with the railroad tracks.

  Response: Addressing the issues related to the proximity of the intersection of Pilgrim Parkway and North Avenue to the Canadian Pacific Railway line (just north of the intersection) may be considered when Waukesha County conducts preliminary engineering and environmental impact study for the reconstruction of this segment of Pilgrim Road.

- A commenter suggested there is a lack of north-south highways in Waukesha County.

  Response: The regional transportation plan has in the past included an extension of Barker Road between Racine Avenue (CTH Y) and Greenfield Avenue (STH 59) and between Capitol Drive (STH 190) and Lisbon Road (CTH K). This would have provided a continuous north-south arterial across Waukesha County. However, at the request of the Waukesha County Executive and Board of Supervisors, this extension was removed from the plan, and replaced with the extension of Springdale Road (CTH SR) between Capitol Drive and Lisbon Road, providing a continuous north-south arterial in northern Waukesha County. The implementation of this extension would be dependent upon interest by affected and concerned local governments and the County.

- A commenter suggested that USH 45 be improved in Kenosha, Racine, Milwaukee, and Waukesha Counties to serve as an alternate route to IH 94.

  Response: Based on USH 45 between STH 36 in Milwaukee County and the Wisconsin State Line being located about four to seven miles west of IH 94, it would be expected that it currently provides an alternate route to IH 94, particularly for through traffic traveling between Kenosha or Racine County and the western portion of Milwaukee County. USH 45 between STH 36 in Milwaukee County and the Wisconsin State Line is generally a two-lane rural roadway. Current and future forecast year 2050 traffic volumes are below the current design capacity of the

roadway. Thus, the Draft Plan proposes that this segment of USH 45 be maintained to essentially its current design capacity.

- A commenter suggested that express lanes be implemented on freeway mainlines.

  Response: WisDOT studied installing high-occupancy vehicle (HOV) lanes on freeway mainlines in the 1990s, but received very little or no support when proposed at that time. Implementing separated HOV lanes on the freeway would require significant right-of-way acquisition, and attendant significant increase in cost. In addition, it would be difficult to design HOV lanes through the freeway system interchanges, like the Zoo, Marquette, Mitchell, and Hale Interchanges. Thus, the Draft Plan does not propose HOV lanes on freeway mainlines. However, the Draft Plan does propose consideration of part-time shoulder use during times of peak freeway congestion. Implementation may be limited to transit use as bus-on-shoulder, increasing the reliability of transit service in congested corridors and encouraging increased transit use by the public. It may be necessary to construct emergency refuge areas at frequent intervals along the portions of freeway shoulder where use as a through lane is permitted, as vehicles would not be able to use the shoulder for refuge purposes during its use as a through lane.

Other Comments Related to Streets and Highways

- A few commenters noted a need to repair and maintain local (nonarterial) streets, specifically noting: (3)
  - The wheel tax increase in the City of Milwaukee has not been enough to repair local streets in the City, and
  - Businesses in the City of Milwaukee suffer from bad roads.
- A commenter indicated a need to consider accessibility when designing roadways, including implementing curb cuts at all corners on urban streets, and avoiding the use of cobblestone or brick used for aesthetics, which makes it more difficult for people with disabilities.
- A commenter suggested constructing a bascule bridge connecting Walker's Point with Jones Island through Greenfield Avenue, continuing down Carferry Drive.
- A commenter indicated that highways should include wildlife corridors and bridges.
- A commenter suggested using porous pavement for roads to improve drainage.
- A commenter indicated that narrowing wide roadways should be considered to improve pedestrian safety under the complete streets recommendation.
- A commenter indicated a need to be conscious of the people being displaced when building highways.

Freight Transportation

Comments in Support

- Several commenters expressed support for a truck-to-rail intermodal station in southeastern Wisconsin, specifically suggesting: (4)
  - It would attract businesses and truck drivers who wish to avoid the congestion and tolls in Illinois, and
  - The Menomonee Valley would be a perfect place for an intermodal station due to existing rail lines and easy freeway access.

- A commenter expressed support for designating oversize/overweight (OSOW) truck routes.
- A commenter expressed support for encouraging more freight movement via rail rather than truck.
- A commenter suggested that freight rail should be able to bypass a city if transporting hazardous materials.

Widening of IH 43 Between Silver Spring Drive and Howard Avenue

Comments in Support

- Several commenters expressed support for widening IH 43 to eight lanes, specifically suggesting: (5)
  - It would improve travel times to jobs and encourage economic growth, (2)
  - It is needed to provide space for emergency vehicles,
  - It is needed to address bottlenecks along IH 43,
  - It would improve safety, and
  - The negative impacts appear to be minimal.

Comments in Opposition

- Numerous commenters expressed opposition to widening IH 43 to eight lanes, specifically suggesting: (16)
  - There should be a focus instead on improving public transit in the corridor, (3)
  - It would impact adjacent neighborhoods, which are disproportionately communities of color, (3)
  - It would have environmental impacts, (2)
  - The costs of the widening outweigh the benefits, (2)
  - There should be a focus instead on repairing/maintaining,
  - It would not benefit minority populations,
  - It may require relocating businesses,
  - It would increase sprawl and inequity,
  - There needs to be a Title VI/environmental justice analysis of widening IH 43, and
  - The travel time improvements are not worth the additional cost and impacts.

  Response: As documented in Appendix I, an evaluation was conducted of the benefits and impacts of widening and not widening when IH 43 is reconstructed between Howard Avenue and Silver Spring Drive. Specifically, the evaluation considered the effect of widening or not widening this segment of IH 43 on construction cost, traffic carrying capacity, traffic congestion on the freeway and adjacent surface arterials, travel time on IH 43, traffic on adjacent surface arterials, vehicular crashes, impacts to natural resource areas and businesses and residences, and greenhouse gas emissions and other transportation-related emissions. An evaluation is also included in Appendix I of the benefits and impacts of widening or not widening this segment of IH 43 on minority populations and families in poverty residing in proximity to IH 43 between Howard Avenue and Silver Spring Drive. This evaluation and the comments provided by the

public in support of, or opposition to, the widening of IH 43 when reconstructed between Howard Avenue and Silver Spring Drive were considered by the Advisory Committee on Regional Transportation Planning as they considered whether the final plan should include or not include the widening of this segment of IH 43. After consideration of this evaluation and the comments provided by the public, the Advisory Committee determined that VISION 2050 would make no recommendation in regards to widening IH 43 between Howard Avenue and Silver Spring Drive at this time. When WisDOT conducts preliminary engineering and an environmental impact study for the reconstruction of this segment of IH 43, alternatives that include both widening and not widening IH 43 will be considered. Should WisDOT determine that this segment of IH 43 be reconstructed in a manner that differs from the final plan, the plan would be amended accordingly to be consistent with the determinations of preliminary engineering.

Funding and Benefits of the Draft Plan

The Funding and Benefits comment card at each workshop included questions to direct feedback on the funding and benefits of the Draft Plan, which were also asked on the Draft Plan website. The comment card first indicated that the Draft Plan identifies a gap in funding for the proposed transit system. It then posed two questions:

- Would you support providing additional public funding for transit?
- If so, are there particular revenue sources you think should be considered?

In addition, the comment card noted that the Fiscally Constrained Transportation Plan (FCTP) includes all transportation elements of the Draft Plan, but does not include the proposed significant improvement and expansion of public transit because it cannot be implemented with existing and likely reasonably expected future funds, and the existing and likely reasonably expected future limitations and restrictions on the uses of those funds. It then posed the following question:

- Do you have any comments on the FCTP?

A summary of the responses to these three questions and other comments on the funding and benefits of the Draft Plan is presented below, along with Commission staff responses to comments, as appropriate.

Comments in Support

- Numerous commenters expressed support for generating additional public revenue to fund the public transit element of the Draft Plan. Several of those commenters also indicated their preferences regarding which funding sources should be pursued: (29)
  - Several commenters expressed support for increasing fuel tax rates to fund the public transit element of the Draft Plan. (7)
  - Several commenters expressed support for implementing a VMT fee to fund the public transit element of the Draft Plan. (7)
  - Several commenters indicated that they supported an increase in sales tax rates to fund the public transit element of the Draft Plan. (6)
  - Several commenters expressed support for paying for the public transit and bicycle and pedestrian elements of the Draft Plan by flexing State and Federal funding away from streets and highways. (4)

- A few commenters expressed support for increasing vehicle registration fees to fund the public transit element of the Draft Plan. (3)
- A few commenters indicated that they supported an increase in hotel room tax rates to fund the public transit element of the Draft Plan. (3)
- A few commenters expressed support for increasing the vehicle rental fee to fund the public transit element of the Draft Plan. (2)
- A few commenters proposed that employers pay for part of the cost of providing public transit to suburban business parks. (2)
- A few commenters expressed concern about implementing any version of a VMT fee that would require government access to GPS technology in vehicles. (2)
- A few commenters expressed support for implementing tolls on the Region's freeway system to fund the public transit element of the Draft Plan. (2)
- A commenter opposed implementing tolls on the Region's freeway system to fund the public transit element of the Draft Plan.
- A commenter opposed implementing a VMT fee to fund the public transit element of the Draft Plan.
- A commenter supported increasing property taxes in the Region to fund the public transit element of the Draft Plan.
- A commenter opposed increasing property taxes in the Region to fund the public transit element of the Draft Plan.
- A commenter expressed support for increasing taxes and fees on trucks rather than on personal vehicles to fund the public transit element of the Draft Plan.
- A commenter proposed utilizing a carbon tax to fund the public transit element of the Draft Plan.
- A commenter proposed a Regional corporate income tax to fund the public transit element of the Draft Plan.

- Several commenters expressed that the public transit element of the Fiscally Constrained Transportation Plan was inadequate for the Region's future. (8)

Comments in Opposition

- A few commenters opposed raising additional revenue to fund the public transit element of the Draft Plan. (2)

Comments Requiring a Clarifying Response

- A few commenters expressed support for a regional transit authority to manage and operate transit services in the Region. (3)

  Response: Although the public transit element of the Draft Plan would require additional funding of some sort, it would not necessarily require a regional transit authority to implement and operate the proposed transit system. However, a regional transit authority should be explored and considered as part of any discussion of providing additional, dedicated funding for transit services in parts or all of the Region.

- A commenter expressed support for ensuring that any additional revenues raised be spent only on transportation infrastructure and services.

  Response: As a result of a binding referendum that was part of the November 4, 2014 ballot, the State of Wisconsin's Constitution requires that all funds collected from taxes or fees associated with transportation (such as motor vehicle fuel taxes or vehicle registration fees) can only be used by a program that is directly administered by WisDOT.

- A commenter expressed a need for additional funding sources to be available to local governments to maintain collector and land access streets (non-arterial streets).

  Response: Although Commission staff recognize that this is an issue of vital concern to many local governments in the Region, the applicable element of VISION 2050 focuses on arterial streets and highways, and therefore does not make recommendations related to the design, funding, or maintenance of collector and land access streets within Southeastern Wisconsin.

Additional Comments on the Draft Plan

The following summarizes additional comments related to the Draft Plan that were received:

Comments in Support

- Numerous commenters complimented the VISION 2050 planning process, the opportunities for public input, and the outreach materials. (12)
- Several commenters supported the plan and its implementation. (7)

Comments in Opposition

- A few commenters expressed concern regarding the input received during the VISION 2050 planning process. The commenters expressed concern than many residents who may object to plan proposals do not comment due to lack of interest. The commenters noted that it is then difficult for elected officials to object to a plan that appears to have overwhelming support. (2)

  Response: Comments obtained from workshops are only one consideration in the preparation of a draft and final plan. Also considered are the technical analyses conducted on the plan alternatives, including consideration of how well the plan performs with respect to goals of mobility, healthy communities, equitable access, and costs and financial sustainability. Another consideration is the input of representatives of local governments and State agencies. In particular, throughout the process and at the same time as the public workshops, the Commission meets with a committee from each county that includes a representative of each local unit of government of that county, and also with the Commission's Advisory Committees on Regional Land Use Planning and Transportation Planning, which include representation from each of the seven counties, local units of government of the Southeastern Wisconsin Region, and State and Federal agencies. In addition, early in the planning process, the Commission conducted a statistically significant telephone survey seeking to gather opinions regarding land use and transportation within each county in the Region in an attempt to gather opinions of a

representative cross-section of the population of each county and the Region.

- A few commenters expressed concern that VISION 2050 is based on the belief that future growth will only be obtained by communities that have a robust infrastructure. The commenters noted that infrastructure is important to attracting businesses, but taxes are also an important consideration. The commenters suggested building infrastructure as it is needed while keeping taxes low. (2)

  Response: VISION 2050 is a long-range plan. The transportation component of the Draft Plan proposes improvements in infrastructure for State and local government to consider over the next 35 years. No recommendation in VISION 2050 would go directly to construction or implementation. Every recommendation, if it is pursued, would require feasibility and engineering studies by the State or local government sponsor. VISION 2050 is intended to help State and local governments anticipate future infrastructure needs.

Comments Suggesting Changes or Additions to the Draft Plan

- A few commenters stated that there is not enough emphasis in the public outreach materials, including the summary booklet, on the benefits of the Draft Plan related to improving public health and improving opportunities for minority residents and low-income residents. (3)

  Response: Additional emphasis was given to these matters in the summary of the final plan.

Comments Requiring a Clarifying Response

- A commenter suggested that it would be beneficial if Commission staff was present when citizens meet with local officials regarding public transit.

  Response: Commission staff will attend any meetings with concerned agencies and units of government or interested parties upon request.

- A commenter stated that citizens should be informed when Commission staff presents the completed VISION 2050 during meetings with local elected officials.

  Response: County and local units of government follow formal public notice procedures for meetings of bodies such as plan commissions and governing bodies. Any presentations regarding VISION 2050 would be included as an item on meeting agendas.

- A commenter suggested preparing an executive summary of the final plan.

  Response: A summary was prepared for the final plan, similar to those prepared for the alternative plans and the Draft Plan. This summary will be widely distributed.

- A commenter suggested presenting the Draft Plan to Milwaukee County.

  Response: Throughout the planning process, Commission staff has met with a committee from each county that includes a representative of each local unit of government of that county, and also with the Commission's Advisory Committees on Regional Land Use Planning and Transportation Planning, which include representation from each of the seven counties, local units of government of the Southeastern Wisconsin Region, and State and Federal agencies. Upon adoption of

VISION 2050 by the Regional Planning Commission, Commission staff will request that Milwaukee County review VISION 2050, and consider endorsement and integration of the findings and recommendations into County planning activities.

- A commenter suggested conducting a Title VI/environmental justice analysis.

  Response: Title VI/environmental justice analyses have been conducted throughout the VISION 2050 process. These analyses began at the conceptual scenario stage of the process, which included equitable access evaluation criteria. The next step in the VISION 2050 process involved evaluation of the alternative plans. Unlike the scenarios, the alternative plans were not "conceptual" in nature. Each of the alternative plans had a higher level of detail, including a specific development pattern and transportation system. A detailed evaluation of the alternative plans was possible, including a detailed Equitable Access analysis that assessed the potential benefits and adverse impacts of each of the alternative plans on minority populations and low-income populations. The Equitable Access analysis of the alternative plans included the following evaluation criteria:

  - Level of Accessibility to Jobs and Activity Centers for Minority Populations and Low-Income Populations by Mode
  - Minority Populations and Low-Income Populations Served by Transit
  - Transit Service Quality for Minority Populations and Low-Income Populations
  - Minority Populations and Low-Income Populations Benefited and Impacted by New and Widened Arterial Street and Highway Facilities
  - Transportation-Related Air Pollution Impacts on Minority Populations and Low-Income Populations

  An Equitable Access analysis was then performed on the Draft Plan. The analysis performed on the Draft Plan included the same criteria as the Equitable Access analysis performed on the alternative plans as well as an assessment of the potential benefits and adverse impacts of the Draft Plan on moderate-income populations and people with disabilities. Further environmental justice analyses on the VISION 2050 land use component and Fiscally Constrained Transportation Plan are included in Appendix L and Appendix N, respectively. These analyses were reviewed by the Commission's Advisory Committees on Regional Land Use Planning and Regional Transportation Planning and the Environmental Justice Task Force.

- A commenter suggested adding discussion of protecting Lake Michigan, stormwater runoff, impervious cover, non-point source pollution, chemicals in the Lake, and problems with invasive species.

  Response: The Draft Plan evaluation criteria include amount of impervious surface estimated for plan conditions and potential impacts to water resources and water quality.

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