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VISION 2050: A REGIONAL LAND USE AND
TRANSPORTATION SYSTEM PLAN FOR SOUTHEASTERN WISCONSIN

Volume II, Chapter II

SKETCH LAND USE AND TRANSPORTATION SYSTEM SCENARIOS

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

INTRODUCTION

As part of VISION 2050, the feedback obtained from the initial visioning activities (described in Chapter I of Volume II) led into a scenario planning effort. Scenario planning was used to further the development of a long-term shared vision by considering and evaluating a wide range of potential future scenarios of regional land use development and transportation system development. Developing and comparing possible scenarios, or futures, can help the public and local governments understand the consequences of future land use patterns and transportation systems and make it easier to provide input into the plan development process. The current Federal transportation bill, Moving Ahead for Progress in the 21st Century (MAP-21), also suggests that metropolitan transportation planning organization (MPOs) consider using scenario planning in developing regional transportation plans.

As mentioned in the previous chapter, *Guiding the Vision* provided direction to the Commission staff in developing a series of conceptual, sketch-level land use and transportation system scenarios and a series of criteria for comparing those scenarios. Sketch scenarios are conceptual designs of alternative ways in which the Region could develop through the year 2050. The five sketch scenarios developed by staff represent a range of possible futures for land use and transportation. These scenarios are intended to be “what if” illustrations, varying based on the location, density, and mix of new development and redevelopment, and transportation system development.

The sketch scenarios include one that continues current trends—Scenario A—and four with different levels of investment in the transportation system and different development patterns. Those four scenarios were intended to

represent alternative futures which could achieve the initial vision, generally described by the Guiding Statements in *Guiding the Vision*, which were developed using the results of the visioning activities conducted during the previous steps in the VISION 2050 process.

The Commission staff evaluated, as best as could be done given the conceptual nature of the scenarios, how each scenario would perform relative to the other scenarios. To evaluate and assist in comparing the sketch scenarios, a series of 13 measurable criteria were selected. Values for each criterion were then estimated for each scenario, with the results presented in a "scenario scorecard" that allowed the scenarios to be easily compared in terms of their relative benefits, costs, and impacts.

The extensive public outreach and engagement conducted as part of each step in the VISION 2050 process continued with the sketch scenarios. A third round of interactive public workshops was held across the Region, along with workshops held by each of the eight VISION 2050 partner organizations and additional workshops held by request. The Commission staff also developed an interactive online tool, allowing interested residents to explore and provide feedback on the sketch scenarios and their evaluation (www.vision2050sewis.org/scenarios). The feedback obtained during this step of the process was used to develop and evaluate more detailed alternative land use and transportation system plans, which are described in Chapter III of Volume II.

SKETCH SCENARIO DEVELOPMENT PROCESS

The sketch scenarios varied based on each scenario's development pattern and the level and type of investment in the transportation system. The process for developing the land use and transportation system components of each scenario is described below.

Developing the Land Use Component

Development of the land use component of each sketch scenario involved the use of a sketch scenario planning tool called CommunityViz. CommunityViz was used to create a sketch land use model for allocating projected household and employment growth through the year 2050 across the Region. The first step was to gather baseline data for the CommunityViz land use model so that a trend scenario (Scenario A) could be developed. The primary baseline data, described in Chapters II and VI in Volume I of this report, included:

- Year 2010 employment and households per U.S. Public Land Survey Quarter Section;
- Existing land use (based on the Commission's 2010 land use inventory);
- Planned land use from composite county comprehensive plan maps developed for the Commission's year 2035 regional housing plan; and
- The Commission's year 2050 household and employment forecasts for each county in the Region.

Using these baseline data in the CommunityViz model, staff then determined restricted lands—those which would not receive any allocations of household or employment growth. Restricted lands included primary environmental corridors, wetlands, open water, floodplains, areas with steep slopes, public park and open space sites, farmland preservation areas identified in county farmland preservation plans, and certain major land uses that would prevent development on a particular parcel, such as General Mitchell International Airport.

After identifying the restricted lands, staff then estimated the total capacity of households and employment for each U.S. Public Land Survey quarter section of land in the Region. These capacities represented the maximum amount of households and jobs that could be present in each quarter section. Capacities in Scenario A were limited by the planned land uses in each community's comprehensive plan, while the other scenarios made some limited exceptions to these planned capacities. These exceptions included increased capacities in areas targeted by communities for redevelopment under Scenarios B, C, D, and E, and increased capacities in areas within walking distance of a fixed-guideway transit station under Scenarios C, D, and E. These increased capacities allowed the model a reasonable amount of flexibility to allocate growth in the form of redevelopment and transit-oriented development. CommunityViz was then programmed to subtract the year 2010 employment and households from these total capacities to determine the net available capacity for development in each quarter section. These net capacities represented the maximum amount of incremental households and jobs—to be added between 2010 and 2050—that could be allocated to each quarter section under each scenario.

The incremental households and jobs that the model could allocate were then programmed into the model for each scenario. For all five scenarios, the overall growth in the Region was constrained to the regional forecasts (intermediate growth projections) of about 172,300 additional households and about 210,300 additional jobs by the year 2050 (presented in Chapter VI of Volume I of this report). For Scenarios A and B, the model was instructed to allocate each county's forecast (intermediate growth projection) of households and jobs. For Scenarios C, D, and E, the model was required to allocate at least the low growth household and employment projections in each county. Tables II-1 and II-2 present the amount of incremental growth in households and employment for each county under each scenario.

With the above constraints in place, the model allocated the incremental households and jobs under each scenario using a number of suitability factors. These suitability factors represented a variety of attractors of development, and staff was able to change the weight of each factor based on the characteristics of each scenario. The suitability factors that were used are presented in Table II-3.

Developing the Transportation System Component

Developing the transportation system component of each scenario involved identifying different ways of investing in transportation infrastructure and services, including the arterial street and highway system, the public transit system, and bicycle and pedestrian facilities. Each scenario's transportation system was designed to serve and be consistent with the scenario's land development pattern. The process began by reviewing the recent trends in transportation system development and the recommendations in the year 2035 regional transportation system plan. Staff then identified key concepts for each transportation system element that would be desirable to compare in the scenarios, and determined how each concept would vary between the scenarios.

In terms of the Region's transit system, the scenarios differed with respect to the level and technology of transit facility and service investments. Scenario A assumed transit service reductions similar to recent trends, including consideration of the comparison of current and expected revenues to current and expected capital, operating, and maintenance costs for the Region's existing transit services. Scenario B included a significant increase in transit services, similar to that recommended in year 2035 regional transportation plan, reversing the recent trend of declining service levels. The improvements were focused on expanding bus services—service to more areas, longer hours of service, and more frequent service—and establishing a system of express bus routes.

Transit improvements in Scenarios C, D, and E went beyond the significant increase to existing bus services under Scenario B. Scenario C included a system of rapid transit lines—light rail or bus rapid transit (BRT)—developed in the Milwaukee area, Scenario D included a system of commuter rail lines between the Region's urban centers, and Scenario E included both a rapid transit system and a commuter rail system. The location of each rapid transit and commuter rail line was initially identified by reviewing the potential lines identified in the year 2035 regional transportation system plan. Staff then slightly modified the lines based on considerations such as existing and expected development patterns, socioeconomic characteristics, and the presence of activity centers. For the rapid transit lines, the technology—light rail or BRT—was not specified, with the understanding that the specific technology would be determined during a more detailed corridor study. The commuter rail lines generally followed existing or former freight railroad lines. Tables II-4 and II-5 present the service headways and hours of service, respectively, for the transit services included in each scenario.

For bicycle and pedestrian facilities, the trend in providing facilities has been greatly affected by Federal and State requirements that bicycle and pedestrian accommodations be provided in all new highway construction and reconstruction projects funded with State or Federal funds, unless demonstrated to be prohibitive. The off-street network has also been expanding. To explore different levels of bicycle investment, staff proposed under Scenarios A and B, the continuation of the trend of an expanding off-street network, and implementation of basic bicycle facilities as the arterial street and highway system is reconstructed. Scenarios C, D, and E also included

the off-street bicycle path network, but went beyond the basic required on-street bicycle facilities to include higher levels of bicycle accommodation, such as protected bicycle lanes in key bicycle corridors. For pedestrian accommodations, all five scenarios assumed pedestrian facilities designed and constructed consistent with Americans with Disabilities Act (ADA) requirements, thus accommodating people with disabilities. Where they varied was in the connectivity of sidewalks based on each scenario's general development pattern.

For the Region's arterial street and highway system, it was recognized that a significant portion of the Region's major roads—including freeways, State highways, county highways, and major local streets—will need to be reconstructed between now and 2050. A recurring comment during the initial visioning activities, at least in some parts of the Region, was that highway capacity expansion should be limited. One of the concepts focused on in the scenarios, therefore, was whether or not the arterial street and highway system included capacity expansion in the form of additional traffic lanes and new facilities. Highway capacity additions were included in Scenarios A and B. These capacity additions would address the residual traffic congestion which may not be alleviated by transit, bicycle, and other measures. For Scenarios C, D, and E, highway improvement was assumed to be limited to modernization to current safety and design standards as highways are reconstructed.

Staff recognized that certain arterial highway capacity improvement and expansion projects had already been committed and such projects were included in all five sketch scenarios. These projects were either under construction, were undergoing final engineering and design, or had a preferred alternative selected as part of preliminary engineering and environmental impact study. Table II-6 and Map II-1 present the projects that were considered to be committed at the time the scenarios were developed.

DESCRIPTION OF SKETCH SCENARIOS

Five sketch-level land use and transportation system scenarios were developed during this step in the VISION 2050 process. They included four scenarios representing alternative futures which to varying extents could achieve the initial vision, along with one scenario that assumed a continuation of current trends in land and transportation system development. The five scenarios and the basic concepts that varied between them are presented in Table II-7 and are described below.

Development Patterns under the Sketch Scenarios

A primary way in which the five scenarios differed was the development pattern under each scenario, including the location, density, and mix of new development and redevelopment. As discussed previously in the chapter, the land use component of each scenario was developed using a sketch land use model that allocated incremental growth in households and employment based on the weighting of a series of suitability factors. By modifying the

weighting of each suitability factor for each scenario, the model predicted where the incremental growth would occur, essentially producing each scenario's development pattern. The household growth that would be expected by the year 2050 under each scenario is presented in Maps II-2A through II-2E. The employment growth that would be expected by the year 2050 under each scenario is presented in Maps II-3A through II-3E.

Scenario A represented a continuation of recent trends in land and transportation system development in the Region from the past approximately 20 years. Most growth under Scenario A would occur in and around existing cities and villages, with single-family development within urban service areas at the edges of cities and villages on larger lots than the other four scenarios. Urban service areas generally include cities and villages and the immediate surrounding area where future growth is anticipated. These areas are typically served by public sewer and public water supply. There would also be more growth in Scenario A outside of urban service areas at lower densities than the other four scenarios. Most of the growth outside urban service areas would be a scattering of new homes built on large lots of 1.5 or more acres in size. These homes would have private onsite water supply and wastewater treatment systems.

New development in Scenario B would mostly occur as redevelopment or infill in existing urban areas or immediately around existing cities and villages within their urban service areas, with residential growth being more compact and on smaller lots than under Scenario A. Residential densities would be higher than in Scenario A, resulting in a reversal of declining urban density. The focus of development and redevelopment would be in the larger urban core areas and other city and village urban service areas throughout the Region. Significantly more new homes would be built in urban service areas and would be served with public water and sewer. Single-family development within urban service areas at the edges of cities and villages would be on smaller lots than Scenario A (about one-quarter acre lots compared to one-half acre lots in Scenario A). The loss of farmland would largely be limited to the edges of existing cities and villages. It would also result in a mix of housing types in some areas that could include not only single-family homes, but also duplexes and apartments. The development of neighborhoods with a mix of uses, such as housing, businesses, schools, and parks, would occur.

The focus of new development under Scenarios C, D, and E would take the form of compact clusters around fixed-guideway transit stations (light rail, BRT, or commuter rail), with the type of transit stations depending on the scenario. This type of development is often referred to as Transit-Oriented Development (TOD). TOD refers to compact, mixed-use development located near a transit station, with streets and sidewalks that provide convenient access for walking and bicycling to the station. It is widely accepted that a higher level of transit service—such as light rail, BRT, and commuter rail—is needed to develop a TOD. Investment in residential, office, and retail development has been linked to investment in higher levels of transit service. Bus service over existing streets and highways does not provide a long-term service commitment, and therefore, is less likely to

result in investment in land development and redevelopment around its stops. Figure II-1 presents highlights of the benefits and challenges associated with TOD as well as a series of examples of existing TODs in the United States.

Under Scenario C, the TODs would be focused around rapid transit (light rail or BRT) stations. They would mostly be achieved through redevelopment and infill and would be focused in the Milwaukee area. However, additional compact, mixed-use development would also occur under this scenario. This development would primarily be through redevelopment and infill in, as well as development at the edges of, cities and villages outside of Milwaukee. The residential development in these areas would include more smaller lot single-family homes and townhomes, and less large lot single-family homes. There may also be a mix of housing types within walking distance of other uses such as businesses, schools, and parks.

Similar to Scenario C, Scenario D emphasizes new development as compact TODs, but instead of being focused around rapid transit stations, the TODs would be focused around commuter rail stations. Commuter rail TODs located in the Milwaukee area would be similar in design to those under Scenario C, and would be achieved through redevelopment and infill. Unlike Scenario C, the commuter rail TODs in Scenario D would also occur in between larger urban areas in the Region, with those located outside the Milwaukee area also having a more compact, mixed-use, and pedestrian friendly design. Given the nature of commuter rail service, significant commuter parking would likely be adjacent to some stations. As in Scenario C, additional redevelopment and infill would occur in cities and villages in the Region, along with development at the edges of cities and villages.

Scenario E would have the most compact development of the five sketch scenarios. This scenario represents a combination of elements from Scenarios C and D, with mixed-use TODs around both rapid transit and commuter rail stations in the Milwaukee area and around commuter rail stations located outside the Milwaukee area. As in Scenarios C and D, in addition to the TODs, there would also be some redevelopment and infill away from rail stations in existing cities and villages under this scenario. This redevelopment and infill development could support a range of housing types and a mix of neighborhood uses such as businesses, parks, and schools. Some development would also occur at the edges of these cities and villages.

Healthy Community Concepts under the Sketch Scenarios

The “active transportation” component of future development, including bicycling and walking, also varied between the scenarios. Figure II-2 provides an overview of the bicycle facility concepts that were considered while comparing the scenarios. Figure II-3 provides an overview of the pedestrian concepts that were considered while comparing the scenarios.

As mentioned previously in the chapter, the trend in providing bicycle and pedestrian facilities has been greatly affected by Federal and State requirements that bicycle and pedestrian accommodations be provided in all new highway construction and reconstruction projects funded with State or Federal funds, unless demonstrated to be prohibitive. The off-street network has also been expanding. In addition, ADA requirements need to be followed when designing and constructing pedestrian facilities to accommodate people with disabilities. All of this was assumed to continue through the year 2050 under all five scenarios.

Reflecting recent trends in bicycle accommodations, Scenario A anticipated basic bicycle facilities—bike lanes, wider curb lanes, or paved shoulders—are provided as non-freeway major roads are reconstructed, with off-street facilities also added to provide a well-connected off-street network. Pedestrian facilities would be designed and constructed consistent with ADA requirements; however, due to the trend in lower density development, the connectivity of sidewalks would be limited in many areas of the Region.

Scenario B assumed similar provision of on-street and off-street bicycle facilities, and ADA-adherent pedestrian facilities. The difference between Scenarios A and B was that Scenario B would include a more compact development pattern, with limited lower density development. This would likely result in more sidewalk connectivity than under Scenario A.

Scenarios C, D, and E assumed higher levels of bicycle accommodation—such as protected bicycle lanes—are provided in key bicycle corridors. These higher levels of accommodation (described in Figure II-2) would go beyond the minimum on-street bicycle facilities required to be provided as part of major road reconstruction projects. The scenario also included the network of off-street bicycle paths under Scenarios A and B. Better sidewalk connections would also be anticipated under Scenarios C, D, and E as convenient walking access to transit stations is a focus of a compact TOD.

Transportation System Investment under the Sketch Scenarios

Another significant concept varying from scenario-to-scenario was the investment in major transportation system infrastructure and services, including the public transit system and the arterial street and highway system. Exploring different ways of investing in these elements of the transportation system was a major focus of the scenarios. As discussed previously in the chapter, each scenario's transportation system was designed to serve and be consistent with the scenario's land development pattern.

Public Transit

Since the early 2000s, transit service in the Region has declined nearly 25 percent. Under Scenario A, the already reduced transit service levels would be reduced by an additional 25 percent. This would particularly affect local

bus service, resulting in entire routes being cut, lower service frequencies, reduced service hours, and/or weekend service being eliminated, depending on the transit system. Existing express bus service would be eliminated as well. Passenger fares would increase faster than inflation as transit systems attempt to maintain service levels as high as possible. Existing shared-ride taxi services would continue to operate, but no new shared-ride taxi services would be established.

Scenario B assumed a significant increase in existing bus transit services, reversing the trend of declining service levels that has occurred since the early 2000s. The increased transit services would continue to be provided primarily by buses. Increases would be in the form of improved and expanded local bus service—including service to more areas, longer hours of service, and more frequent service. A system of express bus routes would also be established. Shared-ride taxi services would be provided throughout the Region outside of fixed-route bus service areas, with a 24-hour notice needed to schedule a ride.

Scenarios C, D, and E included fixed-guideway transit systems in addition to the significant increase to existing bus services under Scenario B. Figure II-4 discusses the different types of fixed-guideway transit technologies considered under these three scenarios. All three scenarios would include express and commuter bus routes. Similar to Scenario B, regionwide shared-ride taxi services would be provided throughout the Region outside of fixed-route bus service areas, but the advance reservation would be four hours instead of 24 hours.

Under Scenario C, a system of rapid transit lines within urban centers would be developed beyond the significant increase to existing bus services under Scenario B. Each light rail or BRT line would have its own lane or right-of-way, and would provide faster, more frequent (every 5 to 15 minutes) service than a standard local bus route. BRT lines would typically be located in long, straight, and wide corridors, with light rail lines typically located in corridors with higher density development.

Scenario D would involve development of a system of commuter rail lines between urban centers. Each commuter rail line would use an existing or former freight rail corridor. Stations would be spaced every 2 to 5 miles, with trains running every 15 to 60 minutes depending on time of day.

Under Scenario E, both the rapid transit system from Scenario C and the commuter rail system from Scenario D would be developed. The rapid transit system would have the same characteristics as the system in Scenario C, while the commuter rail system would have the same characteristics as the system in Scenario D.

The quality of transit services in the Region in the year 2050 under each scenario is presented in Maps II-4A through II-4E. These maps also show the rapid transit corridors in Scenarios C and E, and commuter rail corridors in Scenarios D and E.

Arterial Street and Highway System

Each scenario recognized that a significant portion of the Region's arterial street and highway system will need to be reconstructed between now and 2050. The primary difference in how the scenarios differed was whether or not the arterial street and highway system included additional traffic lanes and new facilities, or was limited to modernizing streets and highways to achieve current safety and design standards. Figure II-5 provides an overview of the arterial street and highway system concepts considered under the scenarios.

Scenarios A and B included additional traffic lanes as arterial streets and highways are reconstructed, and the construction of new facilities on the arterial street and highway system. The additional highway capacity provided under these two scenarios would be designed to address traffic congestion. The highway capacity additions would be implemented only to address the residual traffic congestion which may not be alleviated by transit, bicycle, and other measures. Each reconstructed street and highway would also be modernized to achieve current safety and design standards.

Scenarios C, D, and E would not include additional traffic lanes as arterial streets and highways are reconstructed, or any new facilities, other than those considered as already being committed. As such, the highway improvements under these three scenarios would be limited to modernization to current safety and design standards as highways are reconstructed. These three scenarios would, therefore, not address residual traffic congestion after transit, bicycle, and other measures are implemented.

EVALUATION OF SKETCH SCENARIOS

Public engagement related to the sketch scenarios provided the first opportunity in the VISION 2050 process for residents to compare the long-term consequences of alternative futures. During each interactive workshop and through an online scenario exploration tool, residents were encouraged to consider these consequences, which were represented by sketch-level estimates for a series of evaluation criteria. Given the conceptual nature of the scenarios, the evaluation was not as in-depth as that conducted for the more detailed alternative plans presented in Chapter III of Volume II of this report. Rather, the comparison of the sketch scenarios was intended to provide an understanding of the basic differences of alternative future development patterns and transportation system development. The evaluation did, however, capture a range of performance-related issues through 13 measurable

criteria and showed how all five scenarios would likely perform relative to one another. The evaluation and the criteria developed for the evaluation are described below.

Criteria for Scenario Evaluation

A series of 13 measurable criteria were selected to evaluate and assist in comparing the sketch scenarios. These criteria were designed to provide sketch-level estimates for the scenarios, in a more conceptual way than those used for evaluation of the more detailed alternative plans in the subsequent stage of the VISION 2050 process. These criteria were developed by staff with guidance from the Commission's Advisory Committees on Regional Land Use Planning and Regional Transportation System Planning, and its Environmental Justice Task Force. Staff also considered the Guiding Statements in *Guiding the Vision* and public feedback received during initial visioning activities as part of the process to develop a consensus long-term land use and transportation vision for the Region. The 13 criteria that were developed for evaluating and comparing the sketch scenarios are presented in Table II-8.

Scenario Evaluation Results

Using the 13 criteria described above, the Commission staff evaluated, as best as could be done given the conceptual nature of the scenarios, how each scenario would perform relative to each other scenario. Each criterion was measured for each scenario, with the results presented in a "scenario scorecard" (presented in Figure II-6) that allowed the scenarios to be easily compared in terms of their relative benefits, costs, and impacts[1]. This scorecard, along with the criteria descriptions in Table II-8, was provided to all participants at the workshops and through the online scenario exploration tool to guide their comparison of the scenarios. Evaluation results for transit service quality and traffic congestion were also provided using maps. As mentioned previously in this chapter, the quality of transit services in the Region in the year 2050 under each scenario is presented in Maps II-4A through II-4E. The year 2050 level of traffic congestion on the Region's arterial streets and highways under each scenario is presented in Maps II-5A through II-5E, with the congestion categories defined in Table II-9.

Evaluation results for criteria related to healthy communities showed that the scenarios that envisioned more compact, mixed-use development and investment in enhanced bicycle facilities—particularly Scenarios C, D, and E—tended to perform the best. This was reflected in the estimated number of bicycle and walking trips per day and people living in walkable areas. It was also true of annual tons of greenhouse gas emissions, although there

[1] *The performance graphics in the scenario scorecard show the best performing scenario under each criterion with a filled-in blue circle, the worst performing scenario with an open circle, and the remaining scenarios with circles partially filled in blue on a proportional basis relative to the best and worst performing scenarios. This method may have overstated the performance differences between scenarios for some criteria, but allowed for easily identifying the best and worst performing scenarios at a glance.*

was not substantial variation in emissions from scenario to scenario. The scenarios with more compact development, and focused on infill and redevelopment, also tended to preserve more farmland and undeveloped land, as less of that land would be consumed by new development.

In terms of providing equitable access for low-income and minority populations, scenarios which focused investment in transit services, particularly those serving the Region's urban centers, tended to outperform the other scenarios. Scenarios C and E, which included rapid transit lines primarily in the Milwaukee area and TOD around those rapid transit stations, were estimated to have the most households with affordable housing and transportation costs (considered to be 45 percent or less of household median income) as well as the highest transit service quality for minority and low-income populations.

The costs associated with each scenario also varied. Average annual transportation system investment was affected mostly by major investments in arterial streets and highways and public transit, with the scenarios that included fixed-guideway transit having significantly higher annualized capital, and operating and maintenance costs. By contrast, the cost to local governments associated with supporting new development tended to be lower for those scenarios focused on more compact development, particularly those with more multi-family housing units.

Several measures were used to illustrate the anticipated mobility of Southeastern Wisconsin residents under each scenario. Scenarios A and B, which included additional traffic lanes and new facilities on the arterial street and highway system, tended to perform better in addressing traffic congestion. However, they also had higher average vehicle miles of travel per capita due to residents driving more and having longer trip lengths. There would also be a better balance between jobs and households within the Region under the scenarios with more mixed-use, higher density development. Regarding transit access, Scenarios B, C, D, and E would significantly increase the number of residents with access to fixed-route transit services and the number of jobs accessible by those services. Access to "high quality" transit services—defined as transit service having its own right-of-way—would only be provided under Scenarios C, D, and E, with far more people and jobs having access under Scenarios C and E than Scenario D. This is due to the location of rapid transit lines in areas with the highest concentrations of population and employment.

THIRD ROUND OF VISION 2050 WORKSHOPS

A third round of interactive workshops, open to the general public and held throughout the Region, was conducted between September 8 and 18, 2014. The workshops were the third installment of the five rounds 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. Similar to the first two rounds, the Commission hosted one workshop in each county, with the Commission's eight partner organizations holding individual workshops for their constituents between September 22 and October 6, 2014. A summary report of the eight partner organization workshops held in the fall of 2014 can be found in Appendix C-1. As in the previous two rounds of workshops, the Commission staff offered to hold individual workshops by request, and held one such requested workshop in the fall of 2014[2]. Staff also received input through an event held on October 23, 2014, by MetroGO.

The focus of the third round of workshops was the review and comparison of a series of sketch-level land use and transportation scenarios and their evaluation. Staff asked attendees a series of questions related to each concept covered under the scenarios. The questions were intended to determine what participants believed were the most important factors to consider when comparing scenarios. Attendees then had the opportunity to review, discuss, and provide feedback on each scenario within small groups. The feedback was used to develop and evaluate more detailed alternative land use and transportation system plans, which are described in Chapter III of Volume II. The workshops also involved a review of the results of the initial visioning activities conducted in the fall of 2013 and winter of 2013/2014 (summarized in Chapter I of Volume II). Staff distributed *Guiding the Vision* as part of that review, which presents an initial vision for the Region's land use and transportation system based on the key values and priorities expressed through the initial visioning activities.

Nearly 450 residents attended one of the above workshops held in the fall of 2014—about 220 people participated in the public or requested workshops, about 190 people participated in the eight partner workshops, and an additional estimated 40 people participated through the MetroGO event.

A description of the activities at the third round of VISION 2050 workshops, along with a summary of the results of those activities, are presented below.

Interactive Presentation on the Sketch Scenarios

The presentation at each workshop began with a brief summary of the results of the VISION 2050 process to date, referencing *Guiding the Vision* as the culmination of the initial visioning activities. Staff then described the purpose of the current scenario planning effort, introduced the five sketch scenarios, and briefly reviewed the main scenario concepts and how each scenario was designed related to each concept. As staff reviewed each scenario concept, questions related to that concept were posed to participants aimed at determining what they

[2] *The Commission staff held an individual workshop for City of Wauwatosa elected officials and staff in September 2014.*

considered were the most important factors to consider when comparing scenarios. Participants responded to the questions using iClicker+ keypad polling devices, and a tally of responses to each question was graphically displayed on the screen in front of the room. The same questions were also asked to residents who participated through an online scenario exploration tool (described in the next section of this chapter). The results of the responses to the scenario factor questions, as well as to a series of questions concerning the characteristics of workshop attendees, can be found in Appendix C-2.

Very few respondents were supportive of low-density development outside of urban centers (12 percent), while the majority preferred the Region grow more through redevelopment and infill along major transit lines (61 percent). Walworth County respondents, however, indicated a preference for encouraging redevelopment, infill, and development immediately at the edge of urban centers (50 percent).

There was a strong preference in all counties for preserving farmland, wetlands, woodlands, and wildlife habitat (85 percent) over increasing land available for development (15 percent). There was also a strong preference for locating businesses near housing and transit stops (69 percent) compared to leaving the location decision up to the business (17 percent), locating businesses near housing alone (2 percent), and locating businesses near transit stops alone (12 percent).

When asked what type of neighborhood participants would prefer, the overwhelming majority indicated one where you can walk to places like businesses, parks, and schools, with either a choice of housing types or with homes that have small private yards (88 percent), was preferable to one with homes that have large private yards (12 percent).

Respondents were also asked which bicycle or pedestrian accommodation was most important to them between sidewalks accessible to people with disabilities, off-street bicycle paths, and physically separated on-street bicycle lanes. The results were similar from county to county, with a regionwide average of 72 percent indicating that all three were important.

In terms of transportation priorities, most of the Region indicated that providing as many transportation options as possible (62 percent) was the top priority when compared to reducing congestion as much as possible (21 percent) and keeping the cost of the transportation system as low as possible (17 percent). Washington County respondents, however, indicated that reducing congestion as much as possible was more important (44 percent), compared to the other two choices (28 percent each).

The last question asked of respondents was about what was important when it comes to public transit. For the most part, respondents indicated that rail transit between communities of the Region in addition to improved bus service (60 percent) was more important than rail transit in the Milwaukee area in addition to improved bus service (17 percent), improved bus service alone (14 percent), and none of these are important (9 percent).

Exploration of the Sketch Scenarios

Following the presentation, staff reviewed the scenario scorecard with attendees before leading them through an interactive small group activity focused on reviewing and providing feedback on each of the five scenarios. The small group activity drew upon the World Café Method[3]. Each table or cluster of tables, with the number of tables varying based on room size and expected attendance, was devoted to one of the five scenarios. Each table included large maps depicting household growth, employment growth, transit service quality, and traffic congestion under that scenario. There was also basic information about the scenario and a form with a few questions to facilitate the group's discussion on the scenario. Staff used the questions on the form to guide what participants considered when reviewing each scenario, and recorded the feedback from participants on the form.

The procedure for the activity involved participants gathering into small groups around each table. At their first table, staff introduced and summarized the scenario at their table, with participants then discussing the scenario for about 10 minutes. During the discussion, a staff person recorded the group's responses. These comments could be related to a specific location, something a group member liked or disliked, or suggestions for improving upon a scenario concept during the next step in the process. After each 10-minute interval was over, staff asked everyone to move to a different table devoted to a scenario they had not yet explored. This process continued until each participant had the opportunity to explore and comment on all five scenarios. The results of the input received during this activity are summarized in the next section of the chapter.

The Commission staff made available an interactive online scenario exploration tool through October 31, 2014, for those who were unable to attend one of the fall 2014 workshops. The online tool asked the same scenario concept questions posed at the workshops, allowing users to see in real-time how well each scenario would likely match their indicated preferences. The tool had an individual page for each scenario, which included a description of the scenario, a navigable map with GIS layers that could be turned on and off, and graphics depicting the performance of the scenario relative to the other scenarios. In addition, for ease in comparing the scenarios, the tool included a page with information about all five scenarios and their evaluation. That page contained descriptions of all five scenarios, navigable images of the scenario comparison table and the scenario scorecard,

[3] *The World Café Method (www.theworldcafe.com) is a flexible, widely accepted method for effective large group conversations. It provides a setting and format that encourages participants with different perspectives to engage in productive discussions with one another and provide meaningful input on a particular topic.*

and side-by-side maps illustrating household growth, employment growth, transit service quality, and traffic congestion under all five scenarios.

A total of about 730 residents participated in the exploration of the sketch scenarios, either at a workshop or online, providing a total of over 4,300 comments related to the scenarios (includes small group, individual, and online comments). The results are discussed below, and a summary of the results can be found in Appendix C-3.

Feedback Related to the Sketch Scenarios

Overall, it was clear that most participants at the workshops and through the online tool did not want to follow the current trends in land and transportation system development, seeing room for significant improvement. Scenario A received by far the most negative comments, while Scenario E received the most positive comments, as shown in Figure II-7. Participants cited a number of concerns with Scenario A, including the continued decline in transit service levels and additional lower density development. Comments in general were supportive of improving transit services and encouraging more compact development, as would occur under the four scenarios that presented alternatives to a continuation of trends.

In terms of development patterns under the scenarios, participants expressed a desire for more compact development rather than continuing the trend in lower density development under Scenario A, particularly expressing support for the mixed-use, TOD emphasis of Scenarios C, D, and E. Some of the reasons cited for supporting a more compact development pattern included the reduced consumption of farmland, open space, and natural resources; a focus on strengthening urban areas through infill development and redevelopment; and an improved ability to walk to destinations. Figure II-8 presents a summary of comments related to development pattern preferences.

Participants were also concerned with the housing options offered under each scenario. As illustrated in Figure II-9, they generally preferred the range of housing options included in the more compact development scenarios like Scenario E, citing a current lack of multi-family housing in the Region and indicating that an emphasis on providing affordable housing options is important. Some participants did note that measures should be pursued to prevent gentrification that could potentially result within TODs in the Region's urban centers, although more participants were concerned that Scenario A would continue segregation for low-income and minority populations. Some comments also expressed concern that Scenarios C and E were too focused on development in urban centers, and would not provide suitable housing choices in rural areas of the Region.

There was general agreement among participants that transit services within the Region need to be improved and expanded, with nearly all participants rejecting a future that includes a decline in transit services, as shown in

Figure II-10. Participants were particularly supportive of improving existing transit services and as well providing more transit options, and enhancing the transit system by implementing high quality transit services like rapid transit or commuter rail. There was an acknowledgement that commuter rail services could better connect people and jobs between urban centers, citing benefits from being able to use existing freight corridors to minimize right-of-way acquisition, although some participants questioned the viability of commuter rail in some of the corridors identified in Scenarios D and E. There was also an urging that transit system improvements are done in a way that users are able to travel the "last mile" to their ultimate destinations.

Figure II-11 illustrates participants' opinions regarding traffic congestion on the arterial street and highway system under each scenario. Participants were often split when it came to whether reconstruction of the highway system should include additional traffic lanes along with new facilities (as in Scenarios A and B) or if reconstruction should be limited to modernization to achieve current safety and design standards (as in Scenarios C, D, and E). Some participants were concerned that highway expansion would encourage dependence on the personal automobile, citing that more people, particularly younger generations, would prefer not to need to drive to their destinations. Some comments also indicated that traffic congestion is not a significant problem in the Region. There were other participants, however, that indicated a need to limit congestion to address safety concerns related to congested roadways, and to ensure that people and goods can move efficiently within and through the Region.

The costs under each scenario were also a concern, as shown in Figure II-12. Participants suggested the investments made in Scenario A would not provide as high a return as those in other scenarios, and that they would not attract as many jobs or new people to the Region. Many participants pointed out that Scenario E—although it was the most favored scenario due to its multitude of transportation options and anticipated benefits related to achieving more compact development—also had significantly higher transportation system costs. Many said, in particular, implementing all of the fixed-guideway transit investments in Scenario E may be unrealistic due to the necessary investment levels and considerable budget constraints at the local, State, and Federal levels. They suggested finding ways to achieve increased transportation options, including some high quality transit options, while reducing the costs of providing those options so the additional funding needed would be limited. Some pointed out that higher investment in more robust transit services can reduce personal transportation costs as more participants would be able to travel without the need of a personal automobile. Participants also cited that higher density development, focused on infill and redevelopment, would tend to reduce the costs to local governments associated with providing services and infrastructure.

In terms of bicycle and pedestrian accommodations, Figure II-13 shows that participants were generally supportive of improving bicycle facilities and encouraging more walkable areas. Many participants cited health

benefits from encouraging more bicycle use and establishing more dense, walkable neighborhoods. Several participants expressed support for the enhanced bicycle accommodations, such as protected bike lanes, included in Scenarios C, D, and E. Some participants, however, questioned the need to invest in improved and expanded bicycle facilities, citing that the Region's climate limits usage in the winter months.

The input received on the sketch-level land use and transportation scenarios was used during the next step of the VISION 2050 process, as Commission staff developed and evaluated more detailed alternative land use and transportation plans. These detailed alternative plans are described in the next chapter and were presented at the fourth round of VISION 2050 workshops.

* * *

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Table II-1

INCREMENTAL HOUSEHOLD GROWTH ALLOCATED UNDER EACH SKETCH SCENARIO

County	Incremental Household Growth: 2010 through 2050				
	Scenario A	Scenario B	Scenario C	Scenario D	Scenario E
Kenosha	32,800	32,800	24,000	27,000	24,000
Milwaukee	26,000	26,000	39,500	28,300	40,400
Ozaukee	10,300	10,300	8,400	10,500	9,000
Racine	18,100	18,100	16,900	19,000	16,900
Walworth	19,200	19,200	13,400	14,900	13,400
Washington	22,700	22,700	16,900	18,700	17,200
Waukesha	43,200	43,200	53,200	53,900	51,400
Region	172,300	172,300	172,300	172,300	172,300

Source: SEWRPC.

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Table II-2

INCREMENTAL EMPLOYMENT GROWTH ALLOCATED UNDER EACH SKETCH SCENARIO

County	Incremental Employment Growth: 2010 through 2050				
	Scenario A	Scenario B	Scenario C	Scenario D	Scenario E
Kenosha	26,400	26,400	20,500	23,900	20,300
Milwaukee	33,500	33,500	66,100	60,000	73,000
Ozaukee	16,800	16,800	14,100	14,900	14,300
Racine	24,000	24,000	22,100	22,900	20,900
Walworth	16,600	16,600	14,800	16,300	12,800
Washington	23,500	23,500	22,200	24,200	22,400
Waukesha	69,500	69,500	50,500	48,100	46,600
Region	210,300	210,300	210,300	210,300	210,300

Source: SEWRPC.

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Table II-3

SKETCH SCENARIO SUITABILITY WEIGHTING FACTORS

Household Suitability Factors		Employment Suitability Factors	
Factor	Applicable Scenario	Factor	Applicable Scenario
Proximity to Existing Residential Development	A, B, C, D, E	Proximity to Existing Commercial and Industrial Development	A, B, C, D, E
Proximity to Schools	A, B, C, D, E	Proximity to Major Economic Centers	A, B, C, D, E
Proximity to Public Parks	A, B, C, D, E	Proximity to Sanitary Sewer Service Areas	A, B, C, D, E
Proximity to Areas of Employment	A, B, C, D, E	Proximity to Highway Access	A, B, C, D, E
Proximity to Sanitary Sewer Service Areas	A, B, C, D, E	Proximity to Transit Service	A, B, C, D, E
Proximity to Major Roads	A, B, C, D, E	Proximity to Employment Growth/Loss from 1990-2010	A
Proximity to Transit Service	A, B, C, D, E	Proximity to Light Rail Stations	C, E
Proximity to Household Growth/Loss from 1990-2010	A	Proximity to Bus Rapid Transit Stations	C, E
Proximity to Light Rail Stations	C, E	Proximity to Commuter Rail Stations	D, E
Proximity to Bus Rapid Transit Stations	C, E		
Proximity to Commuter Rail Stations	D, E		

Source: SEWRPC.

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Table II-4

TRANSIT SERVICE HEADWAYS UNDER EACH SKETCH SCENARIO: YEAR 2050

Service Type	Existing Year 2014	Scenario A	Scenario B	Scenario C	Scenario D	Scenario E
	Commuter Bus Express Bus Local Bus/Streetcar	Commuter Bus Local Bus/Streetcar	Commuter Bus Express Bus Local Bus/Streetcar	Commuter Bus Express Bus Local Bus/Streetcar Light Rail Bus Rapid Transit	Commuter Rail/Bus Express Bus Local Bus/Streetcar	Commuter Rail/Bus Express Bus Local Bus/Streetcar Light Rail Bus Rapid Transit
Commuter Service	Weekdays 10 – 225 minutes, many services peak direction only Weekends 90 – 240 minutes, KRM Bus only	Weekdays 15 – 240 minutes, peak direction only Weekends No service	Weekdays 10 – 60 minutes, both directions Weekends 20 – 60 minutes, both directions	Weekdays 10 – 60 minutes, both directions Weekends 20 – 60 minutes, both directions	Weekdays 10 – 60 minutes, both directions Weekends 20 – 60 minutes, both directions	Weekdays 10 – 60 minutes, both directions Weekends 20 – 60 minutes, both directions
Express Service	Weekdays 12 – 60 minutes Weekends 20 – 45 minutes, no service on Western Kenosha County Transit	Weekdays No service Weekends No service	Weekdays 5 – 15 minutes Weekends 10 – 20 minutes	Weekdays 5 – 15 minutes Weekends 10 – 20 minutes	Weekdays 5 – 15 minutes Weekends 10 – 20 minutes	Weekdays 5 – 15 minutes Weekends 10 – 20 minutes
Local Service						
Within Milwaukee County	Weekdays 7 – 40 minutes Weekends 12 – 100 minutes	Weekdays 10 – 60 minutes Weekends 15 – 120 minutes	Weekdays 5 – 30 minutes Weekends 10 – 60 minutes	Weekdays 5 – 30 minutes Weekends 10 – 60 minutes	Weekdays 5 – 30 minutes Weekends 10 – 60 minutes	Weekdays 5 – 30 minutes Weekends 10 – 60 minutes
Outside Milwaukee County	Weekdays 30 – 60 minutes Weekends 30 – 60 minutes	Weekdays 30 – 60 minutes Weekends No service	Weekdays 15 – 30 minutes Weekends 15 – 30 minutes	Weekdays 15 – 30 minutes Weekends 15 – 30 minutes	Weekdays 15 – 30 minutes Weekends 15 – 30 minutes	Weekdays 15 – 30 minutes Weekends 15 – 30 minutes

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Table II-5

TRANSIT SERVICE HOURS UNDER EACH SKETCH SCENARIO: YEAR 2050

Service Type	Existing Year 2014 Commuter Bus Express Bus Local Bus/Streetcar	Scenario A Commuter Bus Local Bus/Streetcar	Scenario B Commuter Bus Express Bus Local Bus/Streetcar	Scenario C Commuter Bus Express Bus Local Bus/Streetcar Light Rail Bus Rapid Transit	Scenario D Commuter Rail/Bus Express Bus Local Bus/Streetcar	Scenario E Commuter Rail/Bus Express Bus Local Bus/Streetcar Light Rail Bus Rapid Transit
Commuter Service	Weekdays 5 a.m. - 10 a.m. 12 p.m. – 8 p.m. many services peak direction only Weekends 8 am – 11 p.m. KRM Bus only	Weekdays 5 a.m. – 9 a.m. 3 p.m. – 7 p.m. peak direction only Weekends No service	Weekdays 5 a.m. – 11 p.m. both directions Weekends 5 a.m. – 11 p.m. both directions	Weekdays 5 a.m. – 11 p.m. both directions Weekends 5 a.m. – 11 p.m. both directions	Weekdays 5 a.m. – 11 p.m. both directions Weekends 5 a.m. – 11 p.m. both directions	Weekdays 5 a.m. – 11 p.m. both directions Weekends 5 a.m. – 11 p.m. both directions
Express Service	Weekdays 4 a.m. – 2 a.m. Weekends 5 a.m. – 2 a.m.	Weekdays No service Weekends No service	Weekdays 4 a.m. – 2 a.m. Weekends 5 a.m. – 2 a.m.	Weekdays Up to 24 hours/day Weekends Up to 24 hours/day	Weekdays Up to 24 hours/day Weekends Up to 24 hours/day	Weekdays Up to 24 hours/day Weekends Up to 24 hours/day
Local Service						
Within Milwaukee County	Weekdays 4 a.m. – 2 a.m. Weekends 5 a.m. – 2 a.m.	Weekdays 5 a.m. – 1 a.m. Weekends 5 a.m. – 11 p.m.	Weekdays 4 a.m. – 2 a.m. Weekends 5 a.m. – 2 a.m.	Weekdays Up to 24 hours/day Weekends Up to 24 hours/day	Weekdays Up to 24 hours/day Weekends Up to 24 hours/day	Weekdays Up to 24 hours/day Weekends Up to 24 hours/day
Outside Milwaukee County	Weekdays 5 a.m. – 10 p.m. Weekends 5 a.m. – 7 p.m.	Weekdays 5 a.m. – 8 p.m. Weekends No service	Weekdays 5 a.m. – 11 p.m. Weekends 5 a.m. – 11 p.m.	Weekdays 5 a.m. – 11 p.m. Weekends 5 a.m. – 11 p.m.	Weekdays 5 a.m. – 11 p.m. Weekends 5 a.m. – 11 p.m.	Weekdays 5 a.m. – 11 p.m. Weekends 5 a.m. – 11 p.m.

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Table II-6

CURRENTLY COMMITTED ARTERIAL HIGHWAY CAPACITY IMPROVEMENT AND EXPANSION PROJECTS INCLUDED IN ALL FIVE SKETCH SCENARIOS

County	Improvement Type	Facility	Termini	Description
Kenosha	Widening	CTH K (60th Street)	CTH H to Union Pacific Railway	Widen from two to four traffic lanes
		IH 94/USH 41	CTH C to STH 142	Widen from six to eight traffic lanes
		IH 94/USH 41	STH 142 to CTH KR	Widen from six to eight traffic lanes
		STH 50	IH 94/USH 41 to 39th Avenue	Widen from four to six traffic lanes
Milwaukee	Expansion	Elm Road extension	27th Street to IH 94	Construct two lanes on new alignment
		IH 94/USH 41	Elm Road Interchange	Construct new interchange
	Widening	CTH U (76th Street)	Puetz Road to Imperial Drive	Widen from two to four traffic lanes
		Pennsylvania Avenue	Rawson Avenue to College Avenue	Widen from two to four traffic lanes
		Watertown Plank Road	STH 100 to USH 45	Widen from four to six traffic lanes
		Watertown Plank Road	USH 45 to 92nd Street	Widen from four to six traffic lanes
		CTH V (13th Street)	Rawson Avenue (CTH BB) to Drexel Avenue	Widen from two to four traffic lanes
		STH 241 (27th Street)	College Avenue to Rawson Avenue	Widen from four to six traffic lanes
		STH 241 (27th Street)	Rawson Avenue to Drexel Avenue	Widen from four to six traffic lanes
		IH 43	Silver Spring Drive to STH 60	Widen from four to six traffic lanes
		IH 94/USH 41	CTH G to College Avenue	Widen from six to eight traffic lanes
		Port Washington Road	Bender Road to Daphne Road	Widen from two to four traffic lanes
		USH 45/STH 100	Rawson Avenue to Drexel Avenue	Widen from four to six traffic lanes
		USH 45/STH 100	Drexel Avenue to STH 36	Widen from two to four traffic lanes
		USH 45/STH 100 (Ryan Road)	STH 36 (Loomis Road) to 60th Street	Widen from two to four traffic lanes
Ozaukee	Expansion	IH 43	Highland Road Interchange	Construct new interchange
	Widening	STH 181	CTH T to Bridge Street	Widen from two to four traffic lanes
Racine	Widening	IH 94/USH 41	CTH K to CTH G	Widen from six to eight traffic lanes
		IH 94/USH 41	CTH KR to CTH K	Widen from six to eight traffic lanes
Waukesha	Expansion	Waukesha West Bypass	CTH X to Sunset Drive	Construct four lanes on new alignment
	Widening	CTH L	CTH Y to CTH O	Widen from two to four traffic lanes
		CTH VV (Silver Spring Drive)	CTH Y (Lannon Road) to Jackson Drive	Widen from two to four traffic lanes
		CTH M (North Avenue)	Lilly Road to 124th Street	Widen from two to four traffic lanes
		CTH M (North Avenue)	Pilgrim Road to 147th Street	Widen from two to four traffic lanes
		CTH TT	Sunset Drive (CTH D) to USH 18	Widen from two to four traffic lanes
		CTH TT (Meadowbrook Road)	Northview Road to USH 18	Widen from two to four traffic lanes
		STH 67 (Summit Avenue)	IH 94 to CTH B	Widen from two/four to four/six traffic lanes
		STH 83	USH 18 (High Meadow Lane) to CTH DE	Widen from two to four traffic lanes

Source: SEWRPC

NOTE: THE PROJECTS INCLUDED IN THIS TABLE 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. THE RECONSTRUCTION OF IH 94 BETWEEN 70TH STREET AND 16TH STREET IS NOT INCLUDED AS THE PROJECT HAS NOT PROGRESSED TO THAT STAGE.

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Table II-7

SUMMARY OF SKETCH SCENARIO ELEMENTS

Scenario Concept	Scenario A	Scenario B	Scenario C	Scenario D	Scenario E
Development Pattern	More development on land outside of planned urban service areas	Development as infill, redevelopment, or on land adjacent to already developed areas	Significant development around stations served by rapid transit (light rail or BRT)	Significant development around stations served by commuter rail	Significant development around fixed-guideway transit stations (rapid transit and commuter rail)
	Lower densities; more single-family homes on large lots	Higher densities; single-family homes on smaller lots	Compact, mixed-used multi-family TOD within walking distance of stations	Multi-family and single-family TOD within walking distance of stations	Multi-family and single-family TOD within walking distance of stations
Healthy Communities	Basic on-street bicycle facilities and an expanded off-street network	Basic on-street bicycle facilities and an expanded off-street network	Enhanced on-street bicycle facilities and an expanded off-street network	Enhanced on-street bicycle facilities and an expanded off-street network	Enhanced on-street bicycle facilities and an expanded off-street network
	Limited sidewalk connectivity due to lower density development	More walkable areas due to limited lower density development	High walkability due to TOD pedestrian design	High walkability due to TOD pedestrian design	High walkability due to TOD pedestrian design
Transportation System Investment	Arterial streets and highways widened to address congestion	Arterial streets and highways widened to address congestion	Arterial streets and highways would not be widened	Arterial streets and highways would not be widened	Arterial streets and highways would not be widened
	Transit service reduced by 25 percent	Significant increase in bus transit service; 24-hour advance reservation shared-ride taxi service	Six rapid transit corridors; significant increase in bus transit service; 4-hour advance reservation shared-ride taxi service	Six commuter rail lines; significant increase in bus transit service; 4-hour advance reservation shared-ride taxi service	Full fixed-guideway network; significant increase in bus transit service; 4-hour advance reservation shared-ride taxi service

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Table II-8

SKETCH SCENARIO EVALUATION CRITERIA DESCRIPTIONS

Criterion	Description
Bicycle and walking trips	An estimate of the total daily non-motorized trips for transportation purposes only (does not include recreational trips); varies between scenarios based on density and the level of bicycle accommodation.
Greenhouse gas emissions	An estimate of annual greenhouse gas emissions produced in the Region from mobile sources (cars, trucks, buses, etc.) and homes. Emissions are measured in CO_2 equivalency.
People living in walkable areas	An estimate of walkability (the ease by which people can walk to various destinations in an area) for residents; considers variation in household density and intersection density, with a baseline for existing walkability estimated using data from Walk Score®.
Remaining farmland and undeveloped land	An estimate of the land that would remain as farmland or undeveloped; varies between scenarios based on location and density of jobs and households.
Households with affordable housing + transportation costs	An estimate of the number of housing units affordable at the household median income, based on combined transportation costs and housing costs (45 percent of income or less is considered affordable); varies between scenarios based on residential density and transit service quality; baseline existing data provided by the Center for Neighborhood Technology.
Transit service quality for minority and low-income populations	An estimate of transit service quality in areas with concentrations of minority and low-income populations in the Region; varies between scenarios based on amount, frequency, and speed of transit service in locations with concentrations of minority and low-income populations.
Cost of supporting new development to local governments	An estimate of select local government operating and capital costs (annualized; in year 2014 dollars; excludes education costs) for new residential development; varies between scenarios by the number of single-family and multi-family housing units; baseline existing data provided by the National Association of Home Builders.
Average annual transportation system investment	An estimate of operating, maintenance, and capital costs (annualized; in year 2014 dollars) of arterial streets/highways, transit, and bicycle facilities; varies between scenarios based on types and quantities of transportation infrastructure and services.
Congestion	An estimate of the degree of traffic congestion on arterial streets and highways, measured in centerline miles experiencing moderate, severe, or extreme congestion; congestion categories vary based on level of service, travel speed, and operating conditions.
Vehicle miles of travel per capita	An estimate of the average annual vehicle miles of travel in the Region per Region resident; varies between scenarios based on the predicted number and length of vehicle trips.
Job/housing balance	An estimate of the balance between the number of jobs and the number of households in communities throughout the Region; varies between scenarios based on location and density of jobs and households.
Access to transit	An estimate of the number of residents with access to fixed-route transit and the number of jobs accessible by fixed-route transit; service area defined as being within 1/4 mile of a fixed-route transit stop.
Access to high quality transit	An estimate of the number of residents with access to high quality transit and the number of jobs accessible by high quality transit; transit service is considered to be high quality if it has its own right-of-way (bus rapid transit, light rail, or commuter rail); service area defined as being within 1/2 mile of a high quality transit stop.

Source: SEWRPC.

Table II-9

FREEWAY AND SURFACE ARTERIAL TRAFFIC CONGESTION LEVELS

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

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

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

Source: SEWRPC.

Figure II-1

DESCRIPTION OF TRANSIT-ORIENTED DEVELOPMENT (TOD)

What is TOD?

- **Compact, mixed use development located near a transit station with streets and sidewalks** that provide convenient access for walking and bicycling to the station.
- **Investment in residential, office, and retail development** has been linked to investment in higher levels of transit service, such as rail, bus rapid transit, and commuter rail.

Benefits of TOD

- Can **reduce transportation costs** for residents by encouraging transit ridership
- Can be a **catalyst for redevelopment** and **increase property value** and tax revenues
- **Increases foot traffic for local businesses**

Bus Rapid Transit TOD (Cleveland, OH)

Light Rail TOD (Portland, OR)

Light Rail TOD (Portland, OR)

Commuter Rail TOD (Denver, CO)

Challenges of TOD

- May require **land assembly**
- May be community opposition to increased density
- Increase in land prices **may raise housing costs** and reduce affordability

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Figure II-2

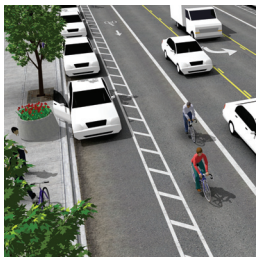
DESCRIPTION OF BICYCLE FACILITY CONCEPTS UNDER THE SKETCH SCENARIOS

On-Street Bicycle Facilities

Federal and state regulations now require bicycle accommodations to be included in all new highway construction and reconstruction projects funded with State or Federal funds, unless demonstrated to be prohibitive. The typical on-street bike facilities in the Region are either unprotected bike lanes or paved shoulders.

Higher levels of accommodation—included in Scenarios C, D, and E—like **buffered and protected bike lanes** can create defined space between bikes and motorized traffic and improve safety. **Bike boxes and colored pavement** can further define travel space and improve visibility of bicyclists in mixed-traffic.

Local streets experiencing through traffic can be designed as **bicycle boulevards,** with traffic calming measures used to discourage motorized traffic and prioritize bicycle traffic. Bicycle boulevards **can help create continuous routes** where bicyclists can safely travel through urban areas and connect neighborhoods.

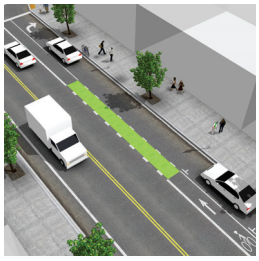


Buffered Bike Lane

Protected Bike Lane

Bicycle Boulevard

Bike Box



Colored Pavement

Off-Street Bicycle Facilities

Off-street paths **connect urban areas and communities** in the Region and **provide routes separated from motorized traffic**. These bicycle paths provide both opportunities for active recreation and a well-connected network which can provide a viable alternative to the automobile. **Filling gaps in the trail network and ensuring proper maintenance** can encourage more non-recreation bicycle travel.

Figure II-3

DESCRIPTION OF PEDESTRIAN CONCEPTS UNDER THE SKETCH SCENARIOS

Connectivity/Walkability

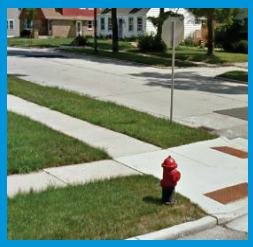
Connectivity is having direct links that connect people to other homes in their neighborhood, shopping, schools, parks, and other destinations. Walkability is the ease by which people can walk to various destinations in an area.

Considerations include:

- Sidewalks and paths in a neighborhood
- Directness and distance of routes
- Land use mix and density
- Road network design

Improved connectivity and walkability can:

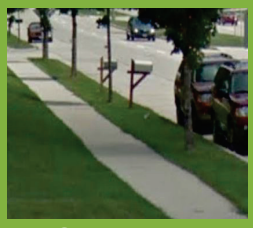
- Encourage more walking trips
- Reduce the need to make vehicle trips
- Make it easier to walk within a neighborhood



Safety

Considerations include:

- Separation from vehicles
- Increased visibility
- Crossing intersections



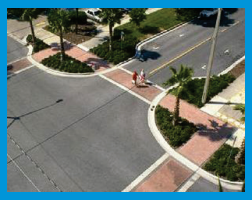
Separation

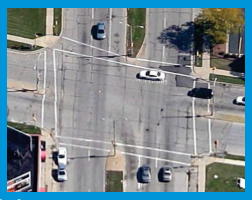
Visibility

Accessibility

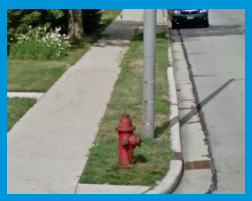
Accessibility is the ability to reach a destination without difficulty.

Considerations include:

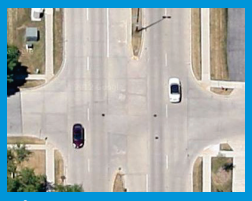




Street Width



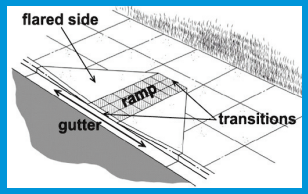
Treatment of Obstructions



Intersection Markings

Access to Transit

Pedestrian facilities must also be designed and constructed consistent with Americans with Disabilities Act (ADA) requirements to accommodate people with disabilities.



Slopes for Curb Ramps

Pedestrian Signals

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Figure II-4

DESCRIPTION OF FIXED-GUIDEWAY TRANSIT TECHNOLOGIES UNDER THE SKETCH SCENARIOS

Light Rail Transit

Light Rail Transit is one of the technologies that could provide service in the Rapid Transit Corridors identified in Scenarios C and E. Light Rail **uses trains traveling along the median of a roadway or in a dedicated lane to provide rapid service,** and would include **stops every half mile to one mile, service every 5 - 15 minutes, priority at traffic signals, and stations** with passenger amenities.

Bus Rapid Transit

Similar to Light Rail, Bus Rapid Transit (BRT) could be used to provide service in the Rapid Transit Corridors identified in Scenarios C and E. BRT **operates in the median of a roadway or in a dedicated lane with stops every half mile to one mile, service every 5 - 15 minutes, priority at traffic signals, and stations** with passenger amenities. It is intended to offer "rail-like" service with the potential for lower construction costs than Light Rail.

Commuter Rail

Traveling on improved freight corridors, Commuter Rail **provides stops every 2 - 5 miles, service in both directions every 15 - 60 minutes, and stations** with passenger amenities. Commuter Rail is included in Scenarios D and E.

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Figure II-5

DESCRIPTION OF ARTERIAL STREET AND HIGHWAY SYSTEM CONCEPTS UNDER THE SKETCH SCENARIOS

Arterial streets are streets and highways, including freeways, intended to provide higher-speed travel through or between major urban communities. The existing network of arterial roadways comprises about 30 percent of the total roadway system and carries about 90 percent of traffic (car, truck, motorcycle, and bus) throughout Southeastern Wisconsin.

The **freeway system** in Southeastern Wisconsin provides a vital backbone to the arterial roadway system, moving people and goods within and outside of the Region. However, much of the freeway system is reaching the end of its useful life and is in need of reconstruction and modernization.

Preservation

All of the scenarios being considered address the needed preservation, and necessary modernization, of the arterial street and highway system in Southeastern Wisconsin. At the time of reconstruction, roadways are modernized, or upgraded to current design standards to increase safety, and improve the efficiency of roadways – maximizing their through capacity.

Additional Capacity

Capacity expansion – included in Scenarios A and B – will address the existing and future residual traffic congestion that may not be alleviated by other forms of transportation such as transit or bicycle and pedestrian facilities. The implementation of highway improvement projects involving adding traffic lanes – with rare exception – occurs when an existing facility requires reconstruction and it is determined that additional lanes are needed. The cost of adding lanes is about 10 to 20 percent of the total project cost.

Freeway Modernization

As the freeways are being reconstructed in Southeastern Wisconsin, outdated designs are being addressed, including:

- Left side entrance/exit ramps
- Inadequate spacing between interchanges
- Scissor ramps along frontage roads

Modernized Interchange Example

Modernization with Added Capacity Example

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VISION 2050
One Region, Focusing on Our Future

Scenario Scorecard

KEY
Best Performing Scenario
Worst Performing Scenario

Figure II-6

SCORECARD DISPLAYING EVALUATION OF SKETCH SCENARIOS

Scenarios	Healthy Communities			Open Space	Equitable Access		Costs		Mobility				
	Bicycle and walking trips	Greenhouse gas emissions	People living in walkable areas	Remaining farmland and undeveloped land	Households with affordable housing + transportation costs	Transit service quality for minority and low-income populations	Cost of supporting new development to local governments	Average annual transportation system investment	Congestion	Vehicle miles of travel per capita	Job/housing balance	Access to transit	Access to high quality transit
A	328,000 Trips Per Day	15.5 Million Tons Per Year	786,000 People	1.023 Million Acres	327,000 Households	Average Transit Score: 2.8	$538 Million Per Year	$800 Million Per Year	291 Congested Miles	8,800 Miles Per Year	523,000 HHs in balanced areas	991,000 People 688,000 Jobs	0 People 0 Jobs
B	361,000 Trips	15.4 Million Tons	793,000 People	1.052 Million Acres	381,000 Households	4.6	$536 Million	$1.26 Billion	272 Miles	8,700 Miles	530,000 Households	1,225,000 People 927,000 Jobs	0 People 0 Jobs
C	472,000 Trips	15.0 Million Tons	843,000 People	1.069 Million Acres	411,000 Households	5.6	$520 Million	$1.50 Billion	363 Miles	8,400 Miles	544,000 Households	1,327,000 People 970,000 Jobs	453,000 People 423,000 Jobs
D	469,000 Trips	15.1 Million Tons	817,000 People	1.066 Million Acres	396,000 Households	4.7	$528 Million	$1.32 Billion	374 Miles	8,500 Miles	555,000 Households	1,288,000 People 975,000 Jobs	84,000 People 93,000 Jobs
E	475,000 Trips	15.0 Million Tons	849,000 People	1.069 Million Acres	420,000 Households	5.6	$514 Million	$1.58 Billion	366 Miles	8,400 Miles	542,000 Households	1,373,000 People 1,013,000 Jobs	514,000 People 480,000 Jobs

Figure II-7

SCENARIO COMMENTS RELATED TO SCENARIO PREFERENCE

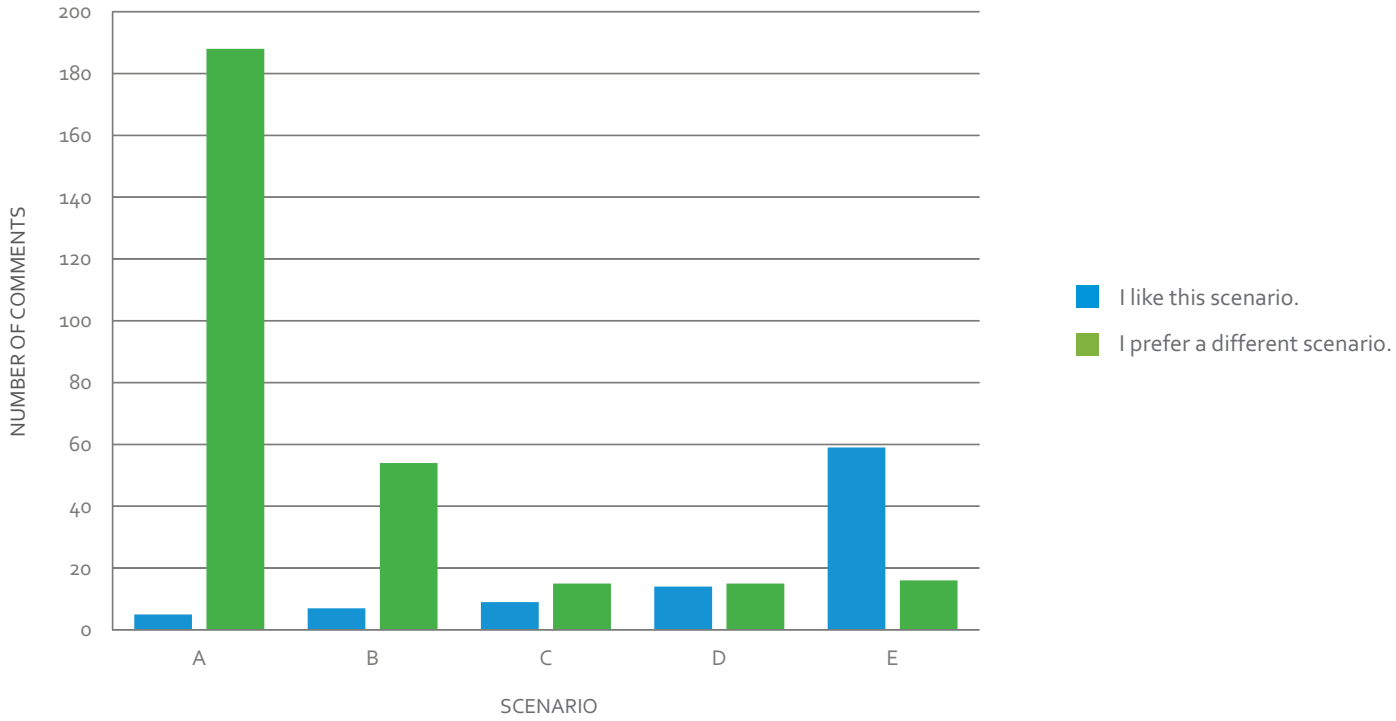


Figure II-8

SCENARIO COMMENTS RELATED TO DEVELOPMENT PATTERNS

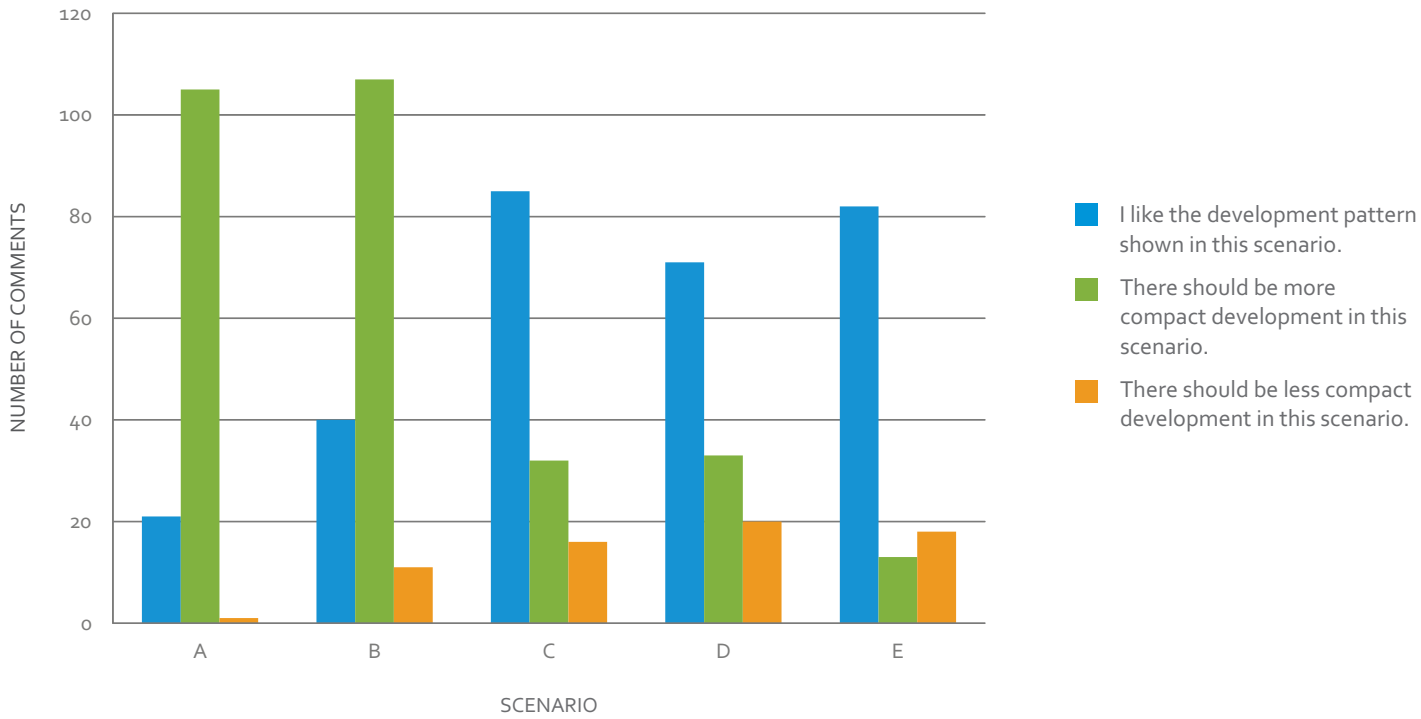


Figure II-9

SCENARIO COMMENTS RELATED TO HOUSING OPTIONS

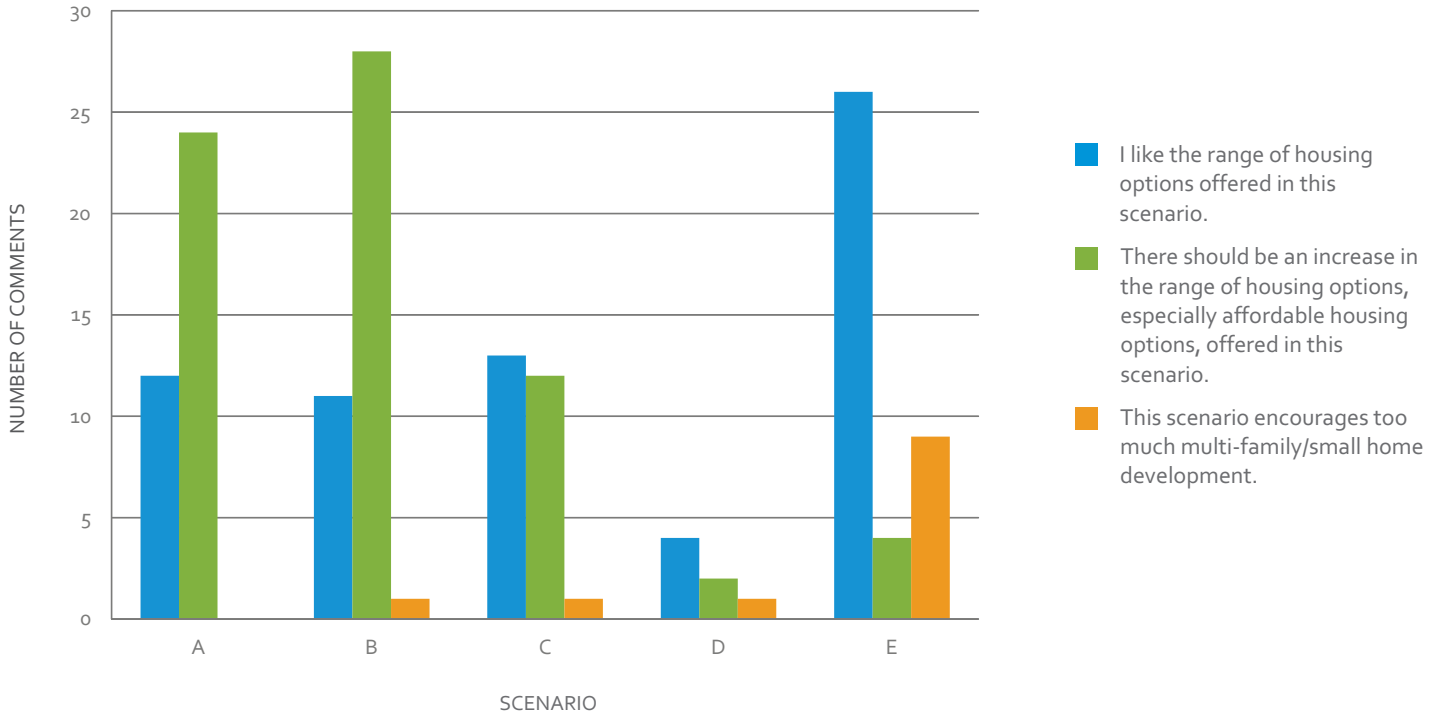


Figure II-10

SCENARIO COMMENTS RELATED TO TRANSIT

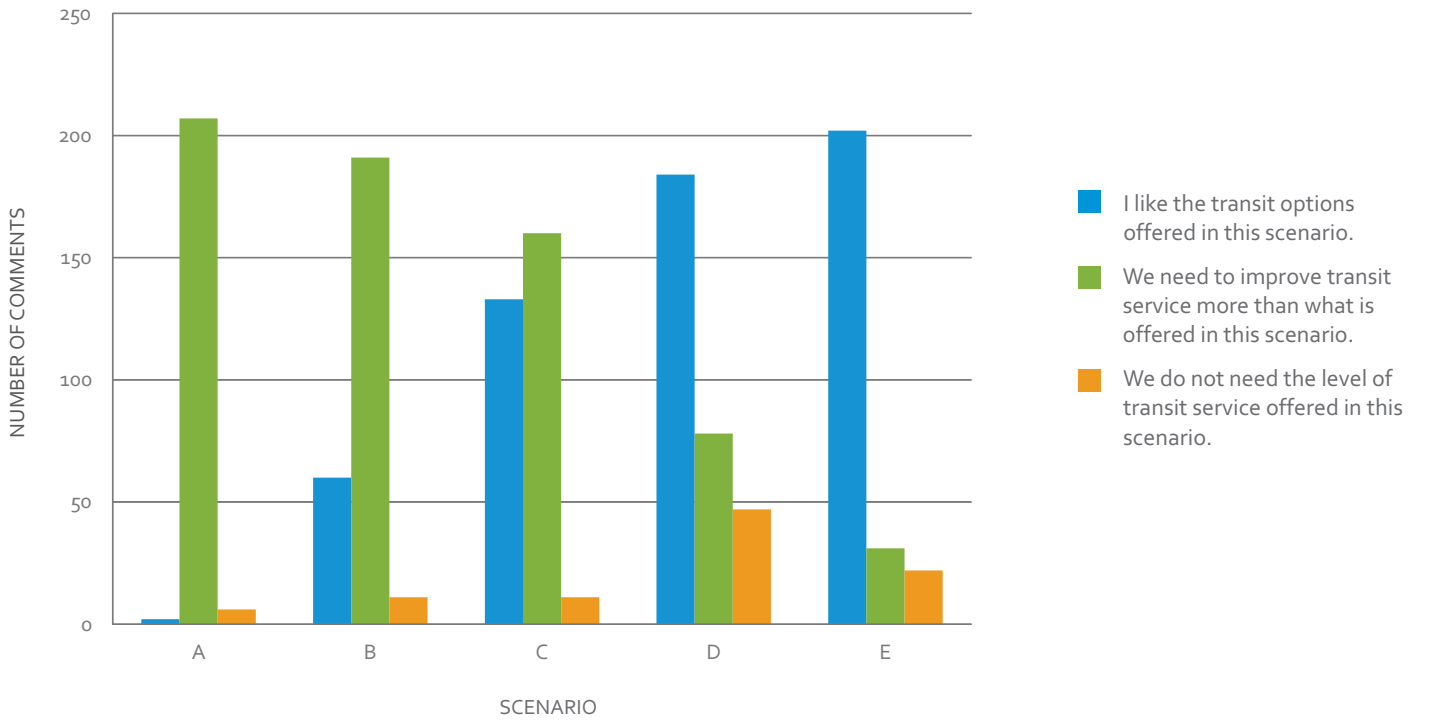


Figure II-11

SCENARIO COMMENTS RELATED TO TRAFFIC CONGESTION

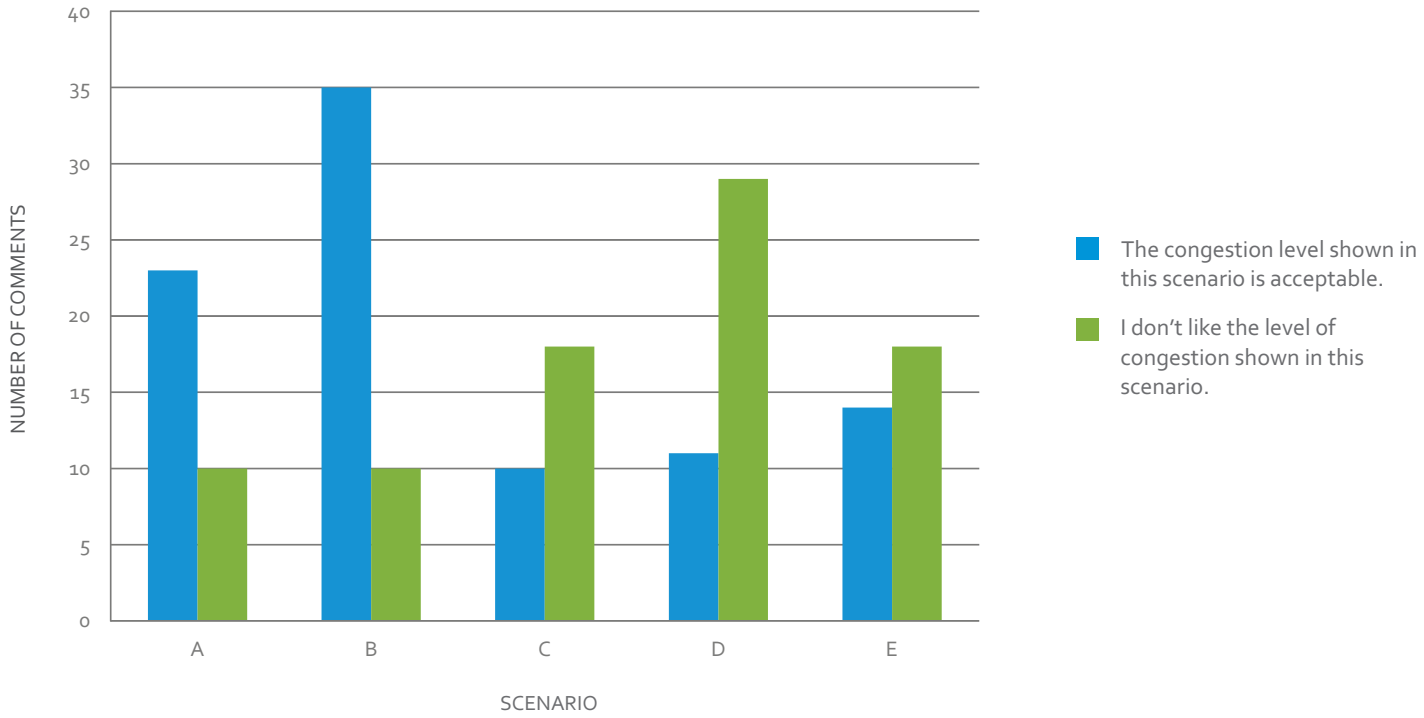


Figure II-12

SCENARIO COMMENTS RELATED TO COSTS

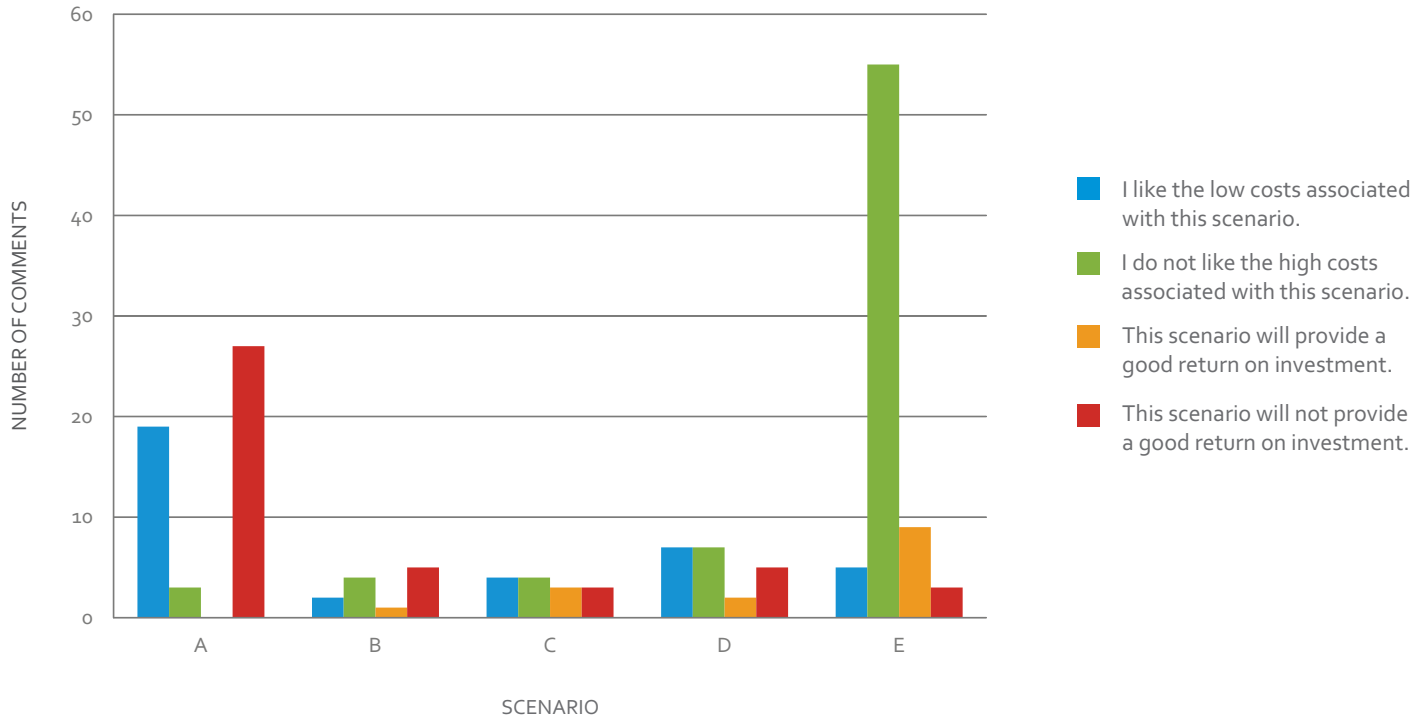
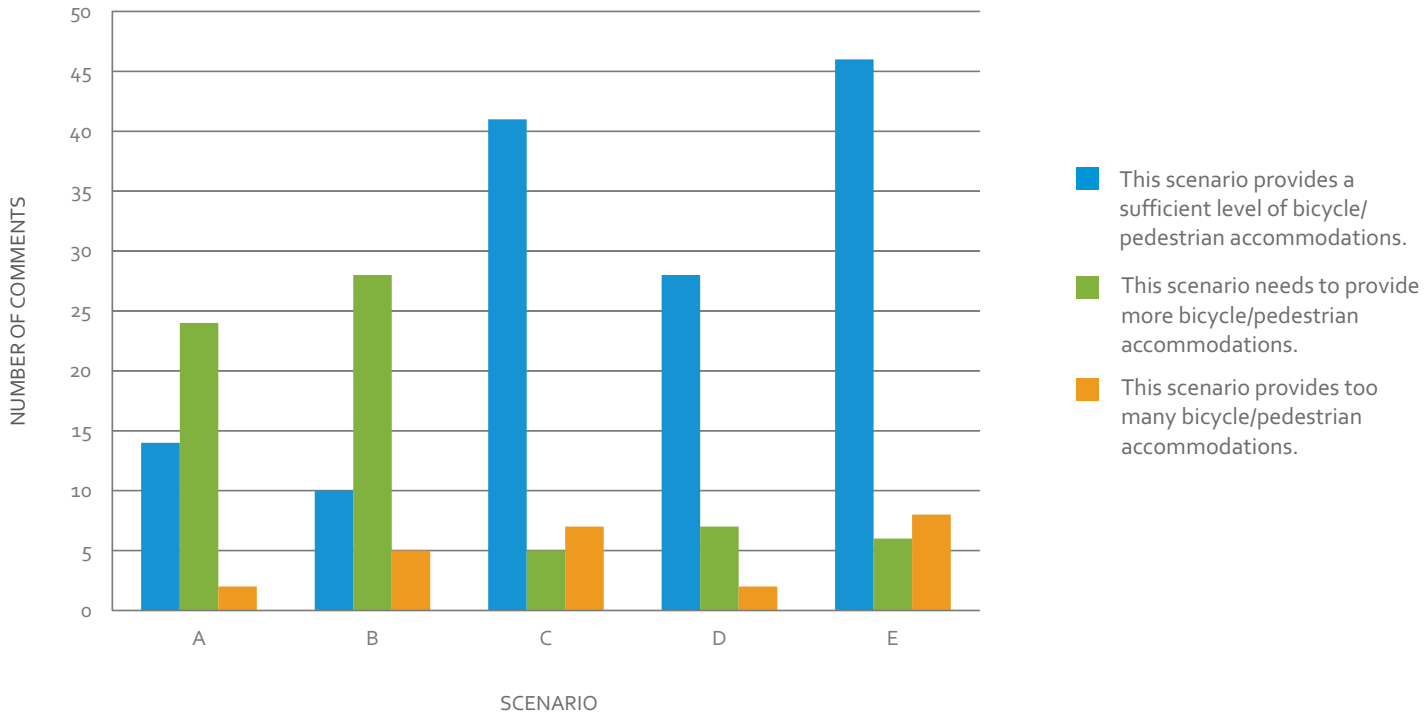


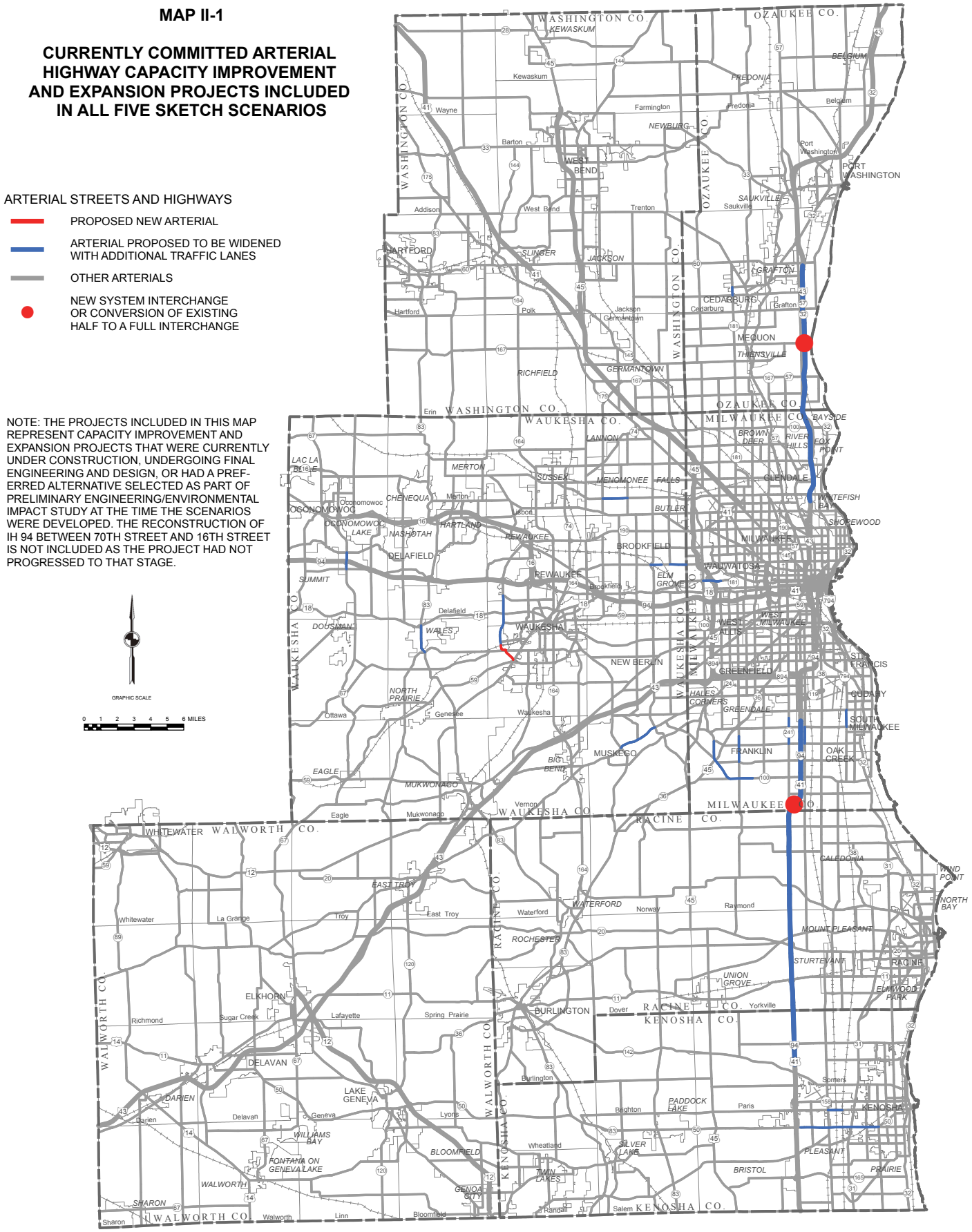
Figure II-13

SCENARIO COMMENTS RELATED TO BICYCLE/PEDESTRIAN ACCOMMODATIONS



MAP II-1

CURRENTLY COMMITTED ARTERIAL HIGHWAY CAPACITY IMPROVEMENT AND EXPANSION PROJECTS INCLUDED IN ALL FIVE SKETCH SCENARIOS

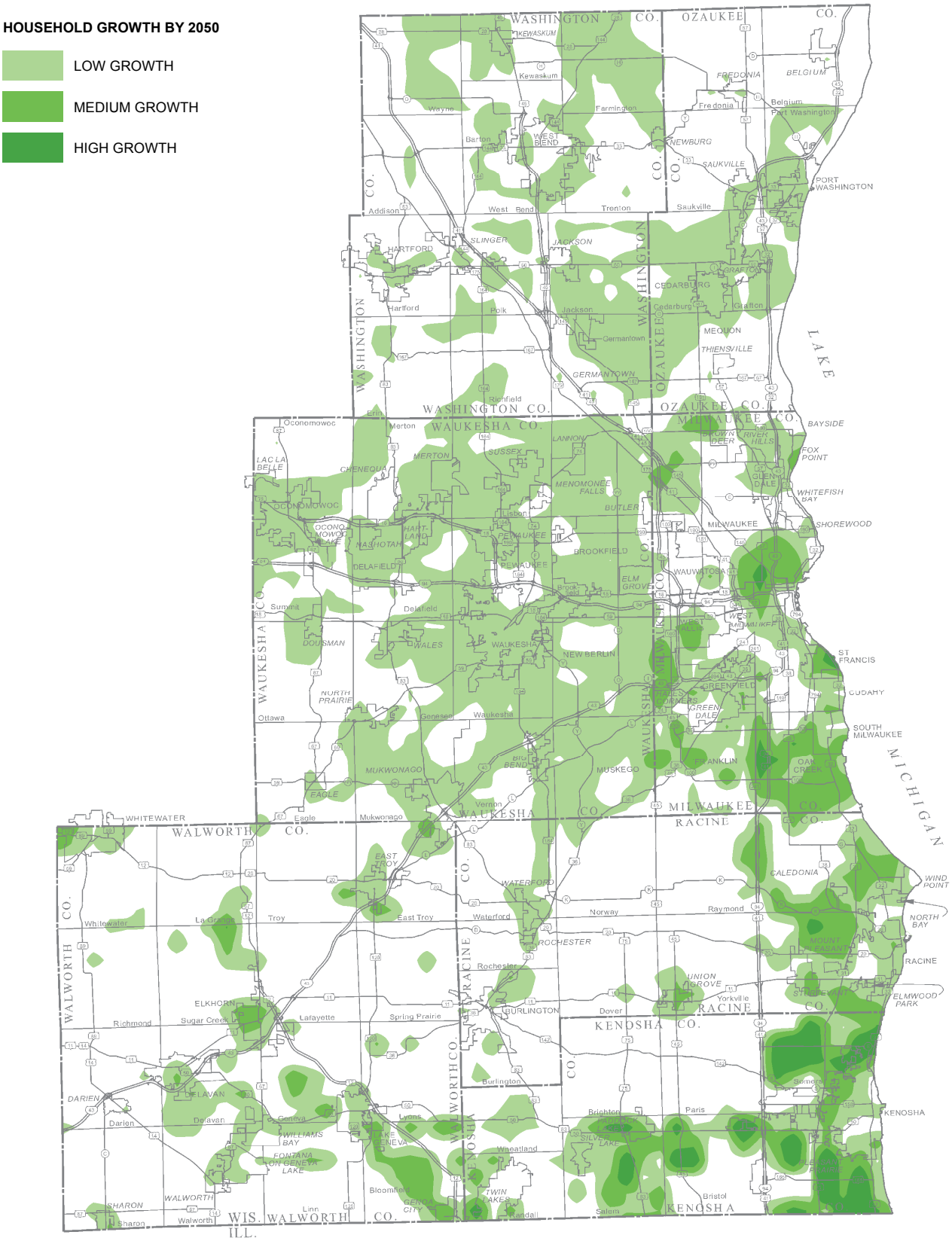


Source: SEWRPC

I:\COMMON\VISION 2050\Chapters\Volume II\Chapter II\Map II-1 Committed Highway Projects.mxd

Map II-2A

SCENARIO A: YEAR 2050 HOUSEHOLD GROWTH



Source: SEWRPC

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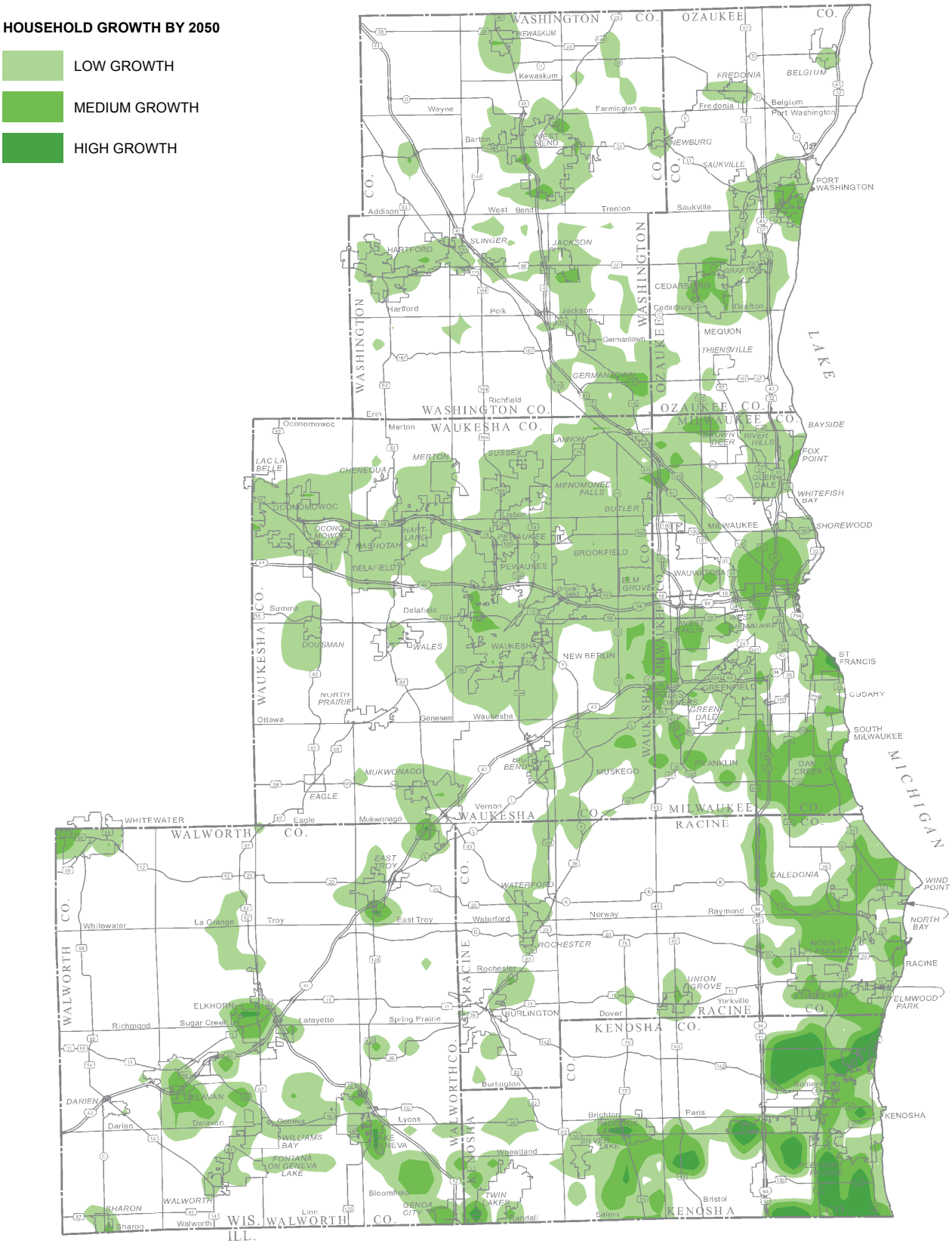
Map II-2B

SCENARIO B: YEAR 2050 HOUSEHOLD GROWTH



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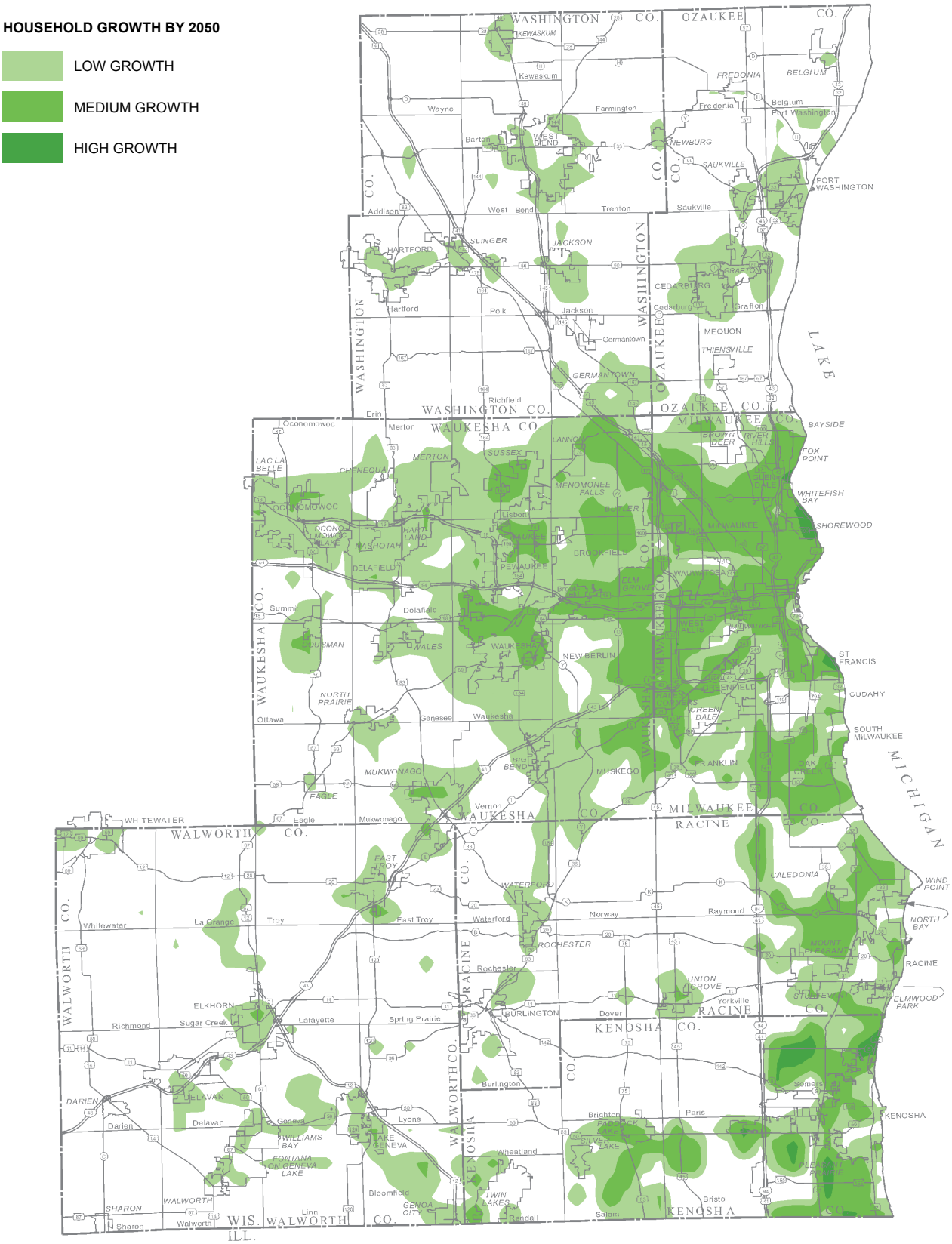
Map II-2C

SCENARIO C: YEAR 2050 HOUSEHOLD GROWTH



Source: SEWRPC

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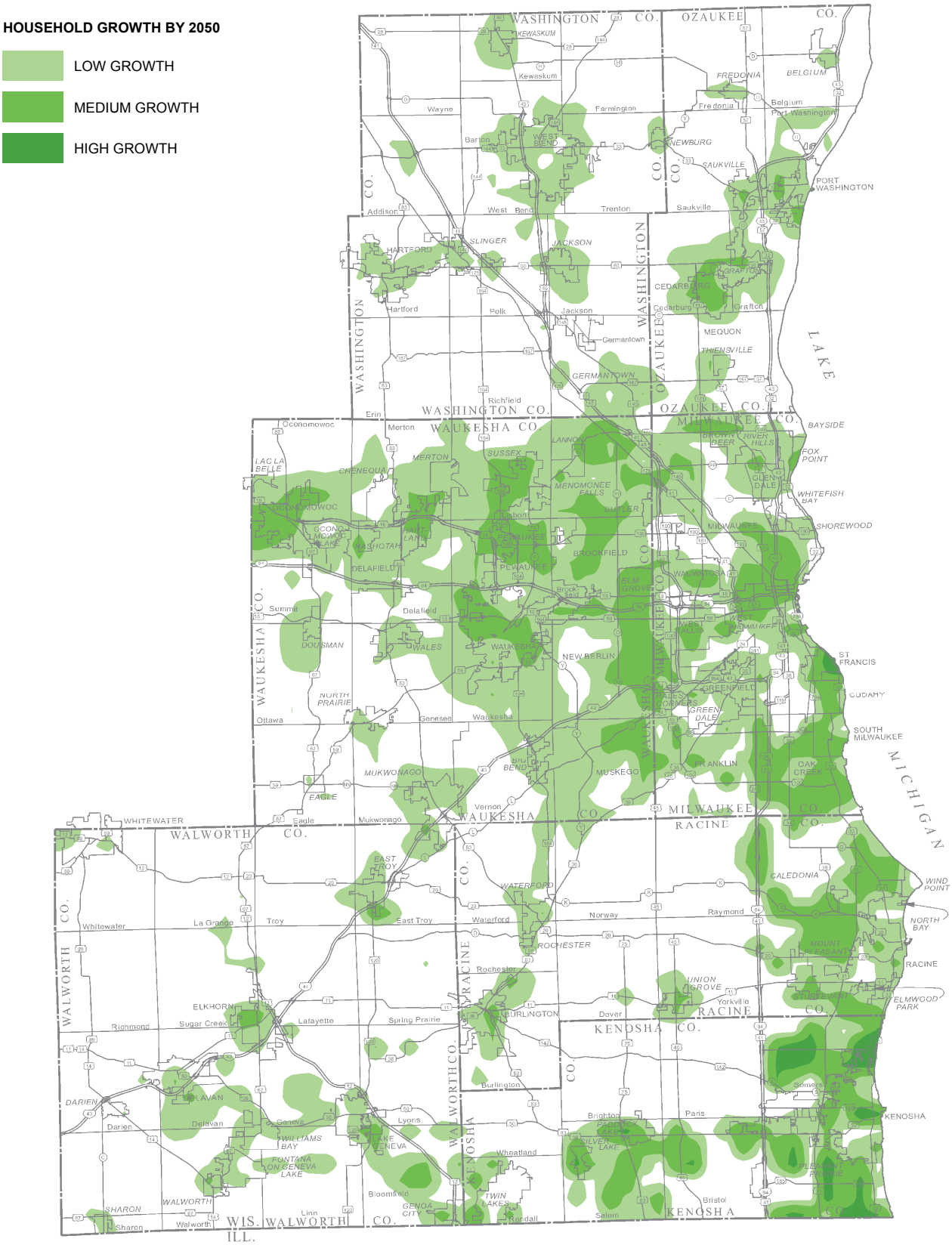
Map II-2D

SCENARIO D: YEAR 2050 HOUSEHOLD GROWTH



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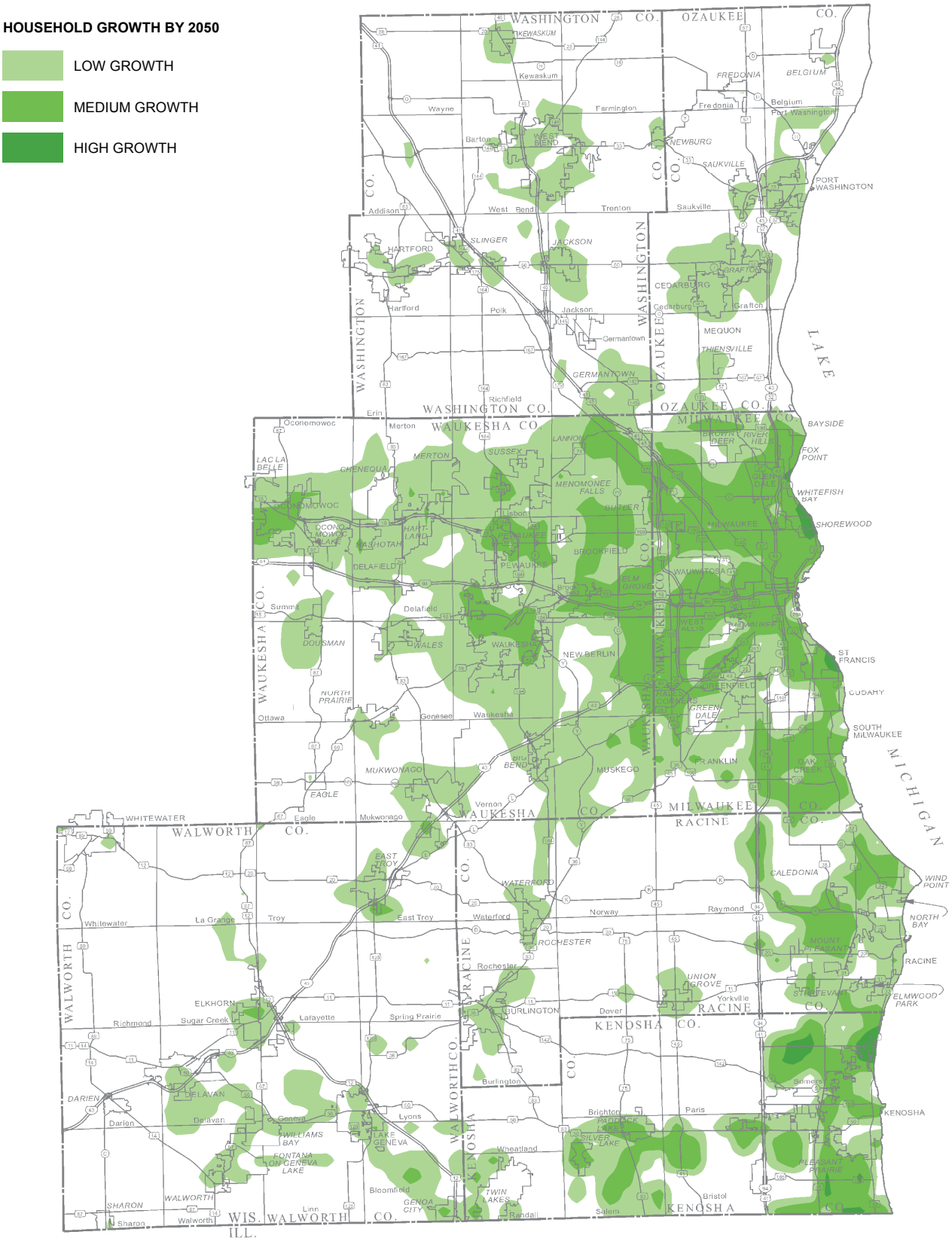
Map II-2E

SCENARIO E: YEAR 2050 HOUSEHOLD GROWTH



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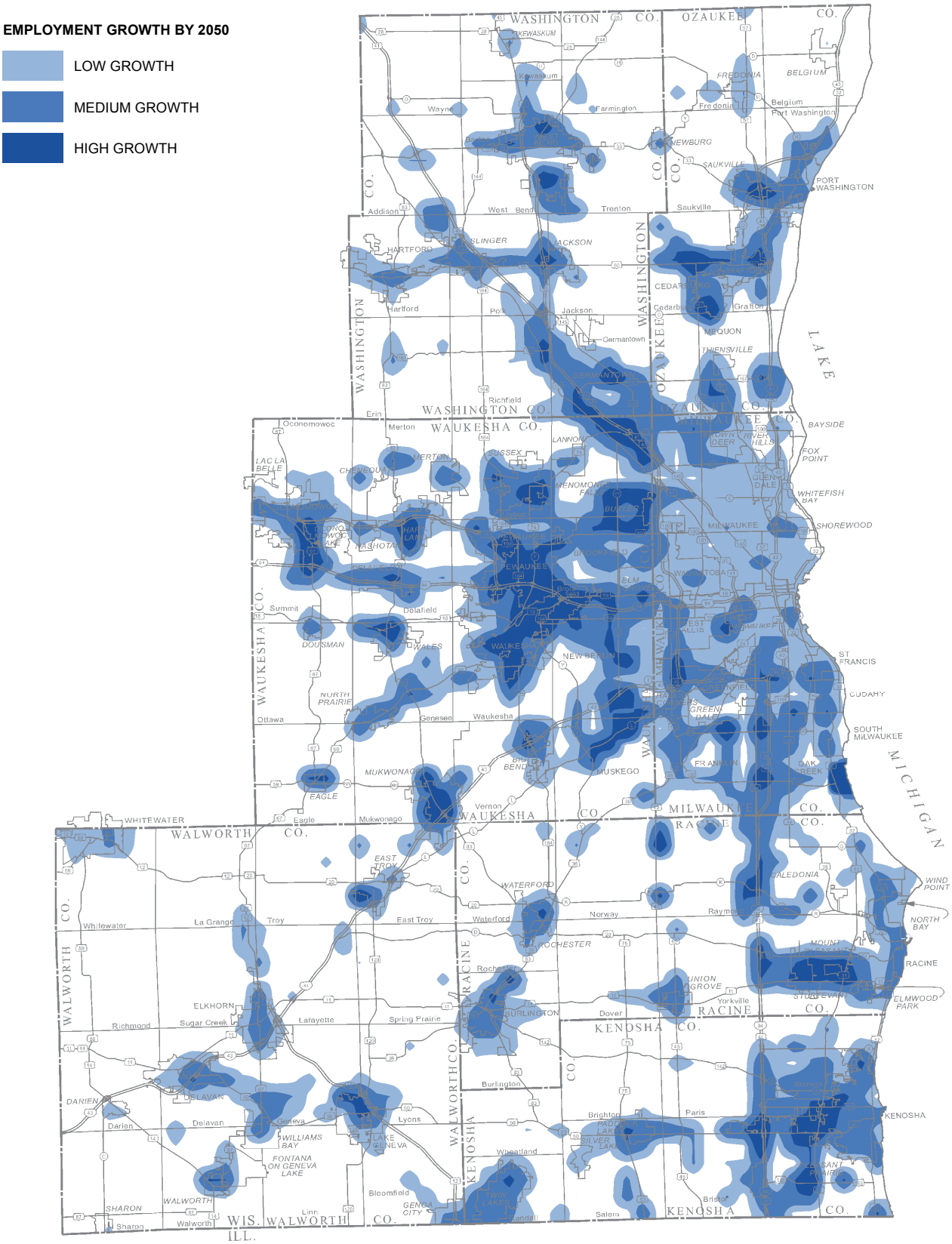
Map II-3A

SCENARIO A: YEAR 2050 EMPLOYMENT GROWTH



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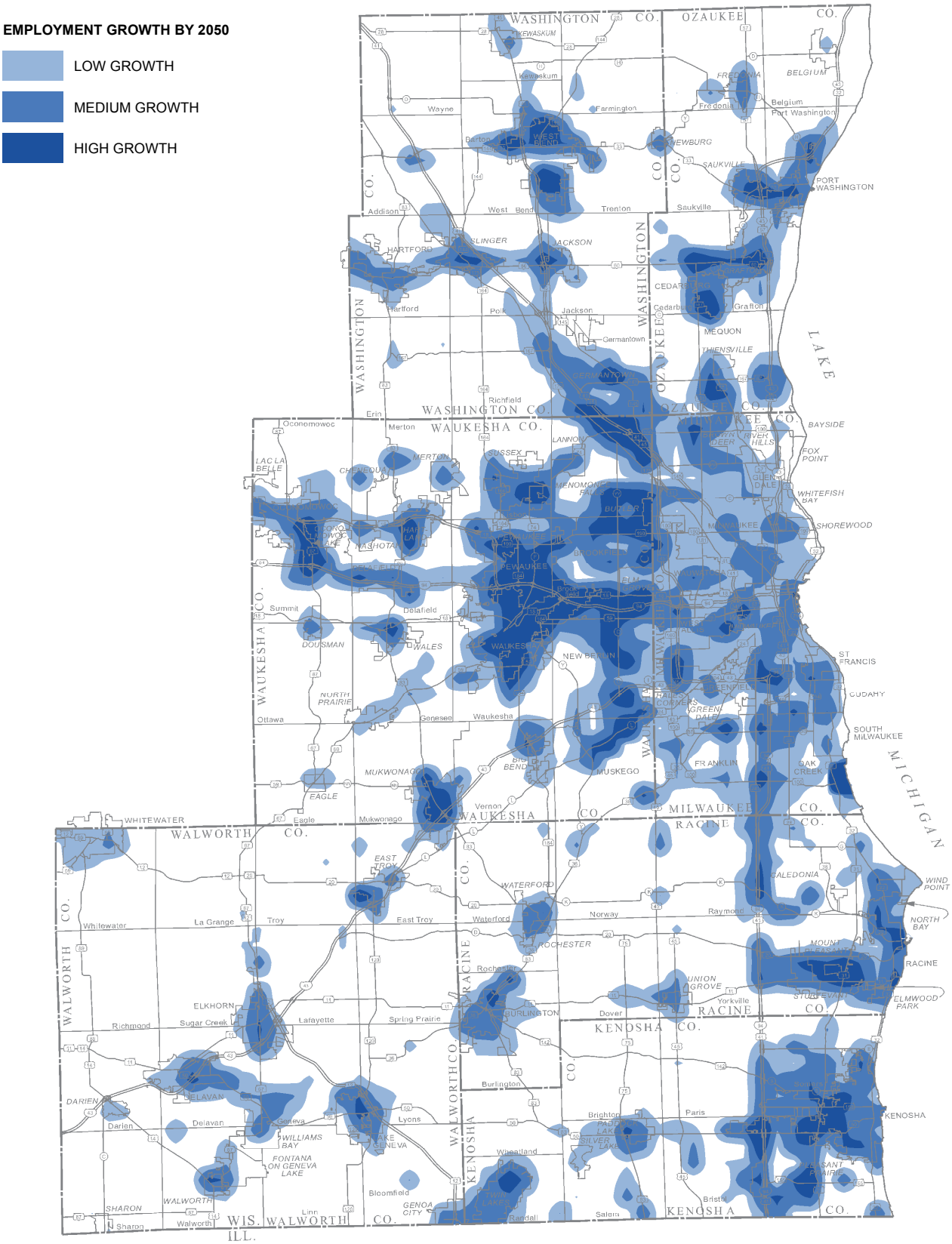
Map II-3B

SCENARIO B: YEAR 2050 EMPLOYMENT GROWTH



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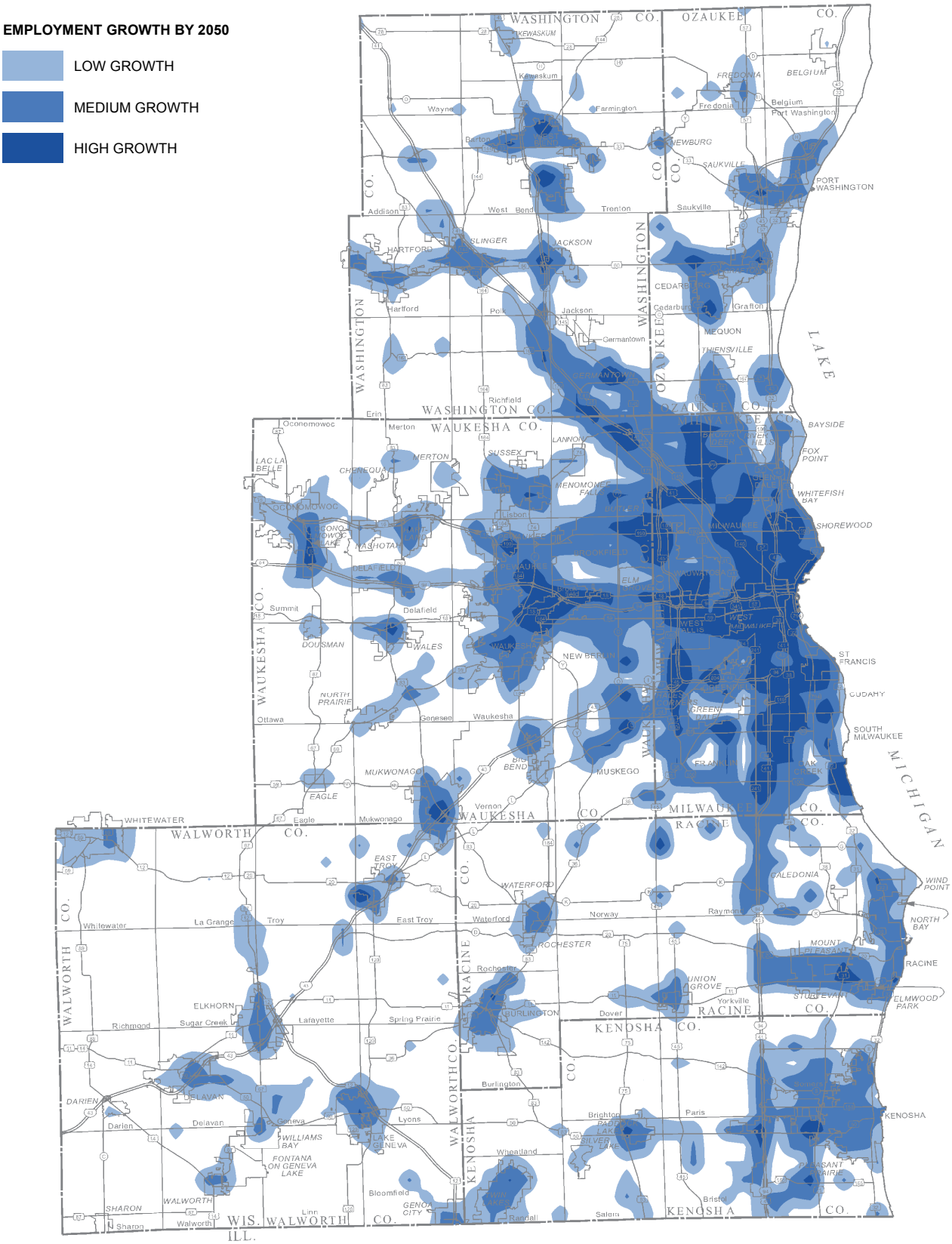
Map II-3C

SCENARIO C: YEAR 2050 EMPLOYMENT GROWTH



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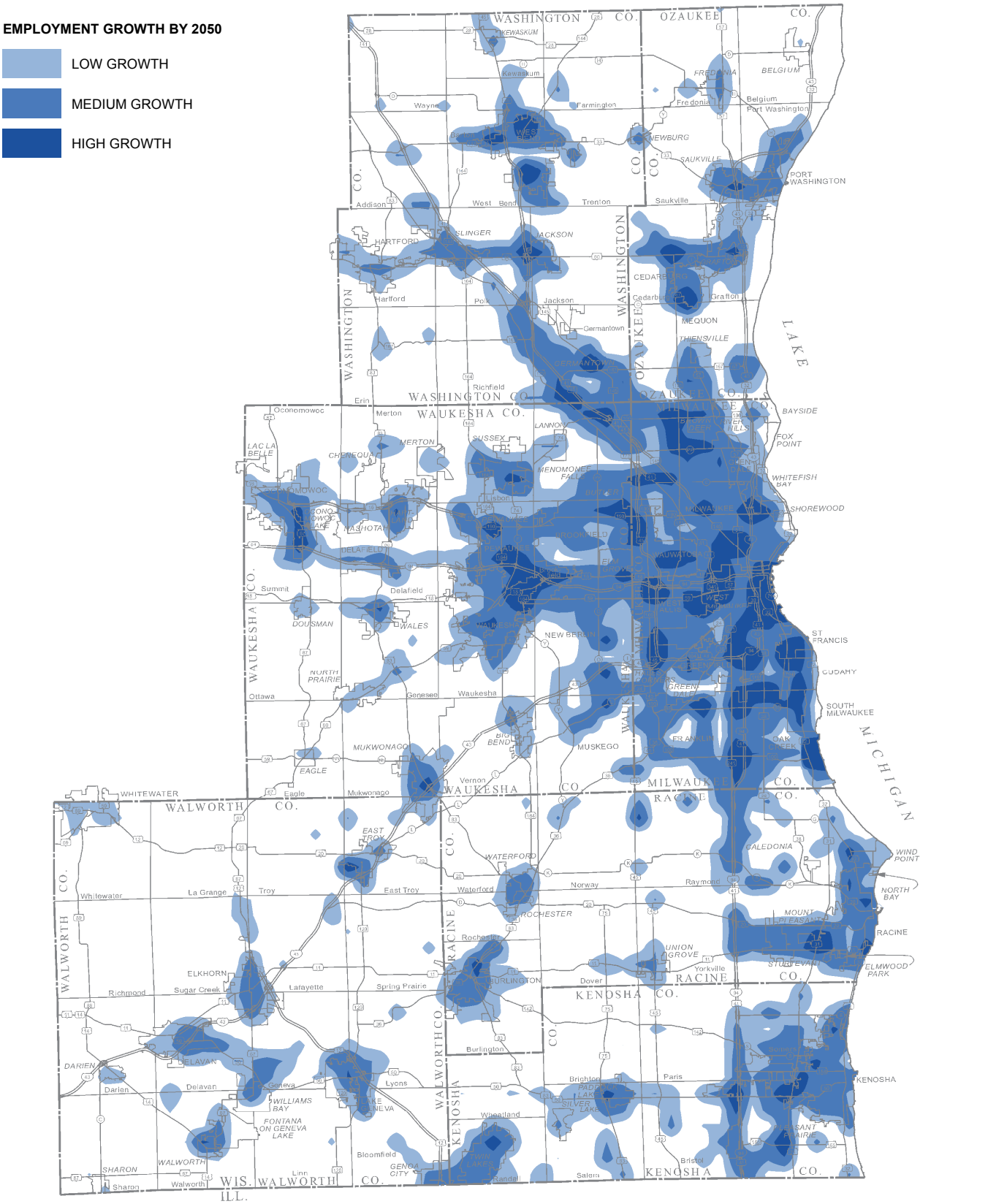
Map II-3D

SCENARIO D: YEAR 2050 EMPLOYMENT GROWTH



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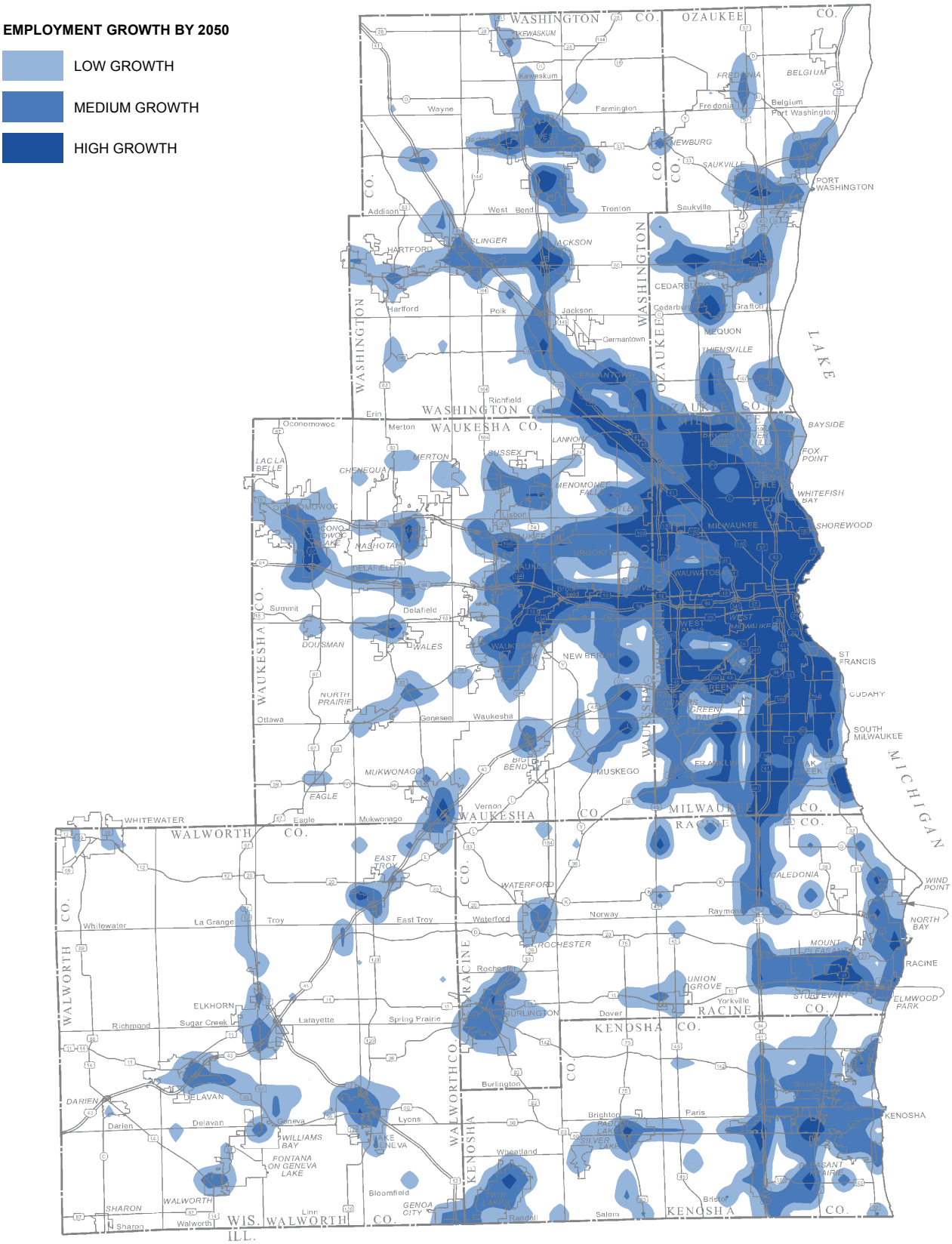
Map II-3E

SCENARIO E: YEAR 2050 EMPLOYMENT GROWTH



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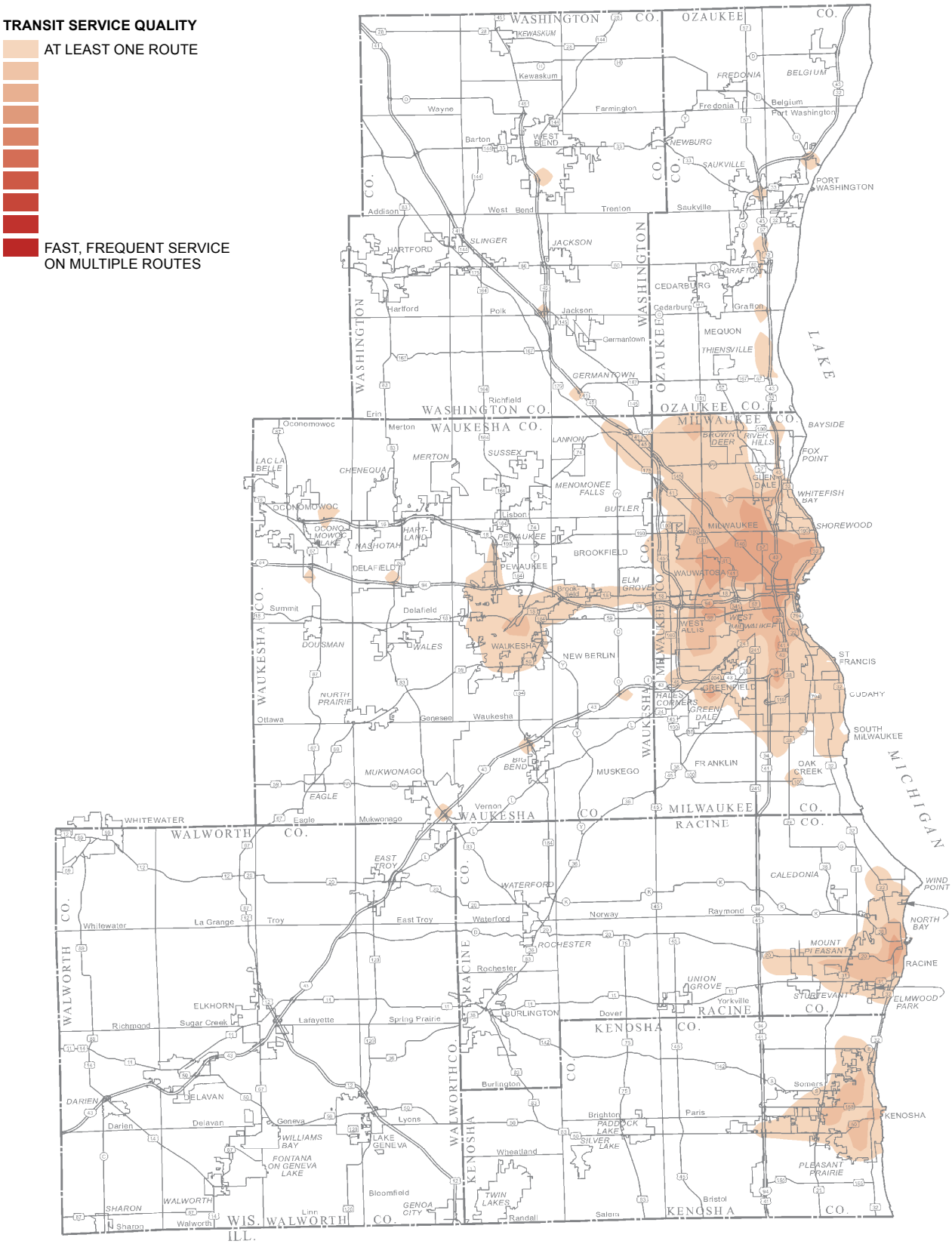
Map II-4A

SCENARIO A: QUALITY OF PUBLIC TRANSIT SERVICES IN THE REGION BY THE YEAR 2050



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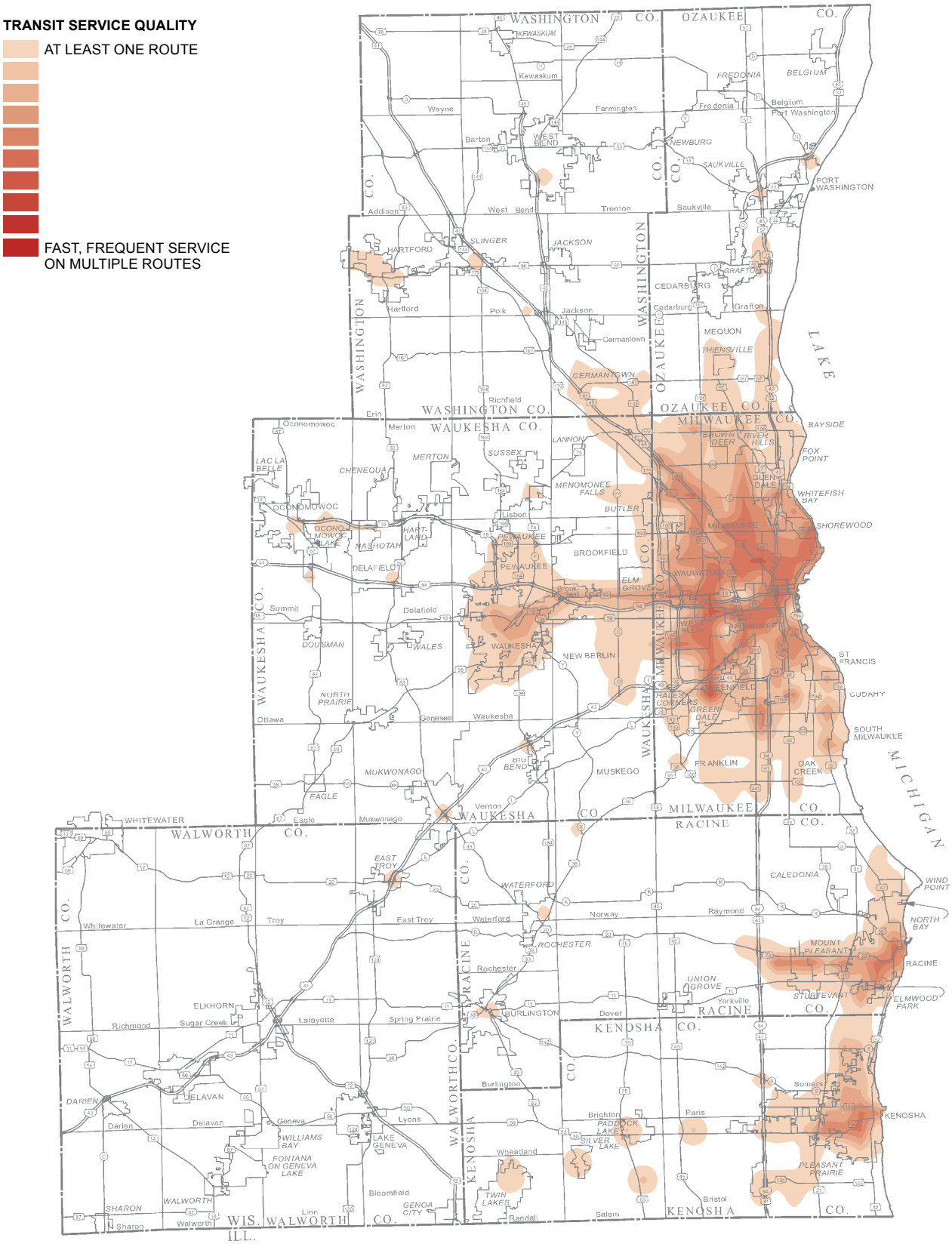
Map II-4B

SCENARIO B: QUALITY OF PUBLIC TRANSIT SERVICES IN THE REGION BY THE YEAR 2050



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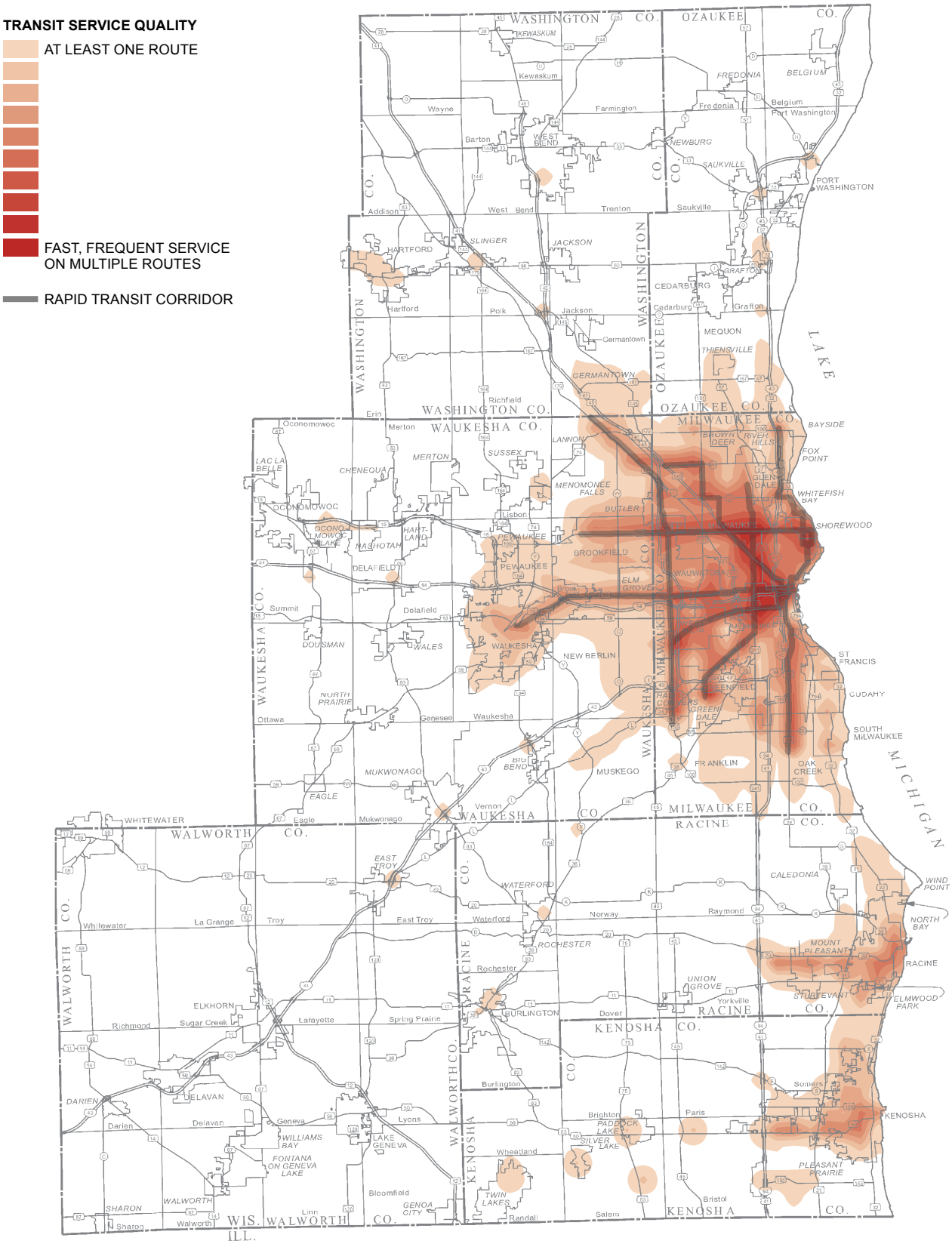
Map II-4C

SCENARIO C: QUALITY OF PUBLIC TRANSIT SERVICES IN THE REGION BY THE YEAR 2050



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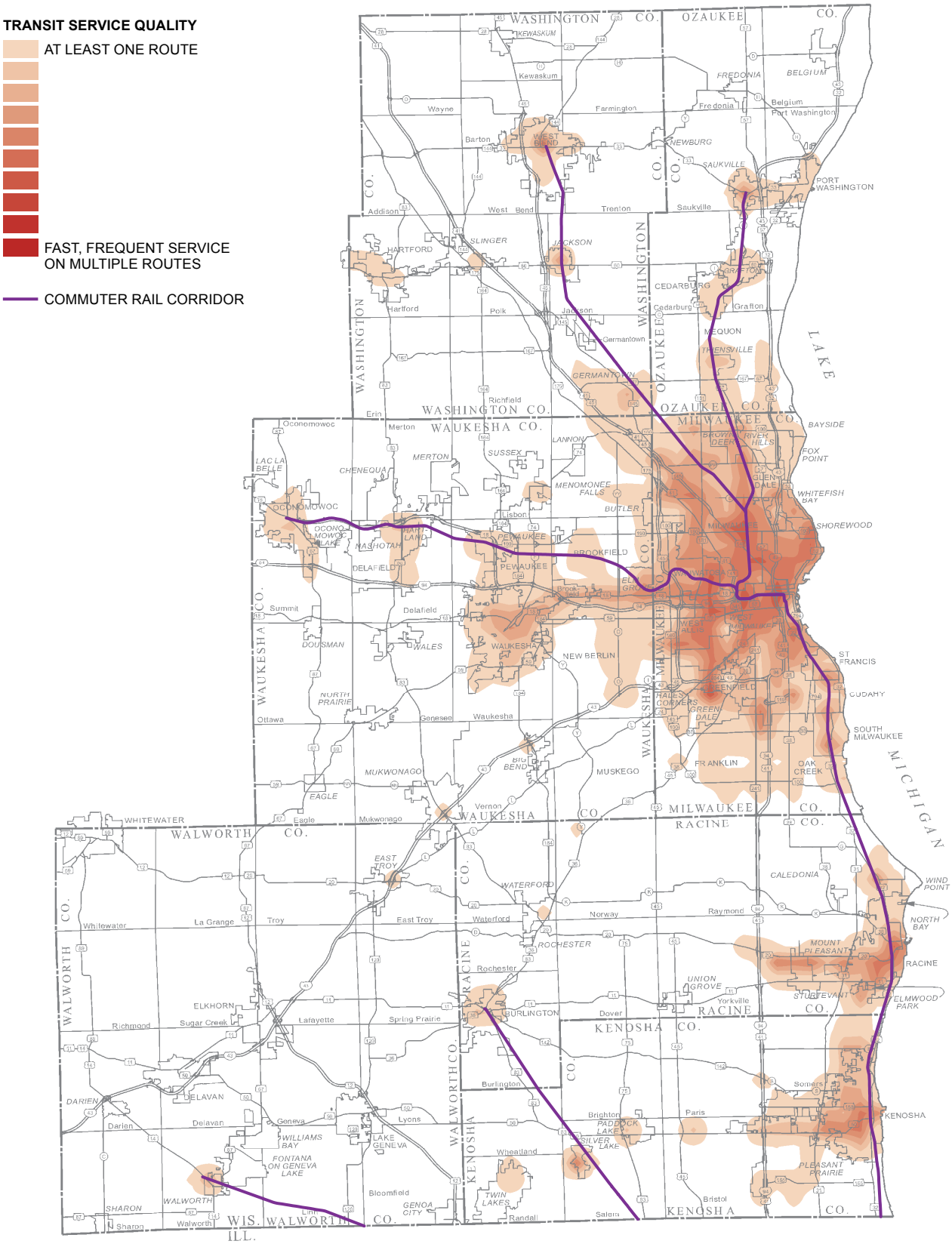
Map II-4D

SCENARIO D: QUALITY OF PUBLIC TRANSIT SERVICES IN THE REGION BY THE YEAR 2050



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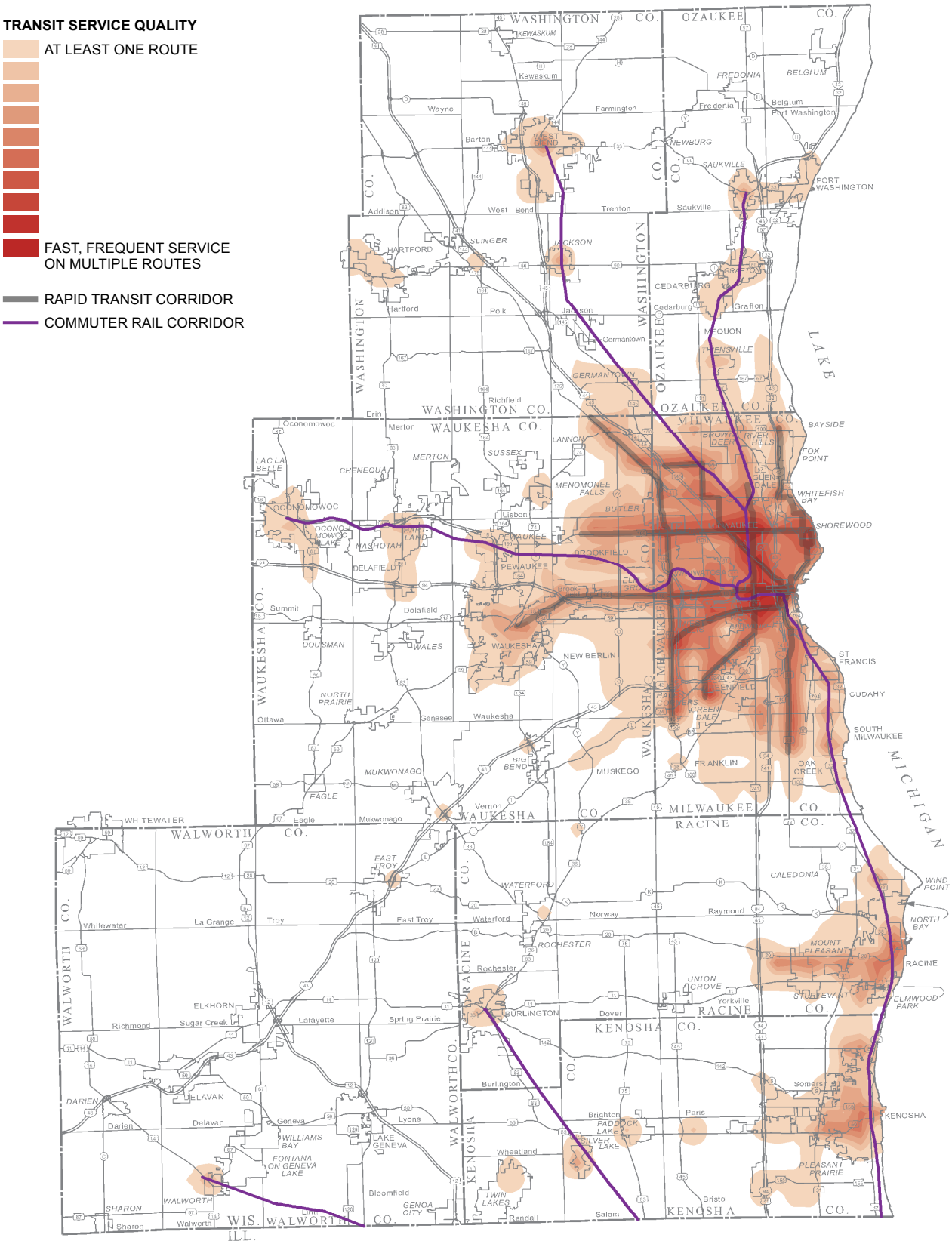
Map II-4E

SCENARIO E: QUALITY OF PUBLIC TRANSIT SERVICES IN THE REGION BY THE YEAR 2050



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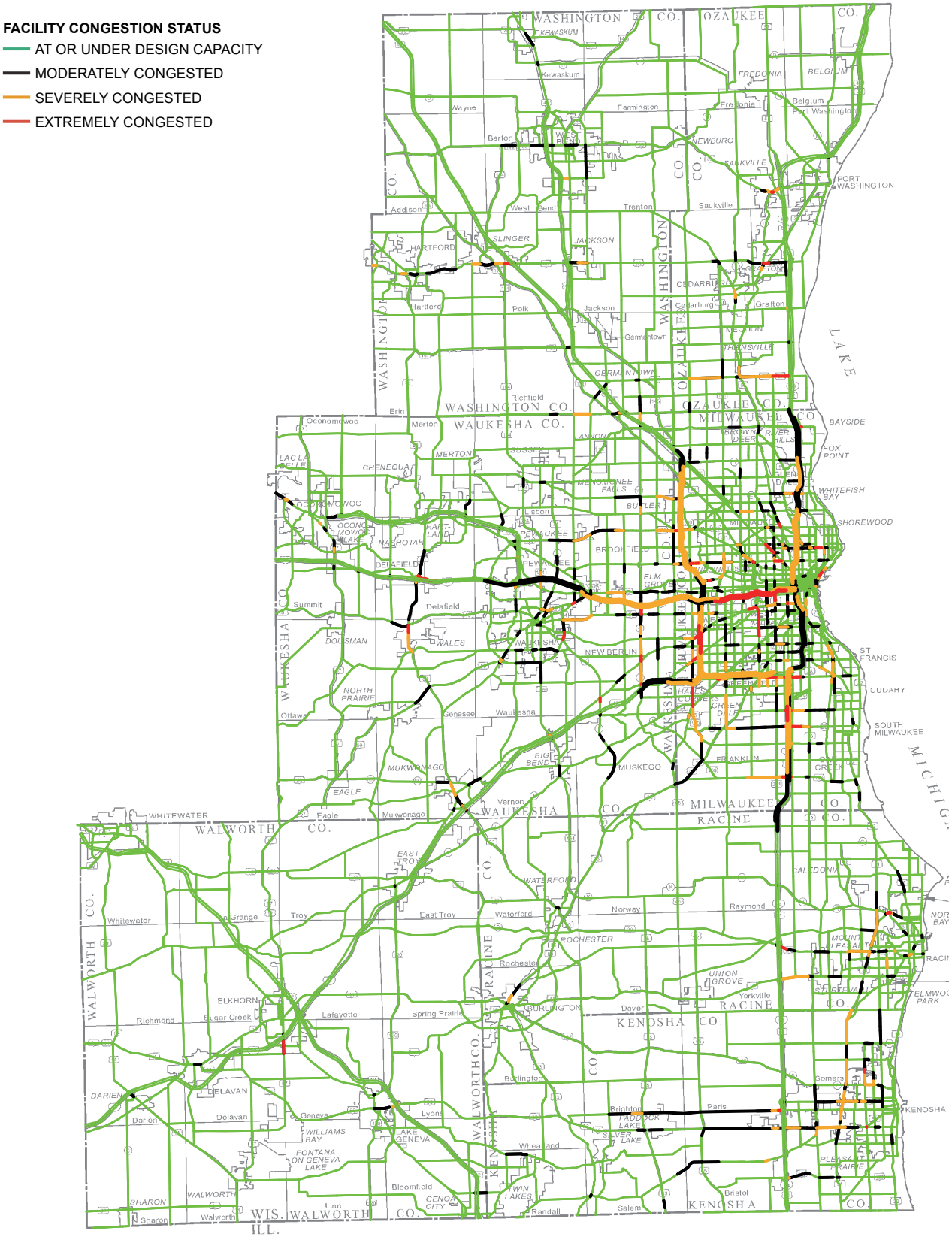
Map II-5A

SCENARIO A: YEAR 2050 TRAFFIC CONGESTION ON ARTERIAL STREETS AND HIGHWAYS



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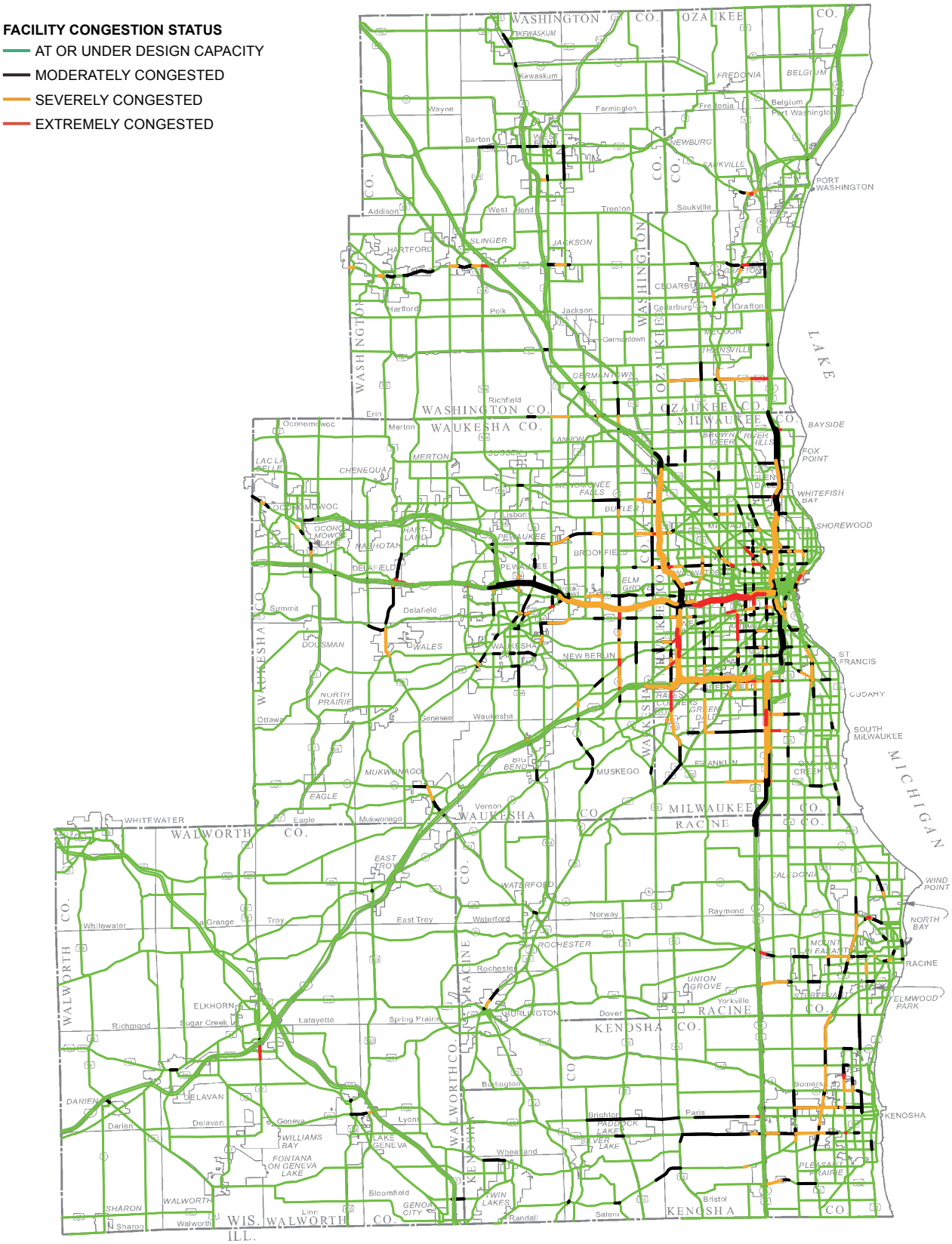
Map II-5B

SCENARIO B: YEAR 2050 TRAFFIC CONGESTION ON ARTERIAL STREETS AND HIGHWAYS



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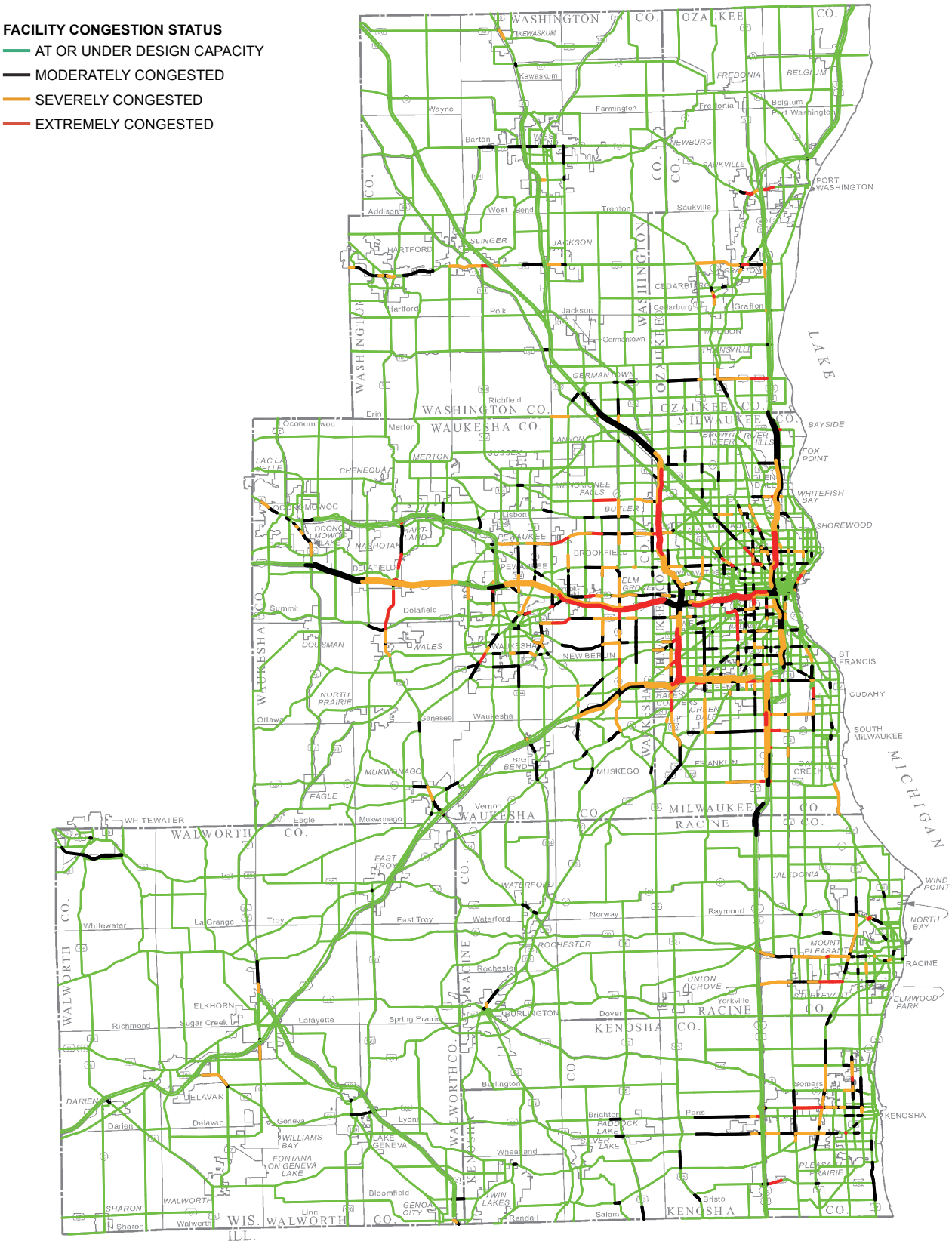
Map II-5C

SCENARIO C: YEAR 2050 TRAFFIC CONGESTION ON ARTERIAL STREETS AND HIGHWAYS



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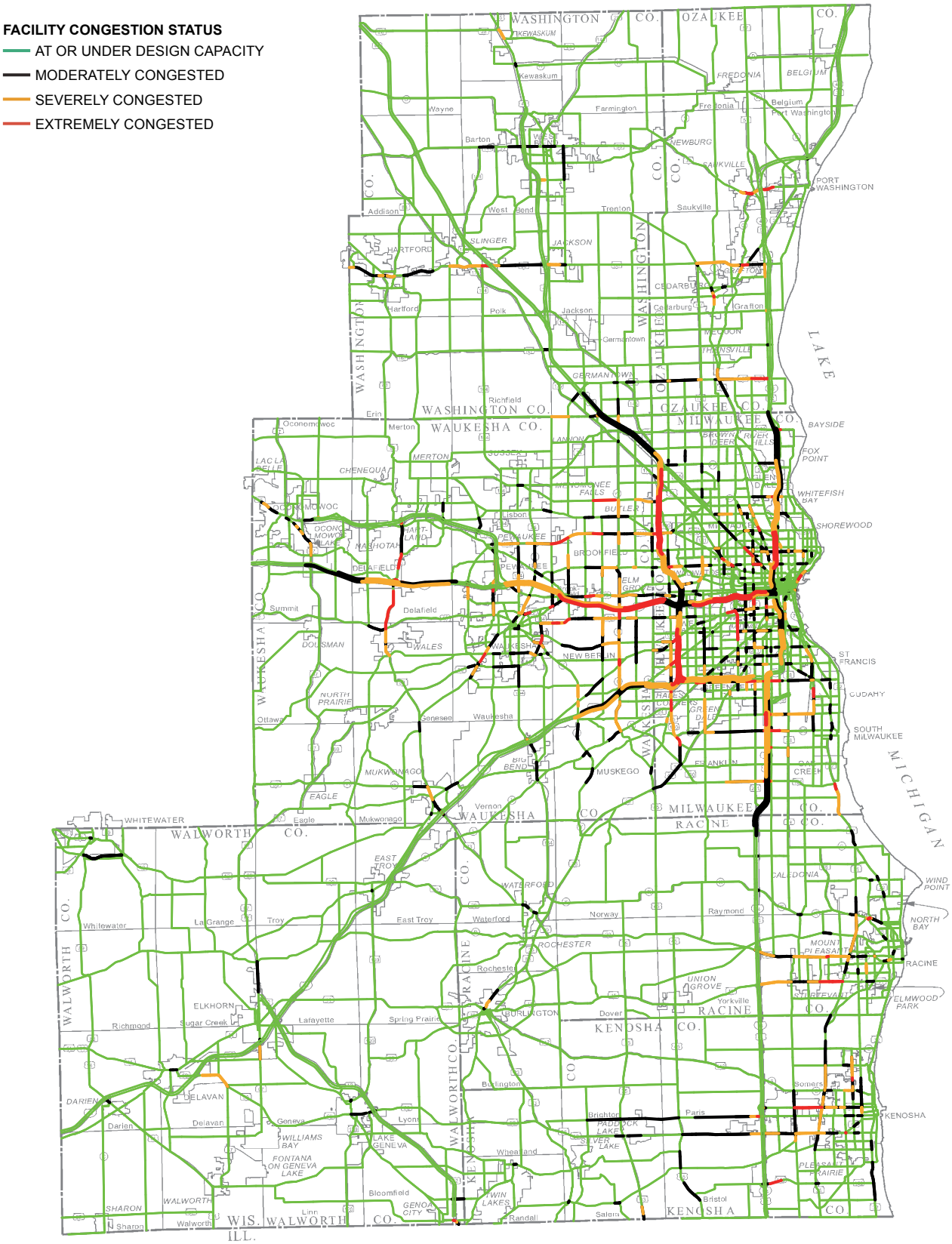
Map II-5D

SCENARIO D: YEAR 2050 TRAFFIC CONGESTION ON ARTERIAL STREETS AND HIGHWAYS



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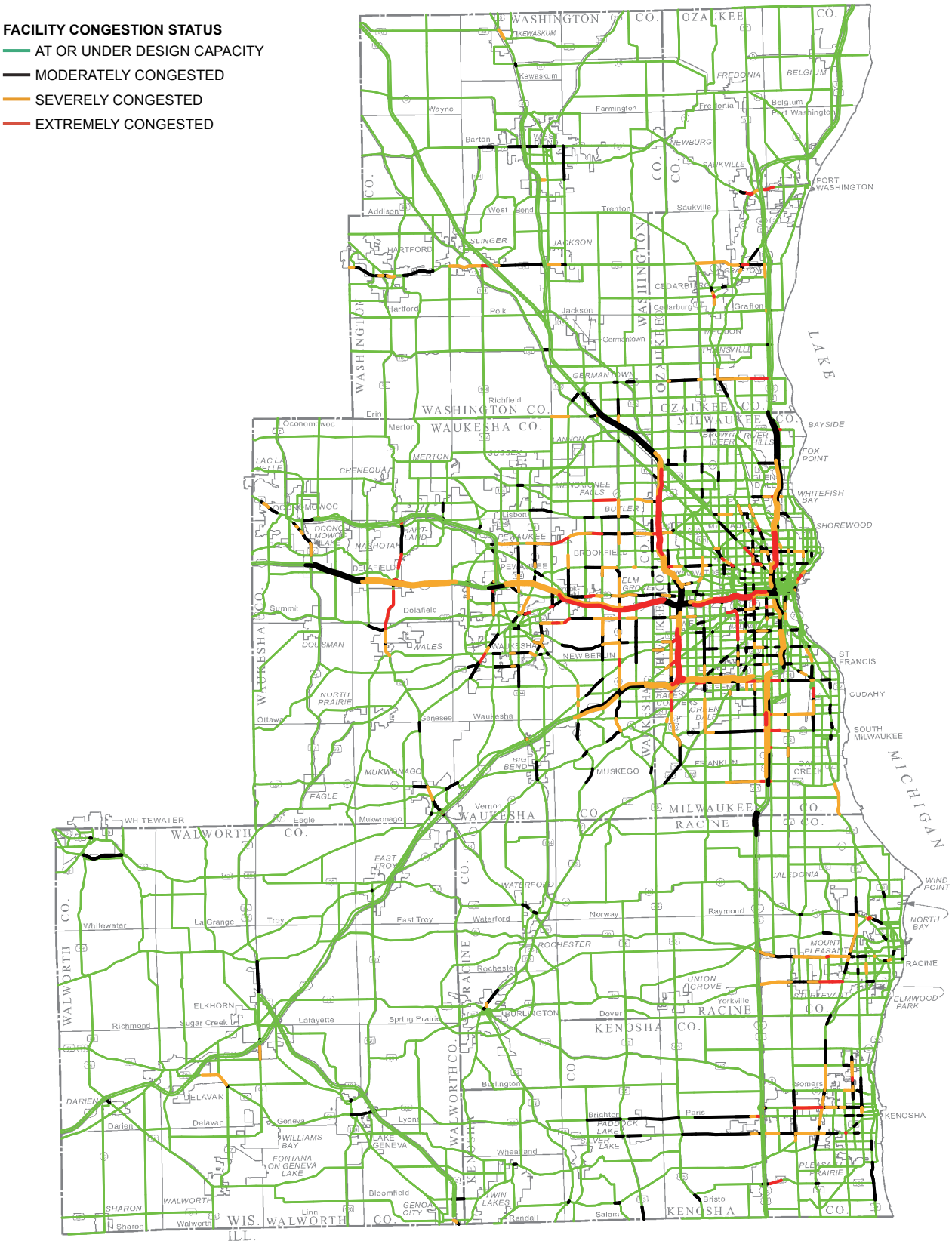
Map II-5E

SCENARIO E: YEAR 2050 TRAFFIC CONGESTION ON ARTERIAL STREETS AND HIGHWAYS



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