

# VISION 2050

One Region, Focusing on Our Future



A publication of the **Southeastern Wisconsin Regional Planning Commission**

**Fall 2015**

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## Introduction

**ALTERNATIVES:** Three detailed year 2050 land use and transportation alternatives for Southeastern Wisconsin have been developed for VISION 2050. The Trend is a projection to the year 2050 of land use and transportation trends from the last 20-25 years, including continued lower density development and declines in public transit service. Alternative Plans I and II include higher density development patterns and significant increases in public transit service. The three detailed alternatives were developed by refining five conceptual-level land use and transportation scenarios, which were the focus of the previous stage of VISION 2050.

**PURPOSE:** The purpose of the alternatives stage of VISION 2050 is to evaluate possible outcomes and consequences of continuing recent development and transportation trends compared to following the two distinctly different paths for the future envisioned in Alternatives I and II. The three alternatives were evaluated using a set of plan objectives and 50 criteria organized under four themes, including Healthy Communities, Mobility, Costs & Financial Sustainability, and Equitable Access. The plan objectives are based on public input from the initial visioning stage of VISION 2050. Detailed information about the alternatives and their evaluation is available on the VISION 2050 website at [www.vision2050sewis.org](http://www.vision2050sewis.org).

**INPUT:** Public feedback from the fourth round of VISION 2050 public involvement will help determine which aspects of the alternatives will be included in a preliminary recommended year 2050 regional land use and transportation system plan. The goal of the preliminary plan is to achieve a consensus vision for regional land use and transportation in the year 2050. Residents throughout the Region will be given the opportunity to review and comment on the preliminary recommended plan at a fifth round of public involvement prior to finalizing VISION 2050.

### Advisory Committees

Staff work on VISION 2050 is being guided by two of the Commission's Advisory Committees: the Advisory Committee on Regional Land Use Planning and the Advisory Committee on Regional Transportation System Planning. Information on the oversight provided by the two Committees can be found on the Commission website at [www.sewrpc.org](http://www.sewrpc.org).

## TIMELINE OF THE VISION 2050 PROCESS

Initial Visioning Activities  
Sept. 2013 - Feb. 2014

Sketch Scenarios  
~Mar. 2014 - Sept. 2014

Alternative Plans  
~Oct. 2014 - Nov. 2015

Preliminary Recommended  
Plan and Preferred Vision  
~Dec. 2015 - Mar. 2016

Final Recommended Plan  
and Vision  
Mid-2016

# LAND USE

## Land Use Component

The land use patterns of the alternatives were developed by allocating new households and employment envisioned for the Region under the Commission’s year 2050 intermediate-growth projections to a series of land use categories that represent a variety of development densities and mixes of uses. **Figure 1** shows the allocation of new households to the seven land use categories shown on this page.



### MIXED-USE CITY CENTER

Mix of very high density offices, businesses and housing found in the most densely populated areas of the Region.



### MEDIUM LOT NEIGHBORHOOD (showing lots of about 15,000 square feet)

Primarily single-family homes on ¼ to ½ acre lots found at the edges of cities and villages



### LARGE LOT NEIGHBORHOOD (showing lots of about ½ acre)

Primarily single-family homes on ½ acre to one acre lots found at the edges of cities and villages and scattered outside of cities and villages



### MIXED-USE TRADITIONAL NEIGHBORHOOD

Mix of high density housing, businesses, and offices also found in densely populated areas



### LARGE LOT EXURBAN (showing lots of about 1.5 acres)

Single-family homes at an overall density of one home per 1.5 to five acres scattered outside of cities and villages



### SMALL LOT TRADITIONAL NEIGHBORHOOD (showing lots of about 7,000 square feet)

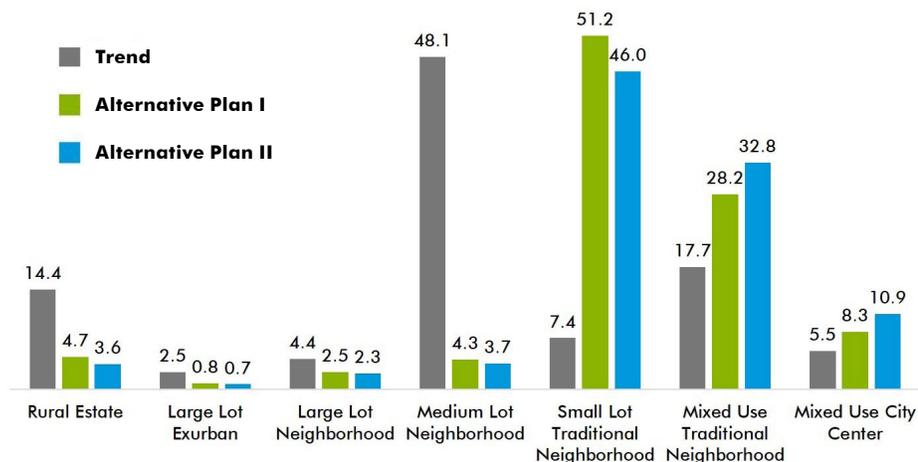
Mix of housing types and businesses with single-family homes on lots of ¼ acre or less found within and at the edges of cities and villages



### RURAL ESTATE (showing a cluster subdivision with one acre lots)

Single-family homes at an overall density of one home per 5 acres scattered outside of cities and villages

**Figure 1**  
**PERCENT OF INCREMENTAL HOUSEHOLDS IN EACH LAND USE CATEGORY**



**Trend**

**Under the Trend, there would be a focus on building homes at the edges of cities and villages. Lot sizes would range from ¼ acre to ½ acre, and perhaps up to one acre.** Businesses and other uses such as parks and schools would be largely separated from residential areas. There would be some infill/redevelopment within cities and villages at higher densities with a greater mix of uses.

**New homes would also be built outside of cities and villages on larger lots** that cannot be served by public sewer, water, or transit services.

Most of this development would be in the Rural Estate category using cluster subdivision design (very low density, but clustered on smaller lots to preserve rural character and productive farmland).

**Alternative Plan I**  
**Infill and redevelopment in existing cities and villages is the focus of Alternative I.** Some of the infill/redevelopment would occur in areas surrounding fixed-guideway transit stations, most of which would be located in Milwaukee County. Alternative I was structured for increased growth in these station areas, which would result in compact, mixed use TOD.

**What is Transit-oriented Development (TOD)?**  
TOD is compact, mixed-use development located near a fixed-guideway transit station with streets and sidewalks that provide convenient access for walking and bicycling to the station.

**Table 1** shows that more households and jobs were allocated to Milwaukee County under Alternative I than the Trend to meet the anticipated growth. Fixed-guideway transit is described in more detail under the public transit section.

Some new development would also occur at the edges of cities and villages. New homes in these areas would be located on lots of ¼ acre or less with a mix of multi-family housing and businesses.

**Alternative Plan II**  
**Alternative II is similar to Alternative I, with one area of departure.** There would be significantly more fixed-guideway transit lines and stations under Alternative II, particularly in Milwaukee County. **Therefore, more growth—as TOD—would occur in areas around transit stations** under this alternative. This is reflected in the household and employment allocations to Milwaukee County, as shown in **Table 1**.

**Table 1**

**YEAR 2050 HOUSEHOLDS AND EMPLOYMENT BY VISION 2050 ALTERNATIVE**

County	HOUSEHOLDS							
	Existing (2010)		Trend (2050)		Alternative Plan I (2050)		Alternative Plan II (2050)	
	Number	Percent of Region	Number	Percent of Region	Number	Percent of Region	Number	Percent of Region
Kenosha County	62,650	7.8	95,480	9.8	95,460	9.8	94,190	9.7
Milwaukee County	383,600	47.9	409,570	42.1	414,070	42.6	424,710	43.7
Ozaukee County	34,220	4.3	44,500	4.6	43,890	4.5	42,430	4.4
Racine County	75,650	9.5	93,750	9.6	93,740	9.6	93,030	9.6
Walworth County	39,700	5.0	58,990	6.1	57,530	5.9	54,860	5.6
Washington County	51,610	6.5	74,330	7.6	73,380	7.5	70,080	7.2
Waukesha County	152,660	19.1	195,780	20.1	194,330	20.0	193,100	19.9
Region	800,090	100.0	972,400	100.0	972,400	100.0	972,400	100.0

County	EMPLOYMENT (JOBS)							
	Existing (2010)		Trend (2050)		Alternative Plan I (2050)		Alternative Plan II (2050)	
	Number	Percent of Region	Number	Percent of Region	Number	Percent of Region	Number	Percent of Region
Kenosha County	74,240	6.3	100,620	7.3	100,620	7.3	99,970	7.2
Milwaukee County	576,350	49.0	609,850	44.0	614,910	44.4	628,670	45.3
Ozaukee County	52,380	4.5	69,140	5.0	68,130	4.9	65,260	4.7
Racine County	88,050	7.5	112,000	8.1	110,990	8.0	110,000	7.9
Walworth County	52,560	4.5	69,170	5.0	69,160	5.0	66,210	4.8
Washington County	63,900	5.4	87,400	6.3	86,390	6.2	82,530	6.0
Waukesha County	268,790	22.9	338,280	24.4	336,260	24.3	333,820	24.1
Region	1,176,270	100.0	1,386,460	100.0	1,386,460	100.0	1,386,460	100.0

# PUBLIC TRANSIT

## Transportation Component

The transportation systems of the three alternatives vary based on three primary elements: 1) public transit, 2) bicycle and pedestrian, and 3) arterial streets and highways. Each element is described on the following pages.

### Public Transit

A substantial difference between the alternatives is the public transit system that would serve the Region. The alternatives vary in how much service is provided, how frequent services run, and where services are provided. They also vary in how much “fixed-guideway transit” is provided.

#### What is Fixed-guideway Transit?

Fixed-guideway transit refers to either rapid transit (bus rapid transit or light rail) or commuter rail. For bus rapid transit and light rail, the fixed guideway would typically be the median of a roadway or a dedicated lane. For commuter rail, the fixed guideway would be an existing freight rail corridor.

### Existing (Map 1)

Existing public transit services include:

- Local bus services in the Milwaukee, Waukesha, Racine, and Kenosha areas
- Shared-ride taxi in Ozaukee and Washington Counties
- Commuter rail in Kenosha
- Commuter bus routes between the Milwaukee area and the rest of the Region
- Express bus routes in the Milwaukee area

### Trend (Map 2)

The trend in public transit has been a loss of nearly 25 percent of service since the early 2000’s. Based on funding projections, **the Trend anticipates an additional 22 percent decline in public transit service in the Region.**

As a result, services would be less frequent and service hours would be shorter. All express routes, some local bus routes, and some commuter bus routes would also be eliminated.



Light rail example in Minneapolis.  
Source: Flickr user Michael Hicks

### Alternative Plan I (Map 3)

**Alternative Plan I proposes significant transit expansion—more than doubling existing service levels—instead of the decline projected under the Trend.**

The expansion would include:

- Local service expanded with additional routes and increased frequency
- Shared-ride taxi throughout the Region outside local transit service areas
- Commuter rail between Kenosha, Racine, and Milwaukee
- Three corridors of rapid transit (either bus rapid transit or light rail depending on more detailed local study that would need to take place following VISION 2050)
- Expanded express and commuter bus services, with increased frequency, numerous express bus routes, a few new commuter bus routes, and all day service on commuter bus

### Alternative Plan II (Map 4)

Alternative Plan II proposes **similar transit expansion to Alternative Plan I, but with more commuter rail and rapid transit corridors.** Service levels would be about 2½ times higher than existing.

The expansion would include:

- Local service expanded with additional routes and increased frequency
- Shared-ride taxi throughout the Region outside local transit service areas
- Commuter rail between Kenosha, Racine, and Milwaukee and between Milwaukee, Brookfield, and Oconomowoc
- Ten corridors of rapid transit (with mode to be determined based on more detailed local study that would need to take place following VISION 2050)
- Numerous express routes (although some from Alternative I would be replaced by rapid transit), a few new commuter bus routes, increased frequency on express and commuter bus, and all day service on commuter bus

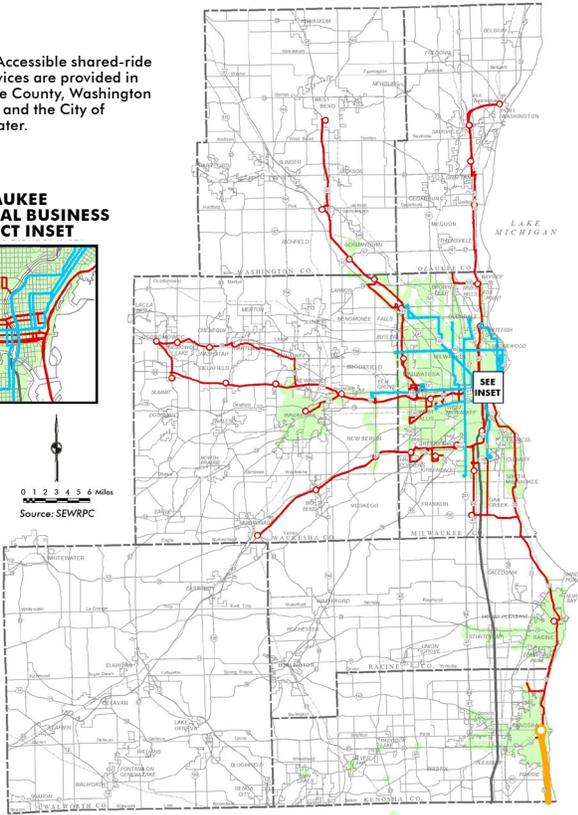


Bus rapid transit example in Cleveland.  
Source: Greater Cleveland RTA

NOTE: Accessible shared-ride taxi services are provided in Ozaukee County, Washington County, and the City of Whitewater.

**Map 1 – TRANSIT SERVICES: EXISTING**

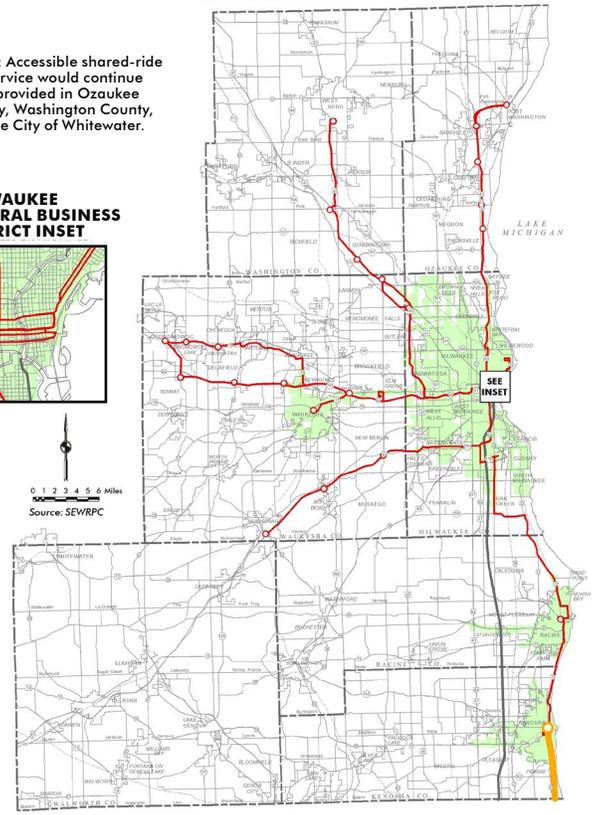
**MILWAUKEE CENTRAL BUSINESS DISTRICT INSET**



NOTE: Accessible shared-ride taxi service would continue to be provided in Ozaukee County, Washington County, and the City of Whitewater.

**Map 2 – TRANSIT SERVICES: TREND**

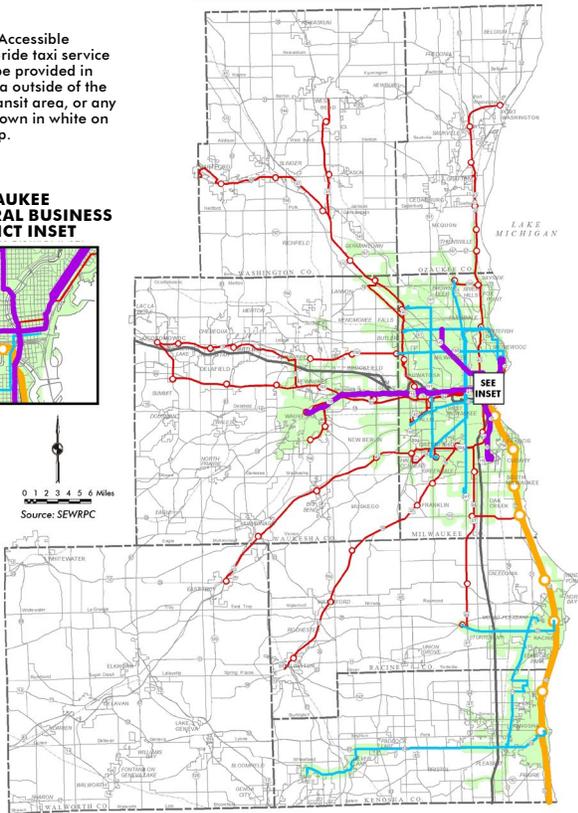
**MILWAUKEE CENTRAL BUSINESS DISTRICT INSET**



NOTE: Accessible shared-ride taxi service would be provided in any area outside of the local transit area, or any area shown in white on this map.

**Map 3 – TRANSIT SERVICES: ALTERNATIVE PLAN I**

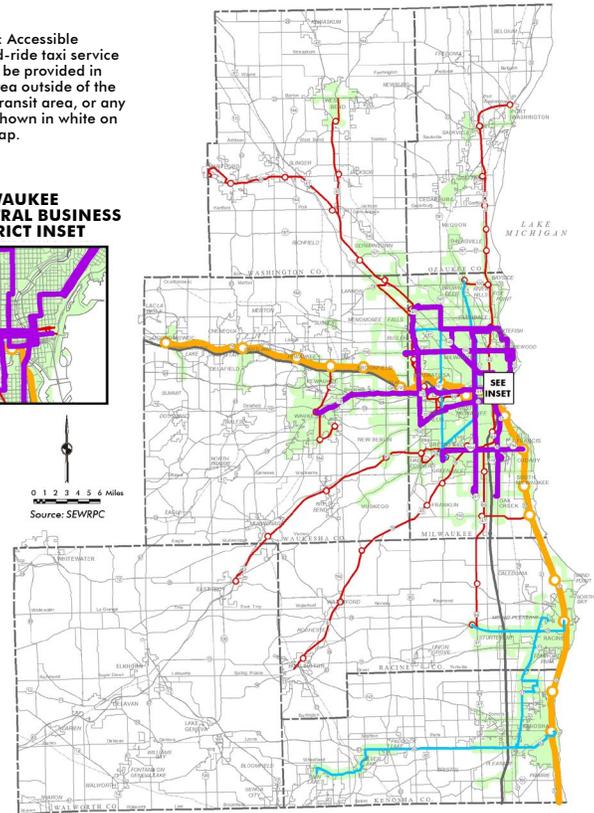
**MILWAUKEE CENTRAL BUSINESS DISTRICT INSET**



NOTE: Accessible shared-ride taxi service would be provided in any area outside of the local transit area, or any area shown in white on this map.

**Map 4 – TRANSIT SERVICES: ALTERNATIVE PLAN II**

**MILWAUKEE CENTRAL BUSINESS DISTRICT INSET**



**TRANSIT SERVICES**

- RAPID TRANSIT LINE
- EXPRESS BUS ROUTE
- COMMUTER RAIL LINE & STATION
- COMMUTER BUS ROUTE & PARK-RIDE
- INTERCITY RAIL
- LOCAL TRANSIT SERVICE AREA

# BICYCLE & PEDESTRIAN

## Bicycle and Pedestrian

The alternatives also vary in their treatment of bicycle and pedestrian accommodations. Each alternative envisions an expanded off-street path system, on-street facilities added as non-freeway arterial streets and highways are reconstructed, and pedestrian facilities designed and constructed consistent with Americans with Disabilities Act (ADA) requirements. Where they vary is in the type of on-street facilities in certain regional corridors and the connectivity of sidewalks.

### Existing (Map 5)

The existing bicycle network consists of about 880 miles of on-street bicycle facilities (including about three miles of enhanced bicycle facilities) and about 290 miles of off-street paths.

### What are Enhanced Bicycle Facilities?

Enhanced bicycle facilities go beyond basic on-street bicycle accommodations (e.g. standard bike lanes). They provide a comfort level similar to off-street paths, but are on the street. The most common types are protected bike lanes (also called cycle tracks or separated bike lanes), which include physical separation between bicyclists and vehicles.

### Trend (Map 6)

The trend in bicycle network development over the past two decades has included **expanding off-street paths and adding bicycle facilities to arterials as they are reconstructed.**

Off-street paths have been added across the Region over the past 20 years, so the Trend anticipates off-street expansion would continue. The result would be about 710 miles of off-street paths by 2050.

On-street bicycle accommodations have grown rapidly over the past 20 years, especially recently, and this is anticipated to continue in the future due to Federal requirements and a commitment to providing bicycle facilities by many cities and villages. The result would be about 3,370 miles of on-street bicycle facilities.



Buffered bike lane in Kansas City.  
Source: Bike Walk KC



Raised bike lane in Milwaukee.  
Source: Michael Sears

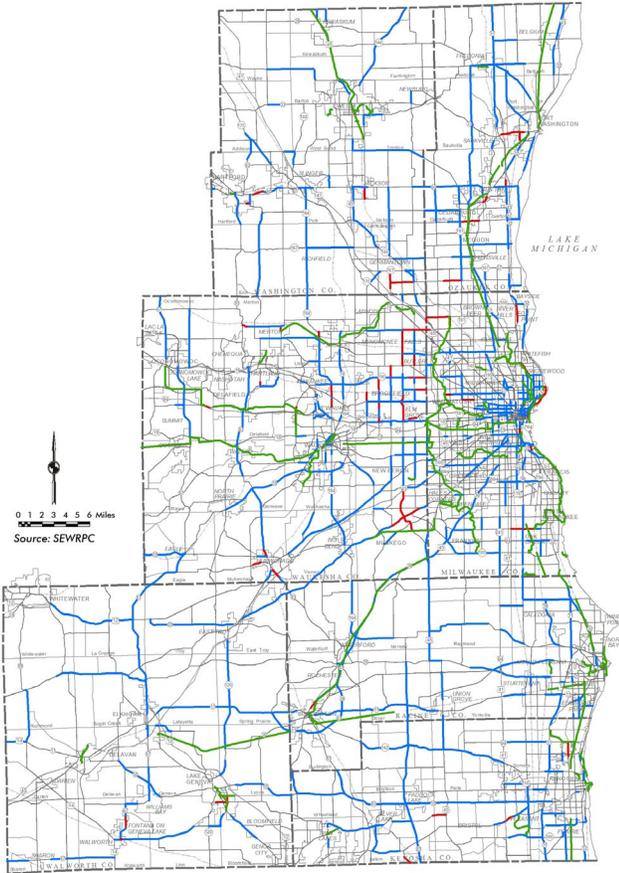


Protected bike lane utilizing bollards in Chicago.  
Source: People for Bikes

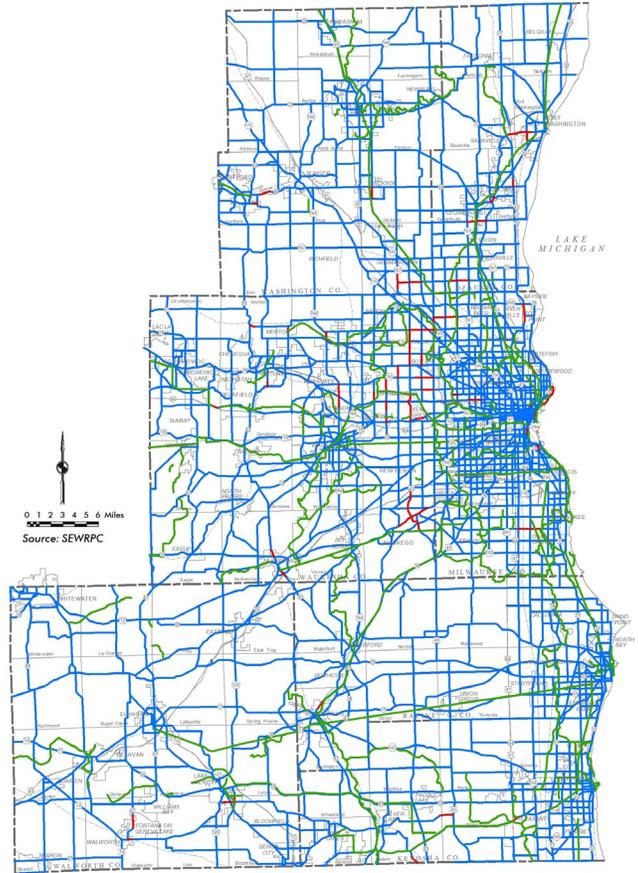


Neighborhood greenway with traffic circle in Tucson.  
Source: NACTO

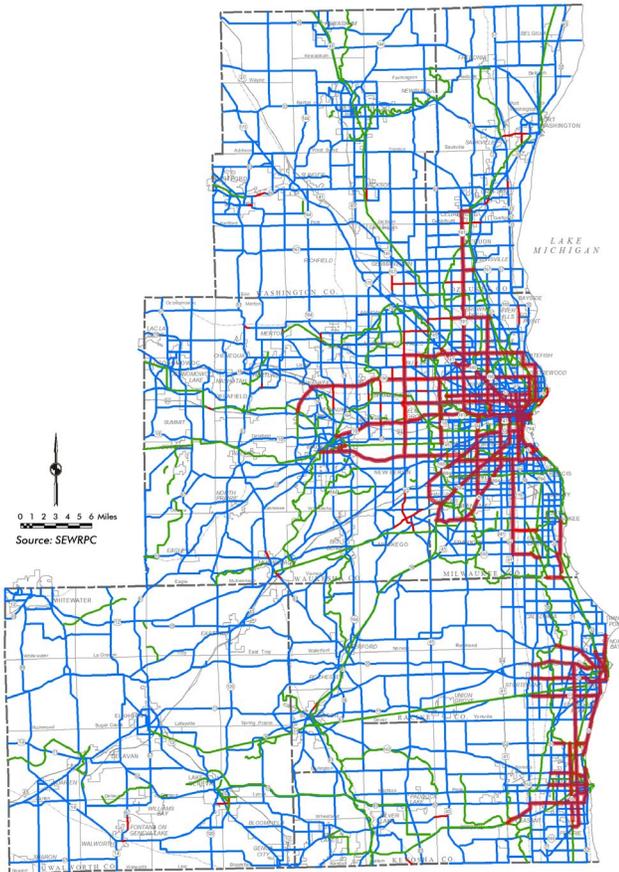
Map 5 – BICYCLE NETWORK: EXISTING



Map 6 – BICYCLE NETWORK: TREND



Map 7 – BICYCLE NETWORK: ALTERNATIVE PLANS I AND II



## BICYCLE FACILITIES

- OFF-STREET BICYCLE PATH
- ENHANCED BICYCLE FACILITY OR SEPARATE PATH WITHIN ROADWAY RIGHT-OF-WAY
- BICYCLE LANE OR PAVED SHOULDER
- ARTERIAL STREET OR HIGHWAY WITHOUT BICYCLE ACCOMMODATION
- POTENTIAL CORRIDOR FOR ENHANCED BICYCLE FACILITY\*

\*Corridor would include an enhanced bicycle facility—such as a protected bike lane or a buffered bike lane—located on an arterial or, alternatively, a neighborhood greenway on a nearby parallel nonarterial.

## Alternative Plans I and II (Map 7)

Bicycle facilities would expand under Alternative Plans I and II as in the Trend—to about 710 miles of off-street and 3,370 miles of on-street facilities—but **about 300 miles of enhanced bicycle facilities would be added in key regional corridors**. The same 300 miles of enhanced corridors are included in both Alternatives I and II, and are mostly in urban areas and connect multiple communities or neighborhoods.

### What is an Enhanced Bicycle Facility Corridor?

Each enhanced bicycle facility corridor is about two blocks in either direction of an arterial street/highway. Alternatives I and II envision that the enhanced facility would either be on the arterial or on a parallel nonarterial in the corridor as a neighborhood greenway (a low-speed, nonarterial street optimized for bicycle traffic).

# ARTERIAL STREETS & HIGHWAYS

## Arterial Streets and Highways

The arterial street and highway system (referred to simply as “highways” below) varies by alternative by the amount of new facilities and additional traffic lanes to address traffic congestion.

### What are Arterial Streets and Highways?

Arterial streets and highways are streets and highways principally intended to provide a high degree of travel mobility. They serve the through movement of traffic and provide transportation service between major subareas of an urban area or through the area. Access to abutting property may be a secondary function of some types of arterial streets and highways, but the primary function is traffic movement. Arterial streets and highways include freeways and standard arterials.

All three alternatives anticipate modernizing the highway system to achieve modern design and safety standards as highways are reconstructed.

### What is Highway Modernization?

Modernization refers to upgrading a roadway to current design standards to increase safety and improve the roadway’s efficiency. This can involve addressing outdated designs, such as freeway left side entrance/exit ramps, inadequate spacing between interchanges, and scissor ramps along frontage roads.

## Committed Highway Capacity Expansion Projects (Map 8)

Some highway capacity improvement and expansion projects have progressed far enough to be considered committed, and are incorporated into all three alternatives. This includes projects that are under construction, undergoing final engineering and design, or have a preferred alternative selected as part of preliminary engineering/environmental impact study.

### Trend (Map 9)

The trend in highway development has included **widenings and new facilities to address congestion** as segment-by-segment reconstruction of the system has occurred. Reconstruction has also included modernization to achieve current safety and design standards.

### Alternative Plan I (Map 10)

Alternative I proposes reconstruction to modernize highways similar to the Trend, with **slightly fewer widenings needed to address congestion than the Trend** due to a denser development pattern and improved transit service.

### Alternative Plan II (Map 11)

Alternative II, in contrast with the Trend and Alternative I, proposes **limiting highway widenings and new facilities mostly to the rural and low-density suburban areas not served by the fixed-guideway transit** (commuter rail, bus rapid transit, or light rail) investments included as part of this alternative.

Table 2

CENTERLINE MILES OF HIGHWAY FUNCTIONAL IMPROVEMENTS BY VISION 2050 ALTERNATIVE

Arterial Street and Highway Functional Improvements	Existing and Committed (Miles)	Trend (Miles)	Alternative Plan I (Miles)	Alternative Plan II (Miles)
Facilities Resurfaced/Reconstructed to Existing Capacity	--	3,271.8	3,292.2	3,332.5
Facilities Reconstructed with Additional Traffic Lanes	77.3	308.7	288.3	247.9
New Facilities	2.9	73.3	73.3	66.9
<b>Total</b>	<b>--<sup>a</sup></b>	<b>3,653.8</b>	<b>3,653.8</b>	<b>3,647.3</b>

<sup>a</sup>The existing arterial street and highway system, including 2.9 miles of committed new facilities, totals 3,579.4 miles.



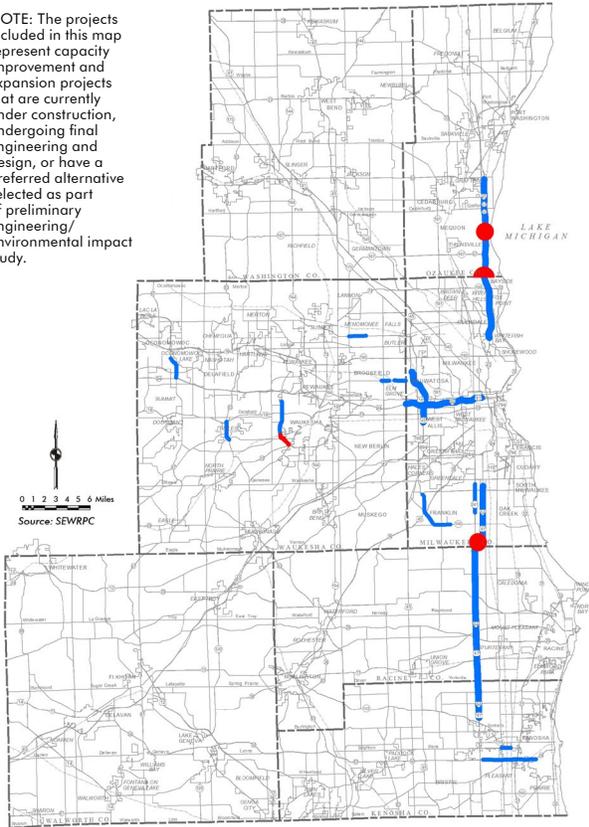
Standard arterial example in Utah.  
Source: Wasatch Front Regional Council



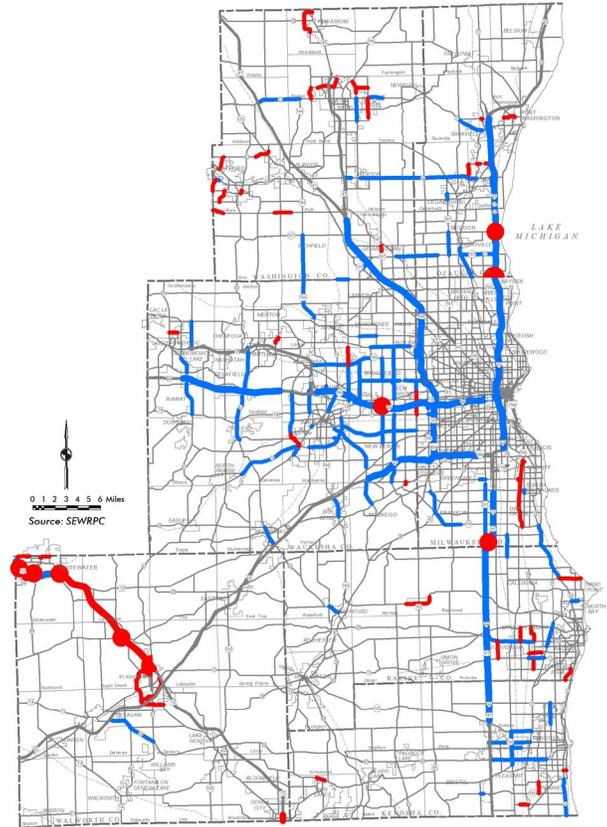
Freeway example in Milwaukee.  
Source: SEWRPC staff

**Map 8 – ARTERIAL STREETS AND HIGHWAYS: EXISTING AND CURRENTLY COMMITTED EXPANSION PROJECTS**

NOTE: The projects included in this map represent capacity improvement and expansion projects that are currently under construction, undergoing final engineering and design, or have a preferred alternative selected as part of preliminary engineering/ environmental impact study.

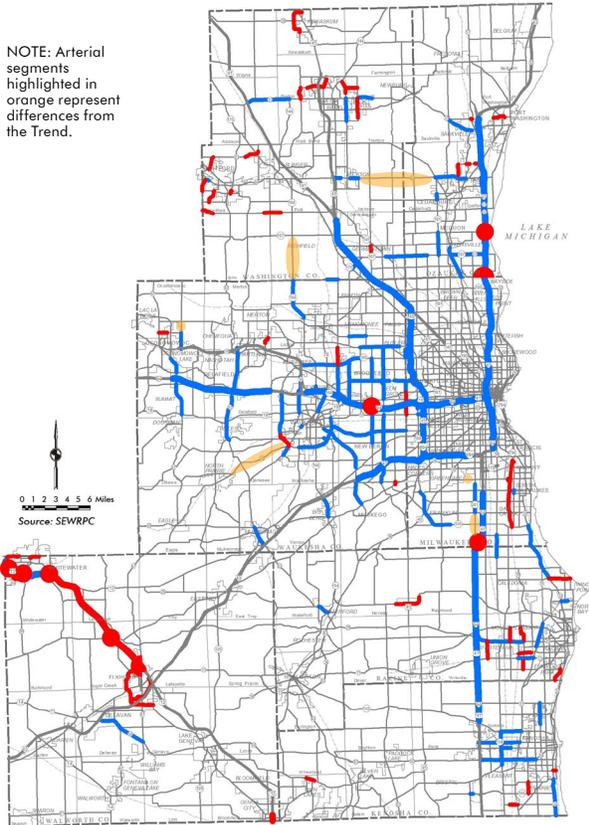


**Map 9 – ARTERIAL STREETS AND HIGHWAYS: TREND**



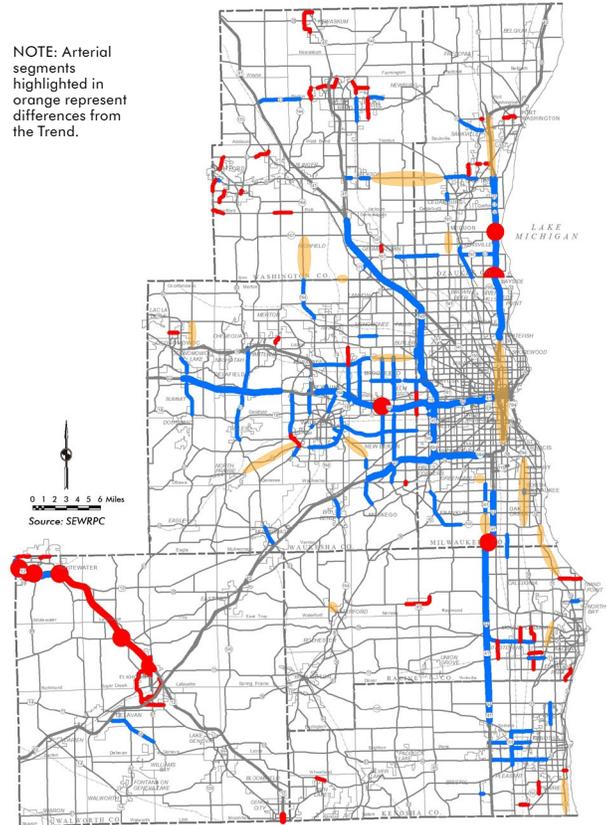
**Map 10 – ARTERIAL STREETS AND HIGHWAYS: ALTERNATIVE PLAN I**

NOTE: Arterial segments highlighted in orange represent differences from the Trend.



**Map 11 – ARTERIAL STREETS AND HIGHWAYS: ALTERNATIVE PLAN II**

NOTE: Arterial segments highlighted in orange represent differences from the Trend.



**ARTERIAL STREETS AND HIGHWAYS**

- PROPOSED NEW ARTERIAL
- ARTERIAL PROPOSED TO BE WIDENED WITH ADDITIONAL TRAFFIC LANES
- EXISTING ARTERIAL (PRESERVE EXISTING CROSS-SECTION IN FUTURE)
- NEW SYSTEM INTERCHANGE
- ▲ CONVERSION OF HALF INTERCHANGE TO A FULL INTERCHANGE

# EVALUATION INTRODUCTION & PLAN OBJECTIVES

## Evaluation of Alternatives

Commission staff thoroughly evaluated the alternatives using 50 criteria to determine their respective abilities to meet a set of plan objectives. The objectives were developed using public input from the initial visioning phase of VISION 2050 and are based on the 15 more general Guiding Statements that were developed. The evaluation also includes a secondary evaluation for select criteria of Alternatives I and II without highway expansions beyond committed projects and freeway modernization. The evaluation results are organized into four themes, including Healthy Communities, Mobility, Costs & Financial Sustainability, and Equitable Access.

## Plan Objectives and Criteria for Evaluating Alternatives

An important part of any planning effort is formulating objectives to pursue through the implementation of plan recommendations. The plan objectives for VISION 2050 are specific goals, or ends, that guided the preparation and evaluation of the alternatives, and would be the desired outcome of the VISION 2050 recommendations to be developed in the next stage of the planning process. There is no priority implied by the order of the plan objectives.

### Healthy Communities Objectives and Criteria

The following objectives and criteria revolve around creating healthy communities within our Region, with active transportation options and environmental preservation serving as cornerstones of this theme.

- **Objective 1: Vibrant, walkable neighborhoods that contribute to the Region's distinct character.**
  - » Number of people living in walkable areas
  - » Population density
  - » Employment density
- **Objective 2: Active transportation options that encourage healthy lifestyles.**
  - » Bicycle level of service
  - » Bicycle network connectivity
  - » Benefits and impacts to public health
- **Objective 3: Compact urban development and limited rural development that maximize open space and productive agricultural land.**
  - » Remaining farmland and undeveloped land
  - » Impacts to natural resource areas
- **Objective 4: Environmentally-sustainable development and transportation that minimize the use of nonrenewable resources and adverse impacts on the Region's natural environment, including biodiversity, air, and water.**
  - » Preservation of areas with high groundwater recharge potential
  - » Impervious surface
  - » Energy use
  - » Greenhouse gas emissions and other air pollutants
  - » Impacts to water resources and water quality
  - » Ability to address issues related to climate change
  - » Overall environmental sustainability
- **Objective 5: A transportation system that minimizes disruption of neighborhood and community development, including adverse effects on the property tax base.**
  - » Homes, businesses, land, and parkland acquired
- **Objective 6: Safe and secure travel environments that minimize loss of life, injury, and property damage.**
  - » Crashes by mode

### Mobility Objectives and Criteria

The objectives and criteria under this theme are aimed at achieving a multimodal transportation system that serves the mobility needs of all of the Region's residents and provides access to important places and services.

- **Objective 7: A balanced, integrated, well-connected transportation system that provides choices among transportation modes.**
  - » Trips per day by mode
  - » Vehicle-miles of travel
  - » Impacts of technology changes
- **Objective 8: Reliable, efficient, and universal access to employment centers, educational opportunities, services, and other important places.**
  - » Travel time to important places by mode
  - » Access to park-ride facilities
- **Objective 9: Well-maintained transportation infrastructure.**
  - » Pavement condition
  - » Transit fleet condition

## Mobility Objectives and Criteria (continued)

- **Objective 10: An acceptable level of service on the transportation system.**
  - » Congestion on arterial streets and highways
  - » Travel time delay
  - » Average trip times
- **Objective 11: Fast, frequent, and reliable public transit services that maximize the people and jobs served.**
  - » Access to transit
  - » Access to fixed-guideway transit
  - » Transit service quality
- **Objective 12: Convenient, efficient, and reliable movement of goods and people.**
  - » Transportation reliability
  - » Congestion on the regional freight network
  - » Impacts to freight traffic

## Costs and Financial Sustainability Objectives and Criteria

The following objectives and criteria take into account the need to make wise investment decisions that consider all the direct and indirect costs of developing the Region's land and transportation system.

- **Objective 13: A land development pattern and transportation system that support economic growth and a globally-competitive economy.**
  - » Impact of the distribution of growth on property values
  - » Return on investment
  - » Ability to connect to nearby metro areas and leverage the value of those areas
  - » Potential for attracting residents and businesses
- **Objective 14: A financially-sustainable transportation system that minimizes life-cycle capital and operating transportation costs.**
  - » Average annual transportation system investment
- **Objective 15: Transportation options that minimize private transportation costs.**
  - » Private transportation costs per capita
  - » Per household cost of delay
  - » Resilience in adapting to changing fuel prices
- **Objective 16: Urban development that can be efficiently served by transportation, utilities, and public facilities.**
  - » Supportive infrastructure costs

## Equitable Access Objectives and Criteria

The objectives and criteria under this theme focus on providing access to opportunity for all of the Region's residents.

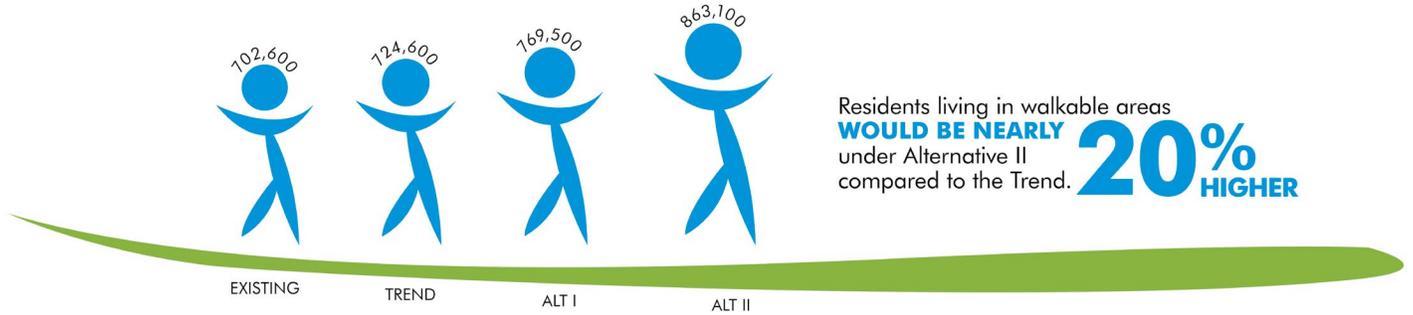
- **Objective 17: Benefits and impacts of investments in the Region's transportation system should be shared fairly and equitably and serve to reduce disparities between white and minority populations.**
  - » Level of accessibility to jobs and activity centers for minority and low-income populations by mode
  - » Minority and low-income populations served by transit
  - » Transit service quality for minority and low-income populations
  - » Minority and low-income populations benefited and impacted by new and widened arterial street and highway facilities
  - » Transportation-related air pollution impacts on minority and low-income populations
- **Objective 18: Affordable transportation and housing that meet the needs and preferences of current and future generations.**
  - » Households with affordable housing + transportation costs
  - » Ability to accommodate demographic shifts
- **Objective 19: Reduce job-worker mismatch.**
  - » Areas with a job-worker mismatch

## Overview of Evaluation Results

The following pages provide an overview of the results of the alternatives evaluation, with a section for each of the four evaluation themes. Full results are available on the VISION 2050 website and can be accessed directly through the following link: [vision2050sewis.org/altevalfull](http://vision2050sewis.org/altevalfull). NOTE: Alternatives I and II were evaluated twice, once with some additional lanes and new roadways (referred to as "with highway improvements" on the following pages), and once without any additional lanes or new roadways beyond what is already committed (referred to as "without highway improvements").

# HEALTHY COMMUNITIES

## Achieving Walkable Neighborhoods



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. Walkable neighborhoods encourage residents to walk or bike rather than drive and can increase community cohesion by encouraging more social interaction with neighbors. Using data received from WalkScore® (www.walkscore.com), walkability was estimated for each of the alternatives. **Alternative II would have the most people living in walkable areas (863,000)**—12 percent more than Alternative I (770,000) and 19 percent more than the Trend (725,000).

## Improving Bicycle Connections and Access

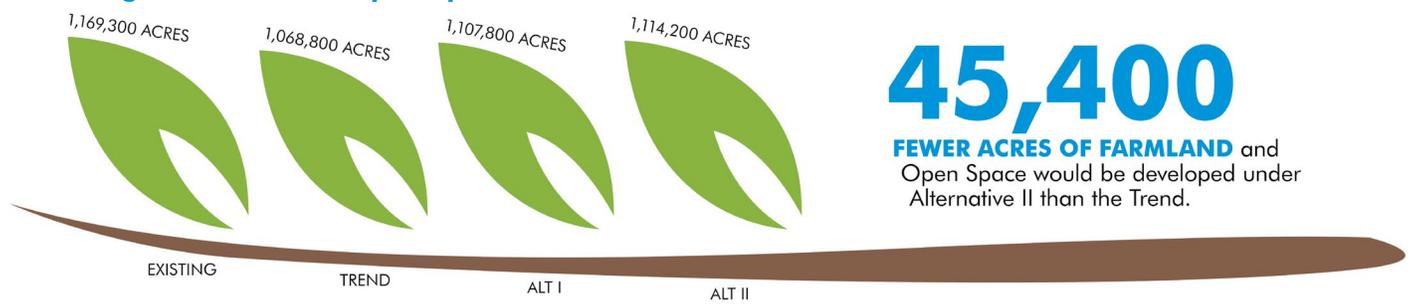


Improving on-street and off-street bicycle facilities increases the perceived and actual safety for people riding bicycles in the Region, and can encourage more residents to use a bike for some of their daily trips. A bicycle level of service was calculated for all of the Region’s arterial streets and highways, measuring the comfort level of people riding bicycles based on the presence of a bike lane, the speed and volume of traffic on a roadway, and other variables. **Although all alternatives would result in a significant improvement in comfort of people riding bicycles, Alternative II would have the greatest increase**, with 1,662 miles of streets and highways with a high or very high comfort level—2 percent more than Alternative I and 22 percent more than the Trend.

## Encouraging Healthy Lifestyles

The way that the Region’s communities develop and the transportation options available to the Region’s residents can significantly impact public health. By encouraging active transportation through well-connected infrastructure such as bike lanes, off-street paths, and sidewalks, and increasing ease of access to parks, schools, and businesses through mixed-use, compact development, **Alternatives I and II would increase opportunities for the Region’s residents to live healthy lifestyles and therefore could decrease the Region’s overall healthcare costs.**

## Preserving Farmland and Open Space



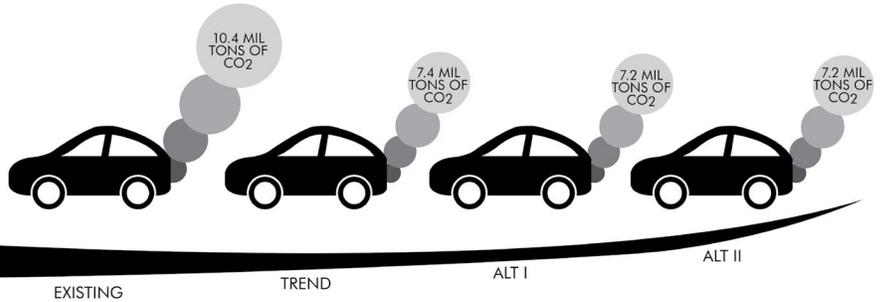
Despite the loss of 308,500 acres of farmland since 1963, about 739,800 acres of the Region are still used for agriculture. Due to their more compact development patterns, **Alternatives I and II would consume less farmland for urban development compared to the Trend.** About 49,300 acres of agricultural land would be converted to urban uses under the Trend, compared to about 20,500 acres under Alternative Plan I and 16,600 acres under Alternative Plan II.

## Reducing Impacts to Water Resources and Water Quality

There are a number of ways that the Region’s transportation system and development pattern can impact water resources and quality, including using compact development to reduce the amount of impervious surface built in the Region, avoiding development in areas with high groundwater recharge potential, and reducing the use of road salt. Due to their smaller roadway networks and more compact development patterns, **Alternatives I and II would reduce the impact of the Region’s residents on water resources when compared to the Trend.**

## Minimizing Greenhouse Gas Emissions and Air Pollution

Depending on the pollutant, Alternatives I & II would **RESULT IN 1-2% FEWER** air pollutant emissions in 2050 than the Trend.



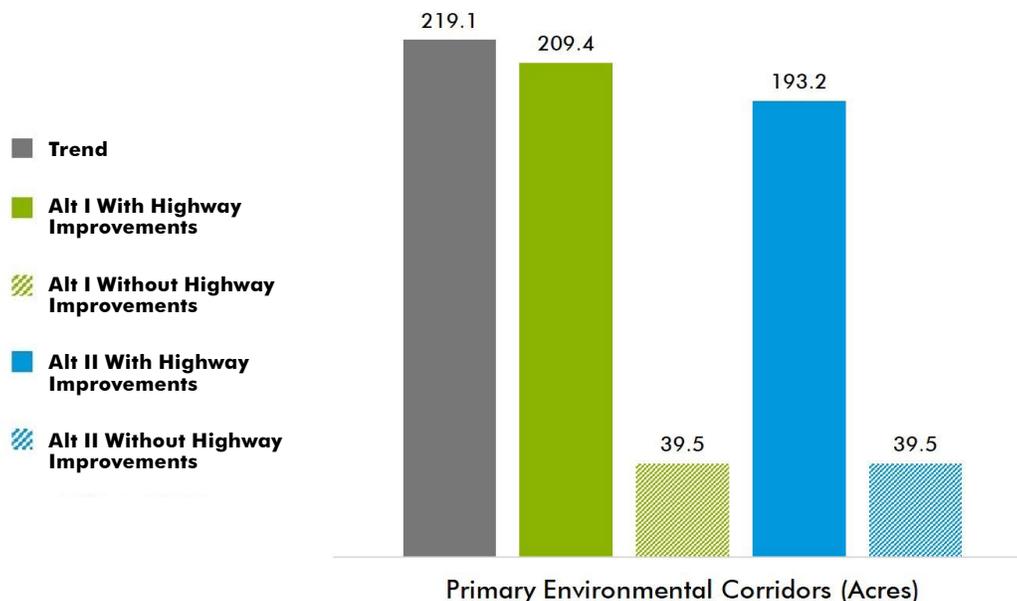
Both the Region’s development pattern and transportation system can impact the amount of air pollution and greenhouse gas emissions produced in the Region. Under all alternatives, transportation air pollutant emissions are projected to significantly decline from current levels due to Federal fuel and vehicle fuel economy standards and improved vehicle emissions controls, even with forecast increases in regional travel and traffic. These **emissions controls and improved fuel economy standards will result in a 20 to 30 percent decrease in carbon dioxide, methane, and ammonia, and a 70 to 90 percent decrease in all other transportation-related air pollutants.** Transportation air pollutant emissions are lowest under Alternative II, generally about 1 to 2 percent lower than the Trend and less than 1 percent lower than Alternative I. New residential development would also be projected to result in the least amount of greenhouse gas emissions under Alternative II. The CO<sub>2</sub> emissions per household added to the Region through the year 2050 would be 12 percent less than under the Trend, and 7 percent less than under Alternative I.

## Minimizing Impacts to Natural Resource Areas

The vast majority of the Region’s natural resource areas, including wetlands, primary environmental corridors, critical species habitat areas, and other natural areas are mostly protected from private development. However, the **expansion of the Region’s transportation system would modestly impact the Region’s natural resource areas, impacting 0.1 percent or less of the total area** of each type of natural resource area. The Trend would be expected to have the greatest impacts to natural resource areas, followed by Alternative I (generally 3 to 7 percent less impact than the Trend) and then Alternative II (generally 9 to 14 percent less impact than the Trend). As expected, not including highway improvements (new or widened arterial facilities) under Alternatives I and II would greatly reduce the potential impacts to natural resource areas.

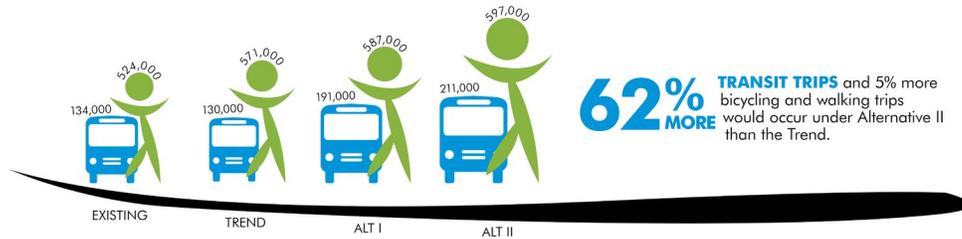
Figure 2

### IMPACTS TO PRIMARY ENVIRONMENTAL CORRIDORS



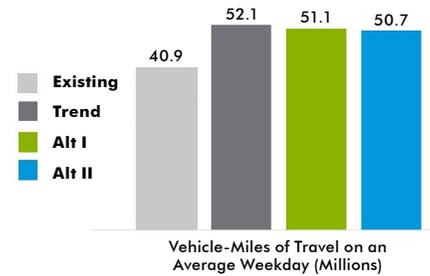
# MOBILITY

## A Balanced Transportation System Providing Choices



Due to the projected increase in the Region’s jobs and population, **the number of trips made by the Region’s residents is expected to increase by 17 percent between now and 2050, regardless of the alternative.** However, with the increase in transit service and more compact development patterns under Alternatives I and II, both would have significant increases in average weekday trips via transit, 47 and 62 percent, respectively, more than the Trend. For the same reasons, vehicle-miles of travel and vehicle-miles of travel per capita would be about 3 percent less than the Trend under Alternative II and about 2 percent less than the Trend under Alternative I, as shown in **Figure 3.**

**Figure 3**  
**VEHICLE-MILES OF TRAVEL**

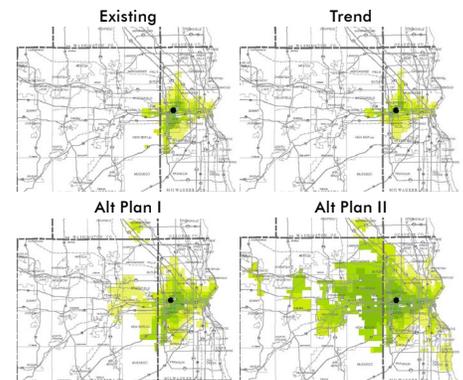


### Improving Travel Time to Important Places

This criterion compares average travel times to major activity centers and regional destinations by automobile and by transit under each of the alternatives. The modest decreases in congestion (see page 15) under all alternatives result in slight improvements in travel time by automobile to all major activity centers and regional destinations. The improvements in the Region’s transit system under Alternatives I and II have a significant impact on travel time via transit, as can be seen in **Figure 4** showing travel time to the Milwaukee Regional Medical Center (with the lightest areas having access within 60 minutes and the darkest areas having access within 20 minutes). A similar analysis was performed for two other regional destinations (Downtown Milwaukee and General Mitchell International Airport) and major activity centers (major retail centers, major parks, public technical colleges and universities, health care facilities, and grocery stores), and the results are shown in **Table 3.** Depending on the important place, **the number of residents that have reasonable access by transit to a destination increases by 40 to 240 percent under Alternative I and 60 to 410 percent under Alternative II when compared to the Trend.**

**Figure 4**

### PEAK TRAVEL TIME TO MILWAUKEE REGIONAL MEDICAL CENTER VIA TRANSIT



**Table 3**

### TOTAL POPULATION WITH REASONABLE ACCESS TO ACTIVITY CENTERS BY TRANSIT<sup>a</sup>

Activity Center	Existing - 2015	Trend - 2050	Alternative I - 2050	Alternative II - 2050
Retail Centers	285,400	223,600	686,100	903,100
Major Parks	162,200	124,600	425,300	634,100
Public Technical Colleges and Universities	368,200	331,400	697,000	902,500
Health Care Facilities	655,700	566,700	960,400	1,168,300
Grocery Stores	1,015,400	981,800	1,378,100	1,548,200
General Mitchell International Airport	343,400	288,700	647,200	1,017,100
Milwaukee Regional Medical Center	143,400	134,600	318,900	410,000
Downtown Milwaukee	143,000	120,800	246,500	367,800

<sup>a</sup> Reasonable access is defined as the ability to travel by transit within 60 minutes to General Mitchell International Airport and the Milwaukee Regional Medical Center and within 30 minutes to all the other activity centers.

Source: U.S. Bureau of Census and SEWRPC

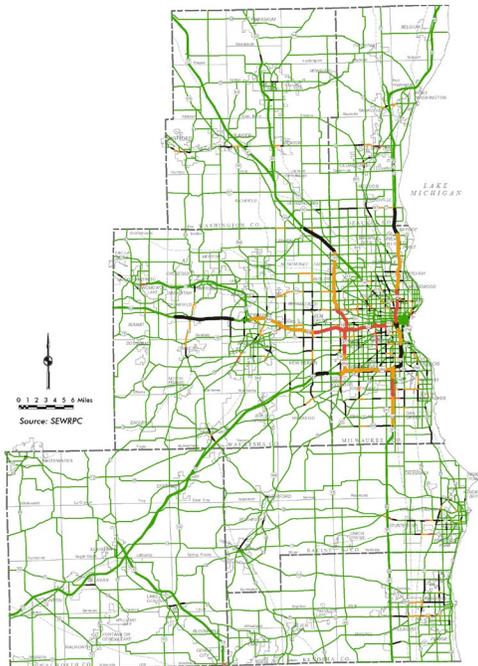
### The Impact of Autonomous or Self-Driving Cars

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. **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 transition period, in which there will be a mix of autonomous vehicles on the road, will likely result in increased congestion on freeways as an autonomous vehicle will likely be programmed to maintain a safe stopping distance between it and the car in front of it, increasing the gaps between vehicles. Should all vehicles be autonomous at some point in the future, shared ownership of vehicles—either by a car rental company or a company similar to Uber—may allow vehicles to be smaller, only having the number of seats as needed for that trip, and smaller vehicles may allow more to fit on a roadway at the same time. However, if personal ownership continues, it is possible that average vehicle occupancy could decrease below one person in each car—as owners send their car on errands for them—while the cars would remain the same large size they are today, creating more congestion.

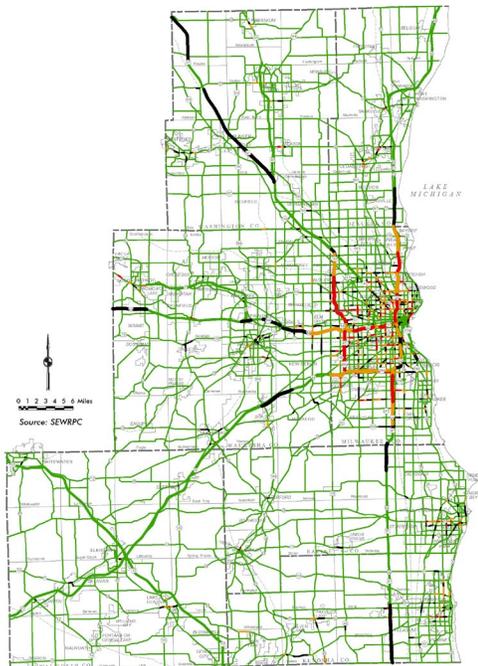
**Providing an Acceptable Level of Congestion on Streets and Highways**

Congestion increases the time it takes for automobiles, buses, and trucks to travel in the Region. Compared to other metro areas, congestion and the associated travel time delays are relatively modest in the Region, and have increased slower than nearly all other metro areas over the last 30 years. Even with relatively modest levels of congestion, however, decreasing congestion in the Region would have many benefits, including reduced vehicle emissions, reduced travel time delay for personal vehicles and public transit, reduced energy use, improved connectivity to nearby metropolitan areas, and reduced freight shipping travel times and costs. These four maps show peak congestion on the Region’s arterial system currently and under each of the alternatives. Due to its compact development pattern, increased public transit, and highway improvements, **Alternative I would be the least congested, with 6.6 percent (242.3 miles) of the arterial street and highway system operating at a volume greater than its design capacity at some point on an average weekday**, compared to 244.5 miles under the Trend and 264.7 miles under Alternative II. Without highway improvements, an additional 150-200 miles of the arterial street and highway network would experience congestion during rush hour.

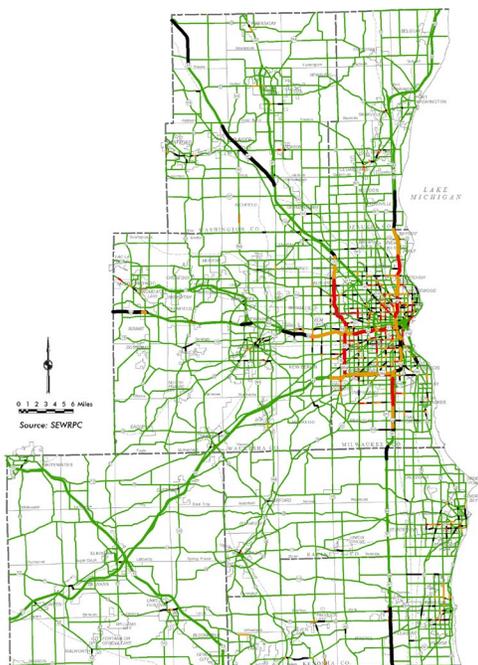
Map 12 – CONGESTION ON THE ARTERIAL STREET AND HIGHWAY SYSTEM: EXISTING



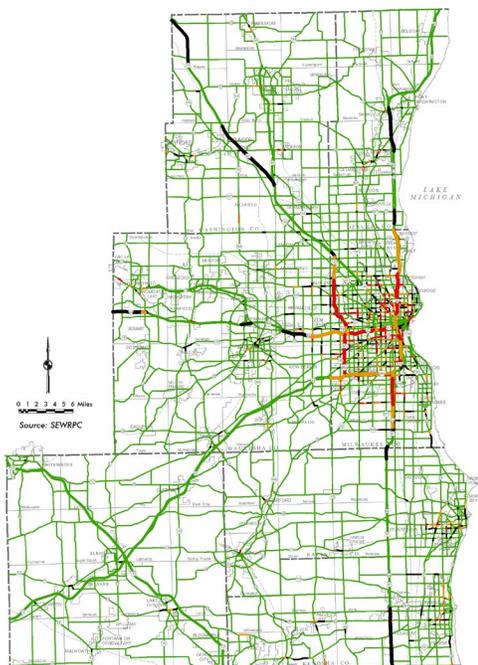
Map 13 – CONGESTION ON THE ARTERIAL STREET AND HIGHWAY SYSTEM: TREND



Map 14 – CONGESTION ON THE ARTERIAL STREET AND HIGHWAY SYSTEM: ALTERNATIVE I



Map 15 – CONGESTION ON THE ARTERIAL STREET AND HIGHWAY SYSTEM: ALTERNATIVE II



**FACILITY CONGESTION STATUS**

- AT OR UNDER DESIGN CAPACITY
- MODERATELY CONGESTED (1-2 M.P.H. below Free-Flow Speed)
- SEVERELY CONGESTED (10 M.P.H. below Free-Flow Speed)
- EXTREMELY CONGESTED (20+ M.P.H. below Free-Flow Speed)

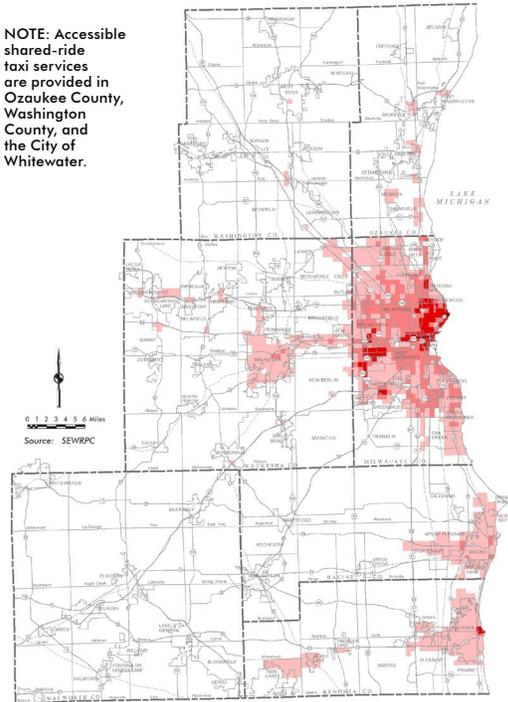
NOTE: These maps display the traffic congestion experienced during an average weekday.

# MOBILITY

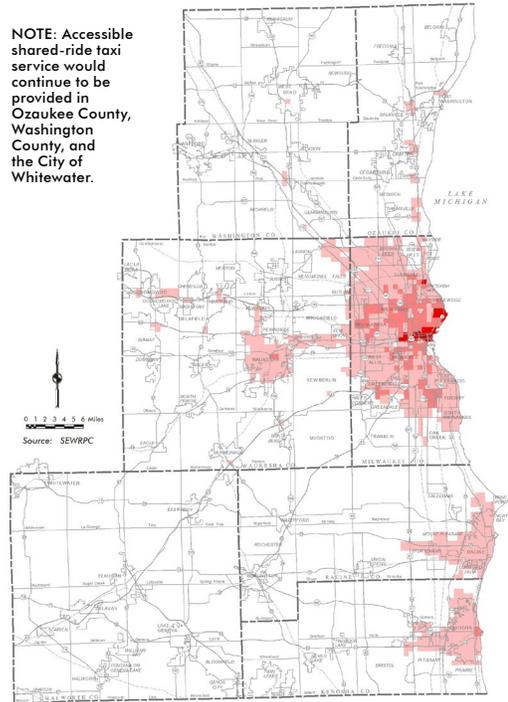
## Maximizing People and Jobs Served by a High-Quality Transit System

Access to transit service provides choices to residents of the Region by providing an alternative to driving. Studies have shown that transit service lowers employee turnover rates for businesses, provides significant congestion relief in mid- to large-sized metropolitan areas, and significantly lower costs associated with transportation for those who use transit instead of owning a car. In addition, access to transit service is vitally important for the 1 in 10 households in the Region without access to a car. These four maps show the quality of transit service in the Region currently and under each of the alternatives. If an area of the Region has “Basic” transit service, it is within walking distance of at least one local bus route, but generally not more than two bus routes. In contrast, “Excellent” transit service means an area is typically within walking distance of at least one rapid transit station and multiple frequent local or express bus routes. About **24 percent of the Region’s residents would live within walking distance of Excellent of Very Good transit service under Alternative II**, compared to 20 percent under Alternative I and 3 percent under the Trend.

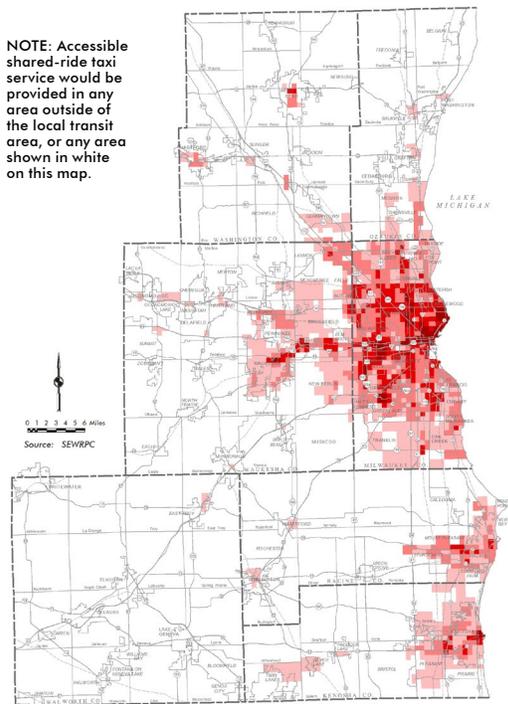
Map 16 – TRANSIT SERVICE QUALITY: EXISTING



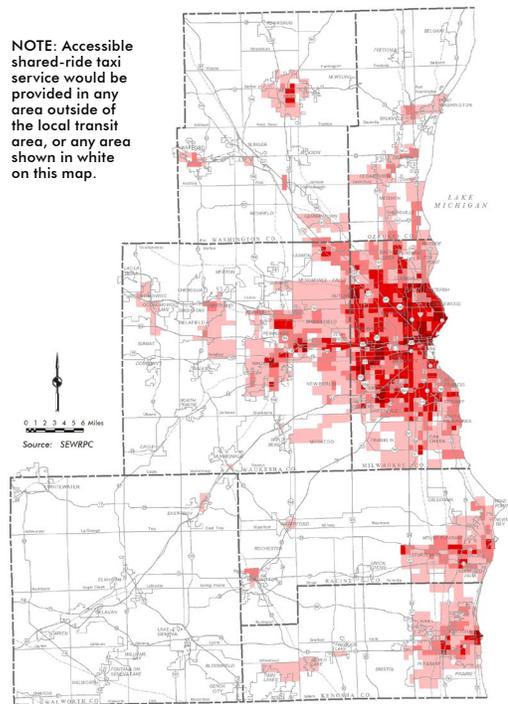
Map 17 – TRANSIT SERVICE QUALITY: TREND



Map 18 – TRANSIT SERVICE QUALITY: ALTERNATIVE PLAN I



Map 19 – TRANSIT SERVICE QUALITY: ALTERNATIVE PLAN II



### TRANSIT SERVICE QUALITY



**Minimizing Transportation Investment Levels**

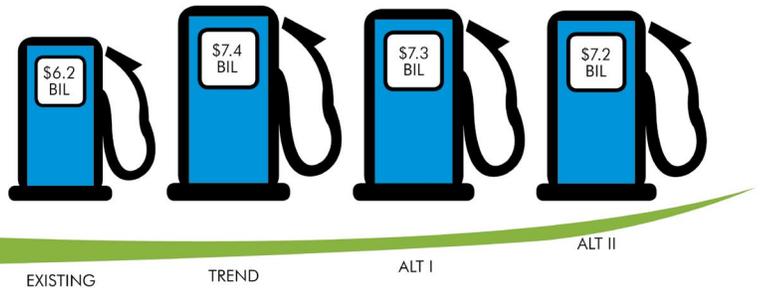
The transportation systems included in Alternative Plans I and II would require additional revenues beyond what is currently available for transportation from Federal, State, and local taxes. As shown in **Figure 5, Alternative II would require the most public investment** (\$1,177.2 million annually, or 46 percent more than the Trend), as it includes significantly increased investment in transit and bicycle facilities, while still adding arterial street and highway capacity primarily in the rural and suburban parts of the Region. Alternative I would be the next most expensive (\$1,128.7 million annually, or 40 percent more than the Trend), and then the Trend (\$807.8 million annually). Implementing Alternatives I or II without highway improvements would save approximately \$43 to \$50 million per year.

**Minimizing Residents' Out-of-Pocket Transportation Costs**

Under Alternatives I & II, annual out-of-pocket transportation costs for the Region's residents would be

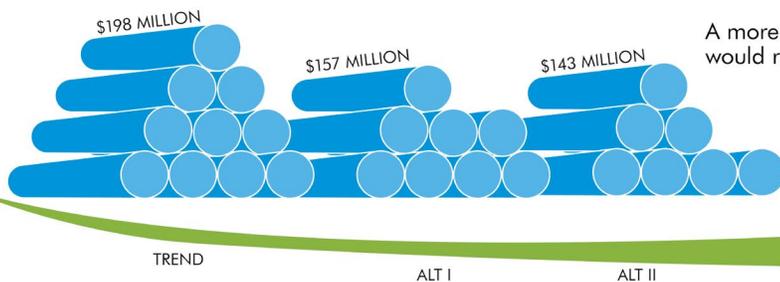
**\$130-185 MILLION LESS**

than the Trend due to destinations and homes being closer together, and more people using alternative methods of transportation rather than cars.



In addition to measuring public expenditures on transportation infrastructure, it is important to consider the amount of money that residents would spend on transportation directly. These personal costs for transportation include the costs of owning and operating a private vehicle and the costs of fares to ride public transportation. In the case of a car, these costs include fuel; tires; maintenance; insurance; purchasing, leasing, or financing; and depreciation. The average vehicle in Southeastern Wisconsin costs its owner approximately \$5,500 per year, while an annual transit pass in Southeastern Wisconsin ranges from \$300 to \$1,000 depending on the transit system and whether or not the rider qualifies for discounted fares. **Alternative Plan II would save the Region's residents approximately \$185 million annually by the year 2050** compared to the Trend, while Alternative Plan I would save the Region's residents approximately \$130 million annually by the year 2050 compared to the Trend. On average, each resident of the Region would save approximately \$80 a year under Alternative II and \$55 a year under Alternative I when compared to the Trend.

**Efficiently Providing Public Services**

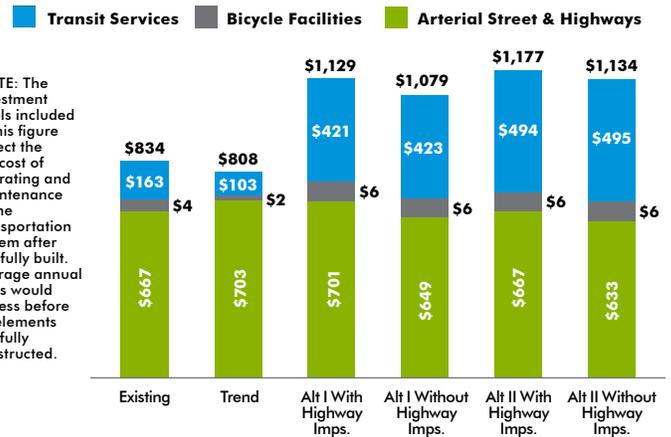


A more compact development pattern in Alternatives I & II would result in **\$40-55 MILLION LESS ANNUALLY** being spent on building sewer systems, water mains, and local roads to serve new development when compared to the Trend.

Density, building type, and location affect the cost of extending supportive infrastructure to new development, including sewer, water, and local roads. Infrastructure can be extended to compact development in a more efficient and cost effective manner than to lower density development. **The annual cost of extending supportive infrastructure (sewer, water, and local roads) to new development would be about \$198 million under the Trend, \$157 million under Alternative Plan I, and \$143 million under Alternative Plan II.** In addition to the construction costs associated with infrastructure for new development, significant research has been done nationally on the costs to municipalities to maintain the public infrastructure associated with serving homes and businesses once it is built. Often, local governments are 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.

**Figure 5**

**AVERAGE ANNUAL TRANSPORTATION SYSTEM INVESTMENT LEVELS IN 2050 (IN MILLIONS)**



NOTE: The investment levels included in this figure reflect the full cost of operating and maintenance of the transportation system after it is fully built. Average annual costs would be less before all elements are fully constructed.

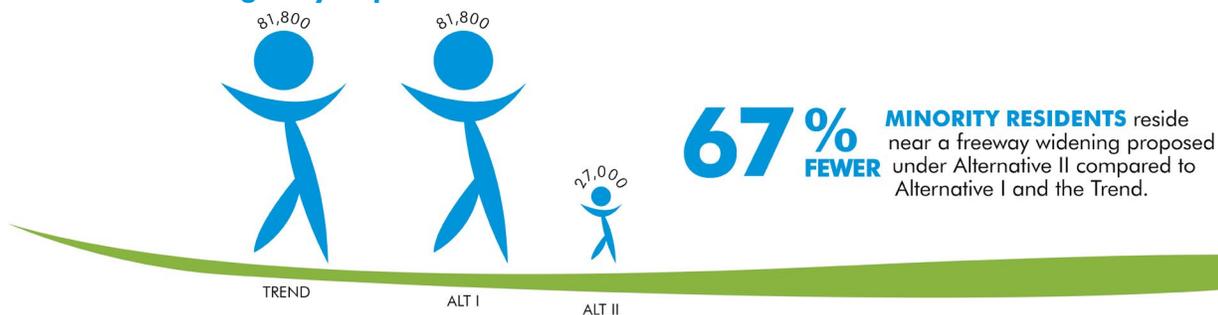
## EQUITABLE ACCESS

Significant disparities in areas such as income and education exist between white and minority populations in the Region, particularly in the Milwaukee Metro area. Previous VISION 2050 analyses have shown that the disparities in Metro Milwaukee are more pronounced than the disparities in almost all other large metropolitan areas in the Country. The alternatives were evaluated based on the degree to which each alternative's benefits and impacts would be shared fairly and equitably and serve to reduce disparities between white and minority populations.

### Accessibility

One of the primary factors to evaluate the equity of the alternatives is how well they improve the ability of minority populations and low-income families to reach important destinations, such as jobs. Although most minority residents use automobiles for their travel, minority residents use public transit at a higher proportion relative to other modes of travel than white residents. Similarly, individuals from low-income families use transit at a higher rate than individuals from higher-income families. For these individuals it is essential to reach jobs using public transit. About 62 percent of the Region's jobs (734,000) can currently be reached by public transit. This would decrease to 52 percent under the Trend (727,000) as a result of a 22 percent decrease in transit service from current levels by 2050. Transit service levels would be significantly expanded under Alternative I, resulting in the number of jobs accessible by transit increasing to 967,000, or 70 percent of the total jobs in the Region. Alternative II would provide transit accessibility to 1,020,000 jobs, or 74 percent of the total jobs in the Region. **Less than 3 percent of minority residents would be within 30 minutes of 100,000 or more jobs by transit under the Trend, compared to 14 percent under Alternative I and 19 percent under Alternative II.**

### Arterial Street and Highway Impacts



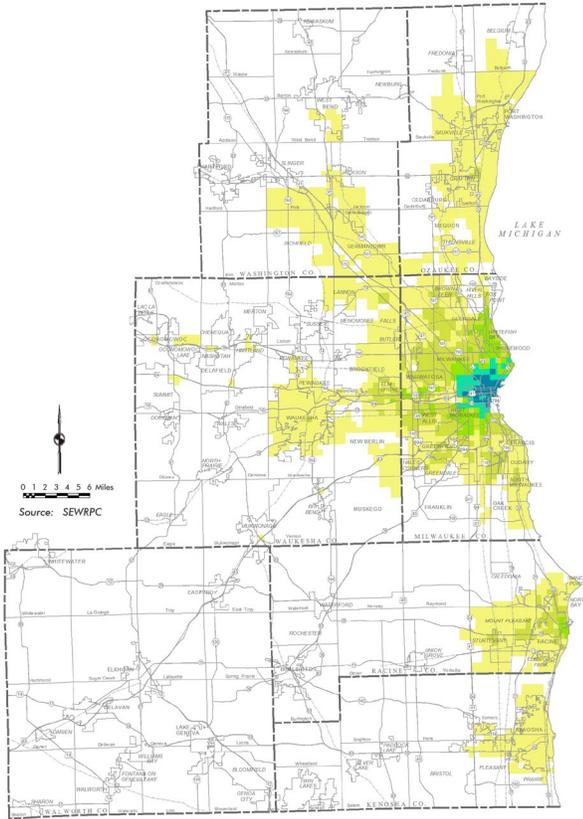
In general, no area of the Region, or minority or low-income community, would be expected to disproportionately bear the impact of highway capacity improvements under any alternative. Proposed standard arterial improvements are largely located outside areas with concentrations of minority populations and low-income families. Slightly more minorities reside near a freeway (20 percent) than non-minorities (15 percent), but the vast majority of the freeway system and future widenings under the alternatives are not located adjacent to concentrations of minority and low-income populations. In comparing the alternatives (with widenings under Alternatives I and II), **Alternative II would have fewer minorities and families in poverty adjacent to a proposed freeway widening** (27,000 people and 2,800 families) than the Trend and Alternative I (81,800 people and 7,500 families). Current and future Federal fuel and vehicle fuel economy standards and improved emission controls are expected to significantly decrease transportation-related air pollutant impacts from current levels under all of the alternatives.

### Housing + Transportation Costs (H+T)

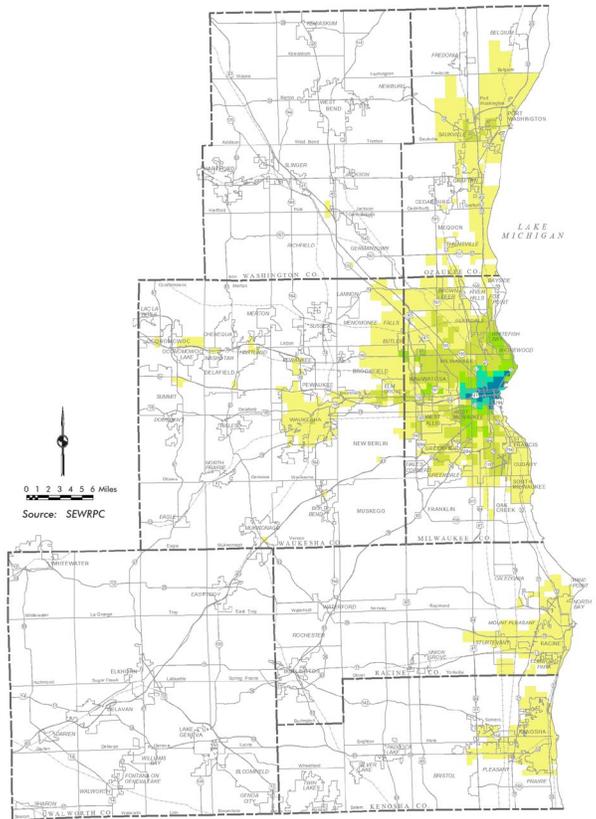


Housing is typically considered affordable if a household is paying no more than 30 percent of its gross income on housing. This standard does not consider transportation costs, which are typically a household's second largest cost and can create a cost burden for low-income households. The Center for Neighborhood Technology (CNT) has created an H+T (housing plus transportation) index that identifies areas that have H+T costs of over 45 percent of the areawide median household income, which the CNT has determined is a high H+T cost burden. The index shows that compact, mixed use communities with a balance of housing, jobs, and stores and easy access to transit have lower transportation costs because residents can meet their daily needs with fewer vehicles. Using CNT's index as a basis, **Alternative II would have the most households in areas with affordable H+T costs** (386,900)—3 percent more than Alternative I (375,000 households) and 9 percent more than the Trend (353,500 households). The Region would also have more areas with a match of jobs and workers in close proximity under Alternatives I and II than the Trend, which could result in shorter trips from home to work.

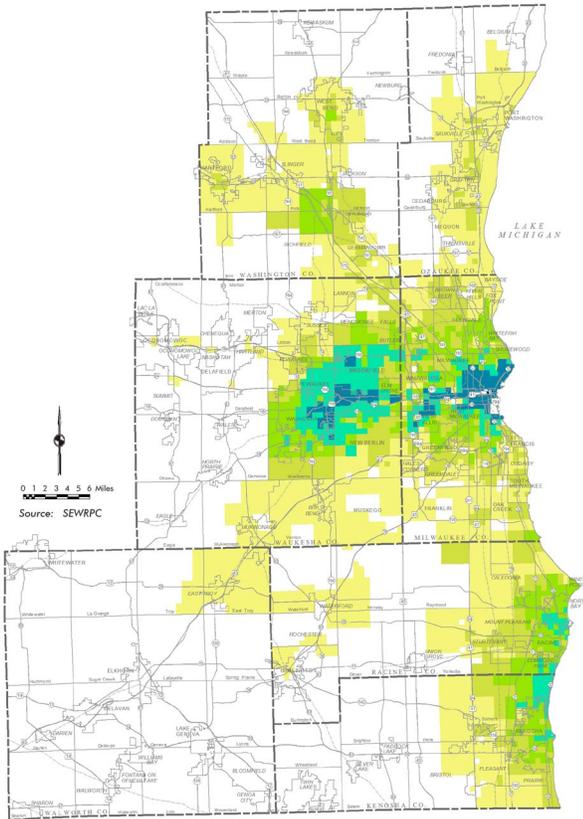
Map 20 – TRANSIT ACCESS TO JOBS WITHIN 30 MINUTES: EXISTING



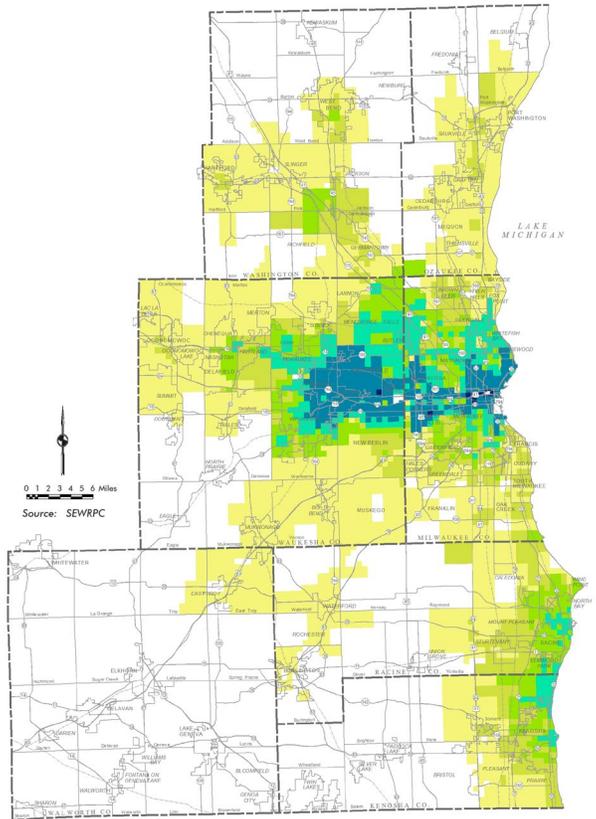
Map 21 – TRANSIT ACCESS TO JOBS WITHIN 30 MINUTES: TREND



Map 22 – TRANSIT ACCESS TO JOBS WITHIN 30 MINUTES: ALTERNATIVE PLAN I



Map 23 – TRANSIT ACCESS TO JOBS WITHIN 30 MINUTES: ALTERNATIVE PLAN II



**JOBS ACCESSIBLE VIA TRANSIT WITHIN 30 MINUTES**



## Watch for Updates



*One Region, Focusing on Our Future*

VISION 2050 is SEWRPC's land use and transportation planning effort for Southeastern Wisconsin.

Learn about VISION 2050 at [www.vision2050sewis.org](http://www.vision2050sewis.org).

Follow us on Twitter at [@vision2050sewis](https://twitter.com/vision2050sewis).

The **Southeastern Wisconsin Regional Planning Commission** is the official advisory areawide planning agency for land use and infrastructure for the seven counties in the Region.

More information can be found at [www.sewrpc.org](http://www.sewrpc.org).

Please contact us at [vision2050@sewrpc.org](mailto:vision2050@sewrpc.org).

## Tell Us What You Think!

Public involvement on the detailed land use and transportation alternatives and their evaluation is the focus of the fourth round of VISION 2050 public workshops (November 2015). Commission staff will be gathering feedback on the alternatives through these public workshops, additional workshops with each of the Commission's eight partner groups, and through a website dedicated to exploring the alternatives and their evaluation.

Input on the alternatives will be important as we develop a preliminary recommended regional land use and transportation system plan during the next step of VISION 2050. The preliminary recommended plan's goal will be to achieve a consensus vision for the Region's land development pattern and its supporting transportation system in 2050. Preparing the plan will involve considering the most effective elements of the alternatives. This step will include the fifth and final round of public involvement for VISION 2050, where Commission staff will summarize the proposed vision for the Region, as outlined in the preliminary recommended plan. Feedback will be welcomed on the preliminary recommended plan, and will be considered in developing the final VISION 2050 plan.



*Images on the front cover by: Milwaukee County Transit System, Daniel Adams and SEWRPC Staff*

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