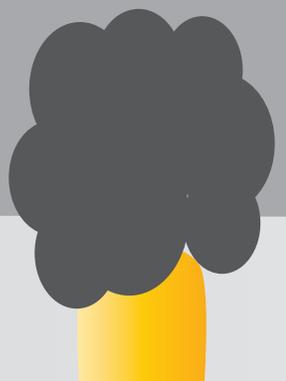
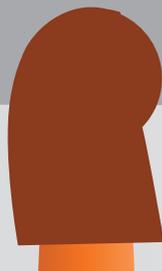
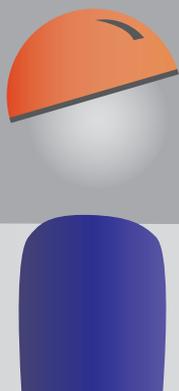
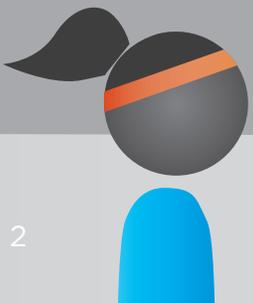


City of Madison, WI

MADISON IN MOTION

EXECUTIVE SUMMARY | 2017

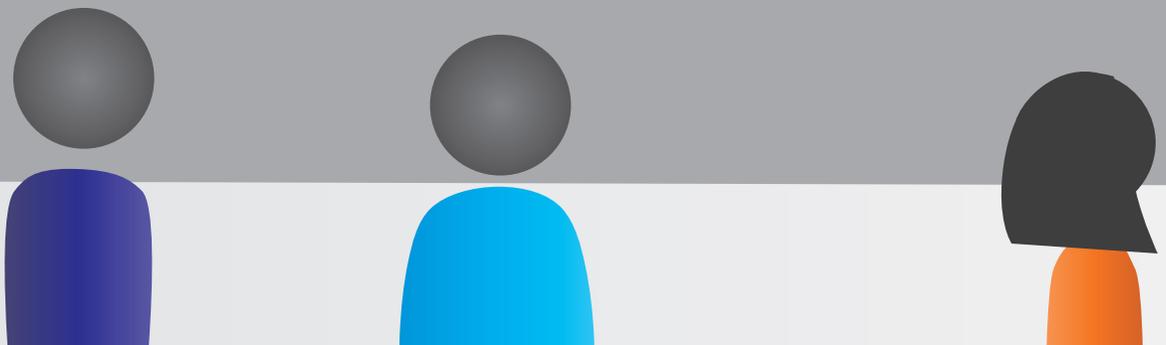




Setting the stage

The City of Madison's Sustainable Transportation Master Plan, Madison in Motion, creates a framework for the future of transportation decisions and investments in the City. The City envisions a future with improved walkability, bikability, and transit availability, which provides residents a variety of options to meet their transportation needs.

Building upon previously adopted transportation and land use plans, this framework is geared towards improving agency coordination, connectivity, and transportation choices, while providing guidance to strengthen neighborhoods with appropriate future development. Madison in Motion evaluates the current transportation system, identifies trends, and establishes steps for the City and partners to undertake in order to achieve the goal of creating a more multi-modal City.



PROJECT GOALS

Throughout the development of the Madison Sustainable Transportation Plan, a set of 8 goals guided decision-making.



Expand mobility choices

Expand transportation infrastructure **to support a greater range of options** for all user types.



Improve safety and health

Future transportation system investments must contribute to **healthy living and good quality** of life for all residents.



Create transportation equity for all residents

The future transportation system **must address the needs of all users.**



Enhance neighborhoods

Future transportation system investments should contribute to the **creation of strong, vibrant neighborhoods.**





Promote beneficial growth

Future transportation system investments should **promote environmentally and fiscally sustainable development** that provides benefits to the entire City.



Promote Environmental Sustainability

Transportation projects and policies will not generate adverse impacts on air and water quality. Instead, **projects will seek to improve both.**



Maintain Fiscal Responsibility

The transportation system should **be affordable for current and future generations.**



Foster Economic Development

Transportation projects should **promote economic opportunity and community prosperity.**



WHAT'S SHAPING MADISON?

The Madison in Motion Plan was developed only after current trends impacting the future of Madison were understood. Through a series of data analysis activities, public outreach efforts, and consultation with key stakeholders the project team gained a better understanding of the changes occurring in Madison that should be planned for in the future. **Here are some of the key trends that are setting Madison in Motion.**

Transit ridership is up.

40%↑

In 2014, 15.2 million passengers used Madison Metro, a 40% increase in rides from 2004. Given limited opportunities to expand roadways, increasing transit ridership is an opportunity to increase the efficiency of Madison's transportation system.



Madison is Booming

25,000

Over the next 40 years, Madison is expected to add 25,000 residents per decade, and about 1,500 jobs per year. This will increase demand for residences, and add stress to the current transportation system. By planning for this growth, Madison can stay ahead of the curve by creating multi-modal communities that provide residents various transportation options to mitigate stress on the transportation system.

More Madisonians could bicycle.

270mi



Designated as a Platinum Bicycle Friendly Community due to a bicycle network that spans over 270 miles, bicycling has a 6% travel mode split in Madison citywide. Though that split is higher in central areas, this split can be increased citywide by creating low-stress bicycle facilities, bridging gaps in the bicycle network, and connecting bicyclists to key destinations.

Madison as an Economic Engine.

Various technological advancements are rapidly changing mobility in Urban communities. The next pages highlight tools that are being used by the industry, as well as disruptive technologies introducing new ways to move around, and new challenges to think about while planning for the future

Less car dependence.



Vehicle ownership patterns in Madison suggest people are relying less on cars for their transportation needs. Households of all types and sizes are less likely to own 3 or more cars, and more likely to have just 1 car in their driveway. This suggests that residents are seeking other ways to get around.

Renewed Interest in City Living.

Demand for housing in central areas of Madison, historically driven by students at the University of Wisconsin, Madison, has strengthened significantly. A renewed interest in urban living is being driven by millennials and by downsizing baby boomers looking for communities that are tightly knit together.



Technology's Role in Changing Mobility.

Various technological advancements are rapidly changing mobility in Urban communities. The next pages highlight tools that are being used by the industry, as well as disruptive technologies introducing new ways to move around, and new challenges to think about while planning for the future

American urban mobility is changing quickly.

Lots of new options are appearing, many of them blurring the line between private goods and public transportation. All of these mobility options – not to mention those that will surely appear in the future – have different applications in people’s lives, and their role will continue to grow and evolve as consumers try them on for size and compare them to traditional transportation options.

Here is quick snapshot of some current shared mobility options, as well as more standard offerings.

BIKE SHARING

DOCK-BASED*

A dock-based bike share system that allows users to check out a bike from a dock using a credit card or membership card. Bicycles can be returned to other docks within the system. This type of system currently exists in Madison and is operated by B-Cycle.

DOCKLESS*

Relying on GPS locators and smart phone technology, this system allows users to reserve a bicycle near them. Bicycles can be picked up and returned at any ordinary bicycle rack within a designated service area, which significantly expands access points, and simplifies the return process.

PEER-TO-PEER*

Bringing the sharing economy to bike share, this system connects bicycle owners to potential renters via an online interface. Using a special lock, owners can list their bicycle as available for reservation. Bicycles can be picked up and returned at ordinary bicycle racks within pre-determined service area.



CAR SHARING

ROUND-TRIP (Traditional)

Round-trip car sharing services are a type of car rental that is designed to be convenient for people who rent cars for short periods of time. These services are membership-based and typically charge by the hour. Reservations are made online and cars are unlocked with a specialized membership card. Cars are scattered throughout a service area, and must be returned to the same pick-up location.

ONE-WAY

One-way car sharing operates similarly to traditional car-sharing but cars can be “returned” by parking them anywhere in the service area – no return trip necessary. This makes the user experience more flexible.

PEER-TO-PEER

This system connects car owners with potential renters via an online interface. Owners list their available vehicles online, and typically install hardware to the vehicle to allow immediate access to renters. Reservations for vehicles are made online and vehicles are returned to the pick-up location, or at least nearby, when trips are completed.

CLOSED NETWORK

This system is a private car share service for a specific development. These work similarly to traditional car sharing services, the car is managed by a property owner, and available only to tenants.



RIDESOURCING

TAXICAB/ LIMO

These services provide for-hire vehicles, which are staffed by professional drivers licensed to transport passengers. In Madison, licensed cab companies operate 24 hours a day, and serve all areas of the City.

TRANSPORTATION NETWORK COMPANY (TNC)

Such companies use an online/mobile platform to connect passengers to drivers. Drivers use their own personal vehicles, and do not require a special license to transport passengers. Typically more affordable than taxicabs, TNC services make it easier for people to leave their vehicles at home. The speed and smooth user interface of these services have attracted many new types of users.



RIDESHARING

CARPOOLING

Carpooling is simply an arrangement between multiple people to make a trip in a single vehicle. A classic example of carpooling is coworkers who live near each other organizing to share a vehicle to work.

VANPOOLING

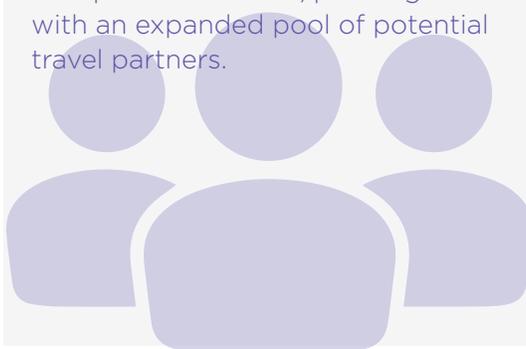
Vanpooling services are typically fee-based operations operated by a third party. The van travels on an agreed upon schedule to and from pick up/drop-off locations, and is operated by one of the commuters.

VANPOOLING SUBSCRIPTION SERVICE

These services require users to pay for each trip, provided door-to-door commuting service to people outside of traditional transit service areas and/or hours. Trips must be booked in advance, and subsidies may be utilized for lower-income users. This service fulfills travel needs not met by transit networks.

DYNAMIC RIDESHARING

This system connects passengers and drivers on an online system, pairing individuals making a similar trip. Passengers agree upon and pay a share of the trips cost. This is an expansion from traditional carpools, as it provides drivers/passengers with an expanded pool of potential travel partners.



TRANSIT

PUBLIC TRANSIT

Public transit provides traditional fixed-route services, typically along high-volume corridors for the use of the general public for a minor fee. Encompassing buses, rapid transit, light rail, trolleybuses, passenger trains, ferries, and more, transit is the high-volume workhorse of transportation modes. Some public transit systems provide paratransit services for the elderly and handicapped in accordance with ADA requirements.

SHUTTLE

Shuttles are privately owned services that operate on a fixed route to pick up and drop off employees of a specific company or visitors to a major destination. These services can be planned to consider major transit locations along the route to accentuate the transit system.

MICROTRANSIT

This online service picks up passengers by using dynamically generated routes based on demand and customer locations. These services charge a fee per ride, typically more expensive than public transit, but less expensive than taxicabs or transportation network company services.



AUTONOMOUS VEHICLES

In recent years, the anticipation and questions around autonomous vehicles have intensified. As technology in transportation continues to rapidly evolve, major benefits such as improved safety, increased mobility, and maximized efficiency are on the horizon. However, autonomous vehicles will bring several challenges for jurisdictions as technology is slowly integrated with existing infrastructure, and human drivers.

Though it is expected that safety will be improved as a result of automation limiting crashes, it will take decades for roadways to become fully automated, potentially resulting in friction between autonomous and human drivers in the near future. In addition, there are concerns of negative impacts autonomous vehicles may have on VMT and emission levels as a result of empty cars traveling to cheaper parking areas away from the owners' destination, which could also add to local congestion. As technology has the potential to increase the capacity of existing roadways and intersections through more efficient signal timing and tighter vehicle spacing, reducing congestion concerns, it may encourage individuals to utilize their own vehicles as opposed to transit services. Planning ahead and implementing policies to curtail VMT in the presence of autonomous vehicles can prevent such concerns from materializing. Potential system features that could be set up to prevent increases in VMT include the following:

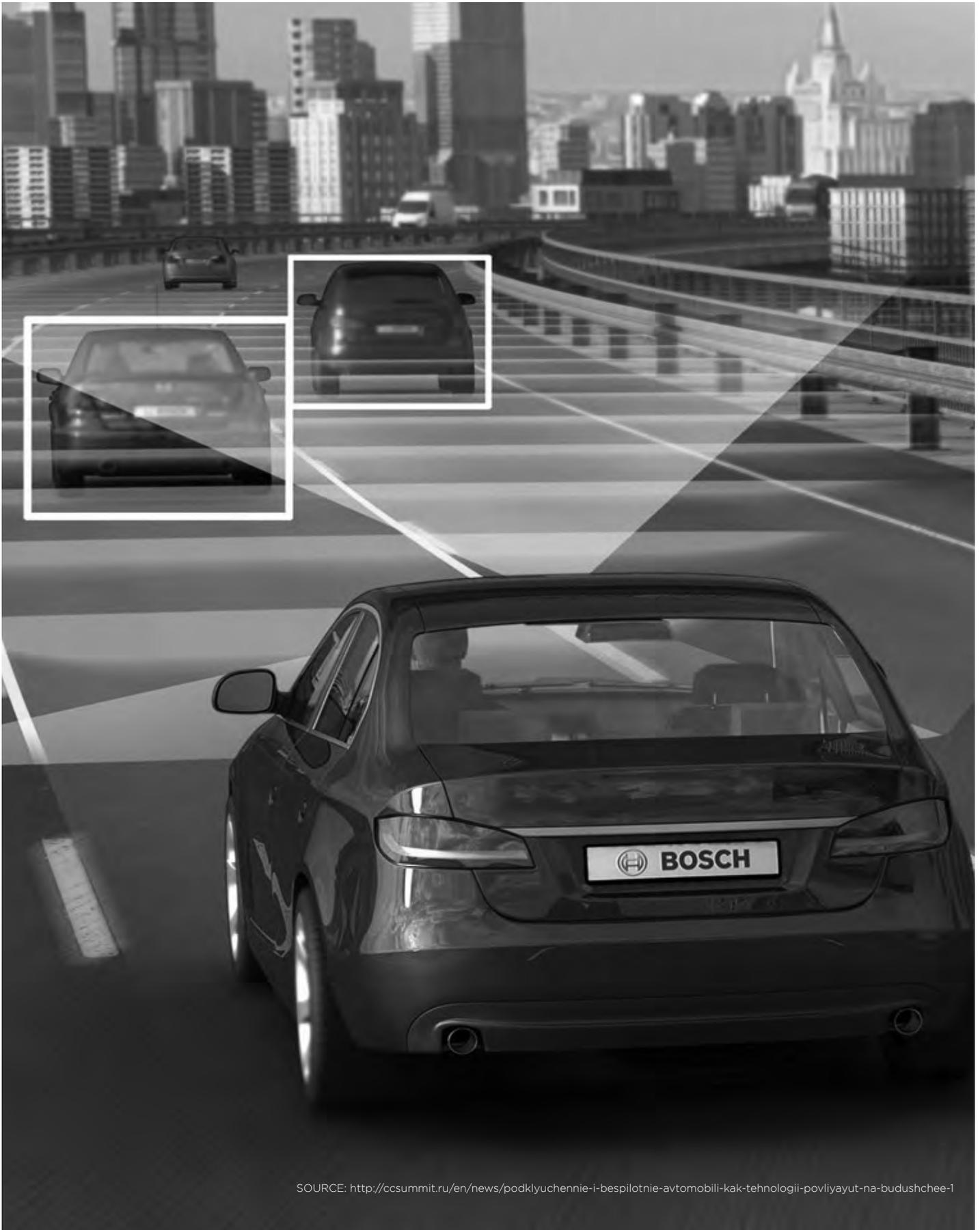
- Pay per mile
- Facilitating and encouraging the sharing economy
- Establish autonomous vehicles as support for transit and active modes, not a replacement
- Ensure high quality transit is available, especially along major corridors, as quality will be more important than ever to encourage ridership

In addition, though automation will bring many benefits assuming negative impacts are curtailed, it will not bring benefits related to improved public health, economic development, and quality of life, as seen with active transportation. Modal balance of the transportation system will be as important in the future, as it is today for residents.

Parking is another key component of the transportation system that is likely to be impacted as autonomous vehicles emerge. A system of shared autonomous vehicles could reduce, or perhaps even eliminate, the need for parking. This presents tremendous opportunity, because of the significant amount of land underutilized by being dedicated to parking, which negatively impacts walkability and the overall vibrancy of an area. If predictions of lowered parking demands materialize, cities and developers could rapidly eliminate or reduce future parking projects, opening the door to projects that bring along the benefits of density, availability of affordable housing, and walkability. With technology expected to evolve to complete autonomous capability in 2022, and 100% autonomous penetration by 2045, cities like Madison may consider creating dramatically less parking for the future, especially when considering the long development process and life span of parking structures¹.

As these technologies begin to emerge Madison should not only update infrastructure technologies to maximize capacity and safety of the network, but also look ahead to address potential challenges of managing new technologies as they may impact VMT levels and other travel patterns.

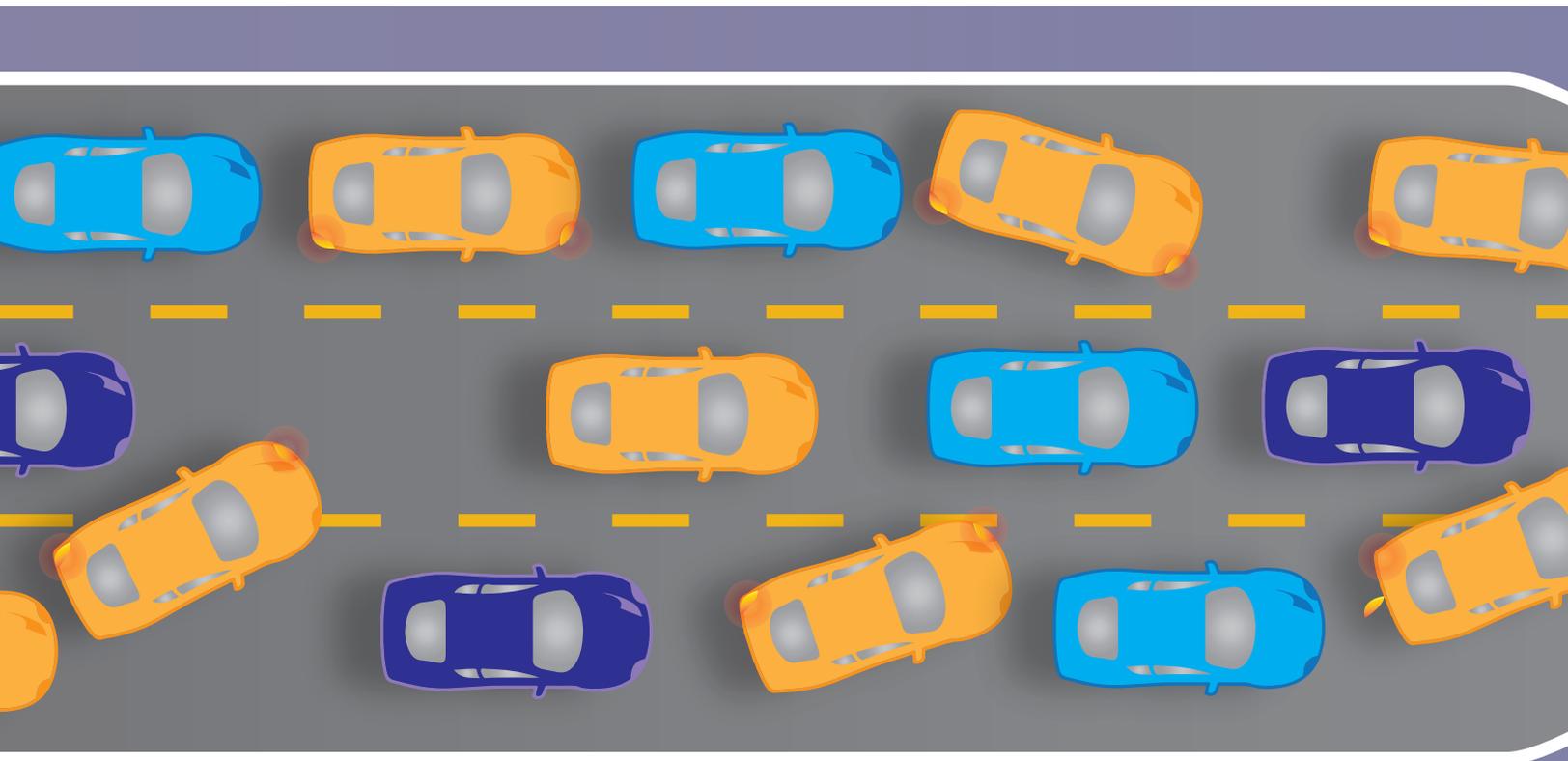
¹ Morgan Stanley. (2013). "Autonomous Cars: Self-Driving the New Auto Industry Paradigm." Retrieved from: <http://orfe.princeton.edu/~alaink/Smart-DrivingCars/PDFs/Nov2013MORGAN-STANLEY-BLUE-PAPER-AUTONOMOUS-CARS%EF%BC%9A-SELF-DRIVING-THE-NEW-AUTO-INDUSTRY-PARADIGM.pdf>



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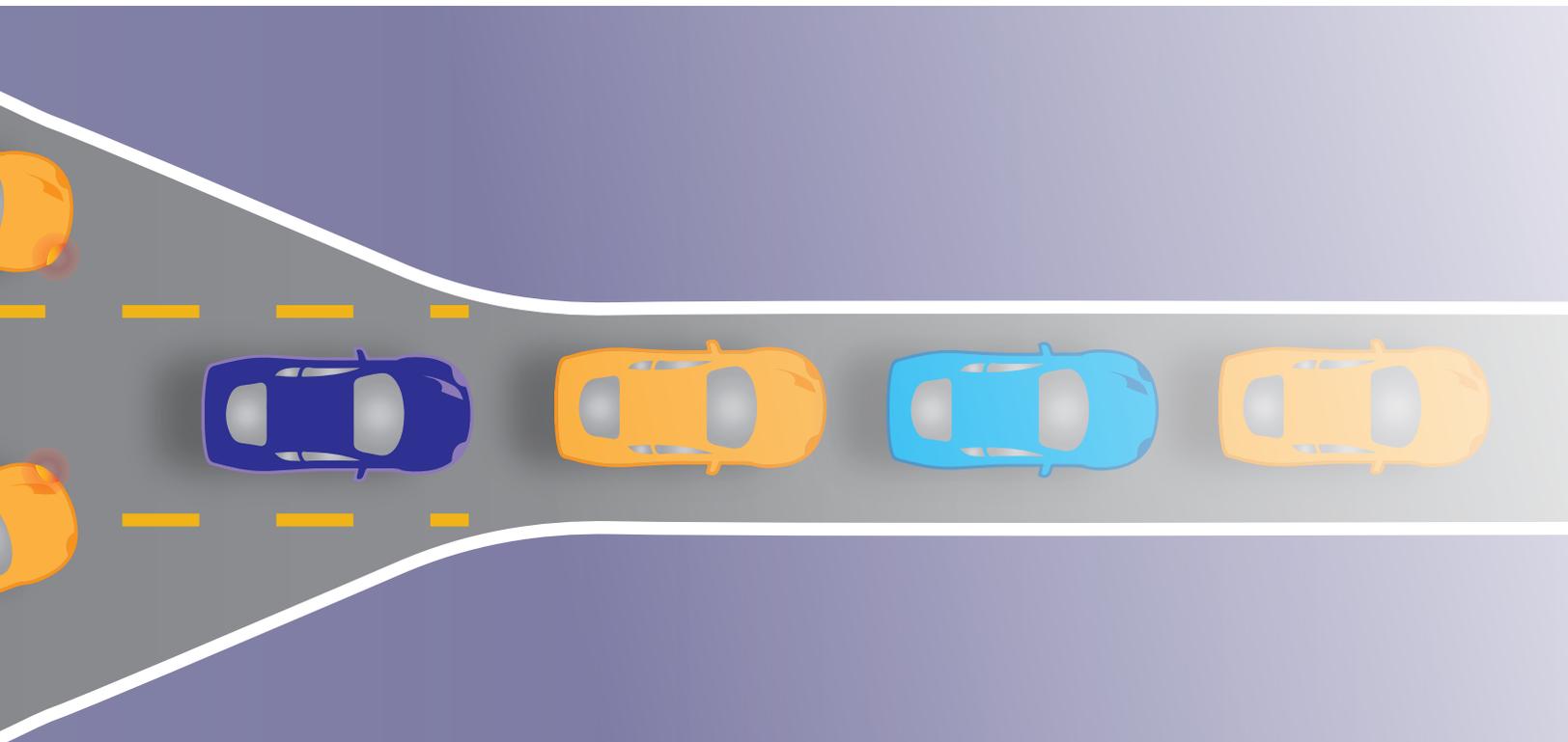
What challenges await Madison?

Though there are several positive trends guiding recommendations, challenges faced by the City and the region also provide the basis for action items in the Madison in Motion Plan. Based on an understanding of current trends and public outreach efforts, several challenges were clearly identified. Here are the principal challenges that the Madison in Motion Plan will seek to alleviate.



Natural Limitations in Madison.

The same natural features that make Madison beautiful, create transportation challenges. Lakes and other natural features result in few parallel routes to provide alternatives to roads that are at or near capacity during peak hour resulting in congestion. This is particularly true of the Isthmus, where options in and out are most limited. With limited opportunities to add road capacity outside of perimeter areas, Madison must develop a multi-modal network to meet increasing demands.



Metro demand is increasing, opportunities to improve service are not.

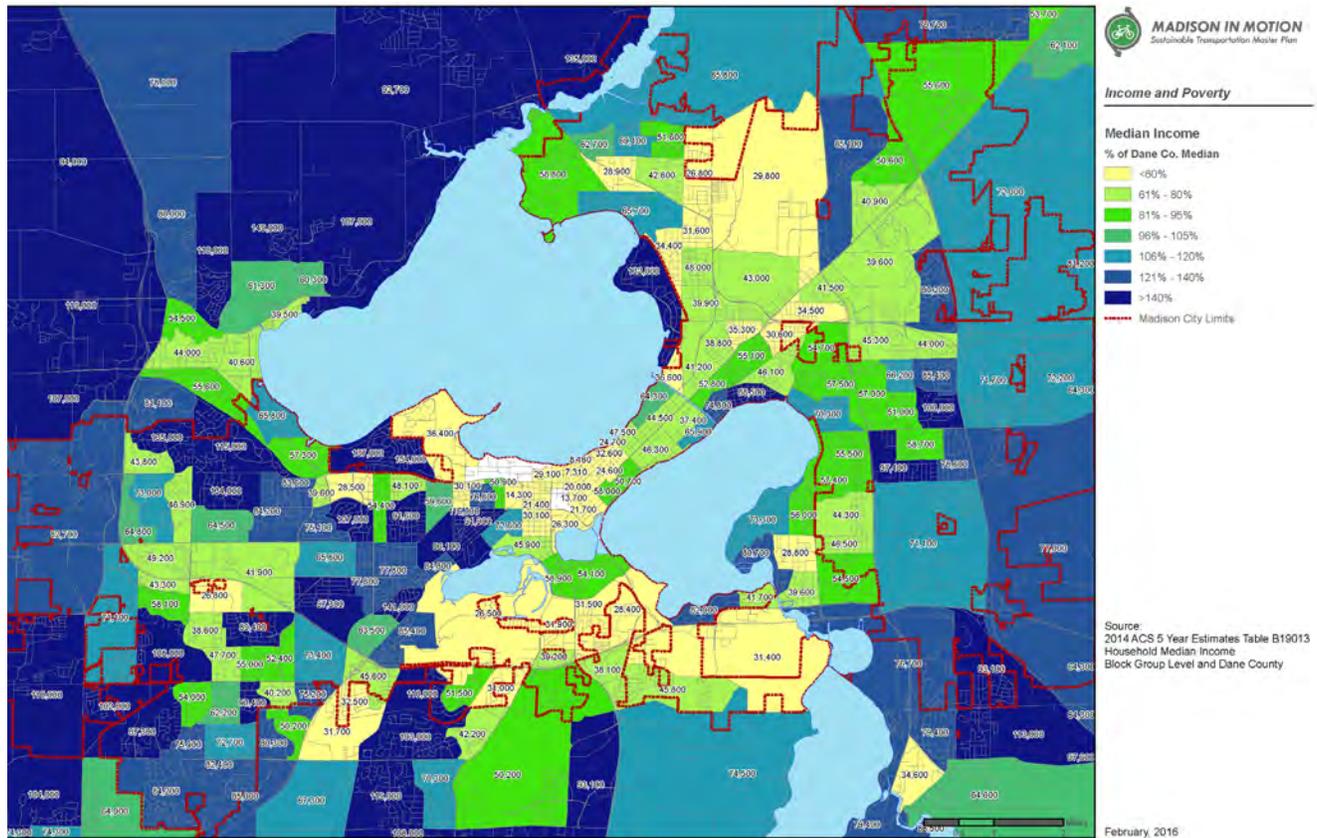
While the increasing ridership over the past decade provide a positive trend to lean on, Madison Metro has limited abilities to improve transit service.

Metro's #1 complaint is bus crowding, as buses are often at or near capacity during peak transportation hours. However, Metro has no viable way to respond to this complaint at the moment without a funding mechanism for transit improvements, and without physical space in its facilities for additional buses. Madison will need to make funding decisions that reflect the prioritization of transit improvements.



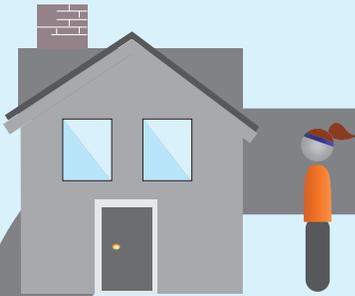
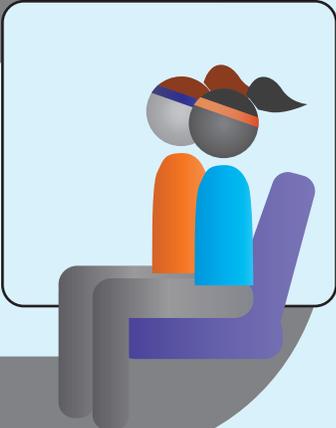
Displacement of low income community members.

With the renewed interest for urban living, the increasing demand for housing has pushed lower income households to communities in the perimeter of the City. These communities are away from jobs and effective transit service resulting in longer commute distances, lower densities, and less connected street patterns that make transit service more difficult to serve these individuals. This forces individuals already struggling to spend greater portions of their income on transportation, as transit is not as reliable.

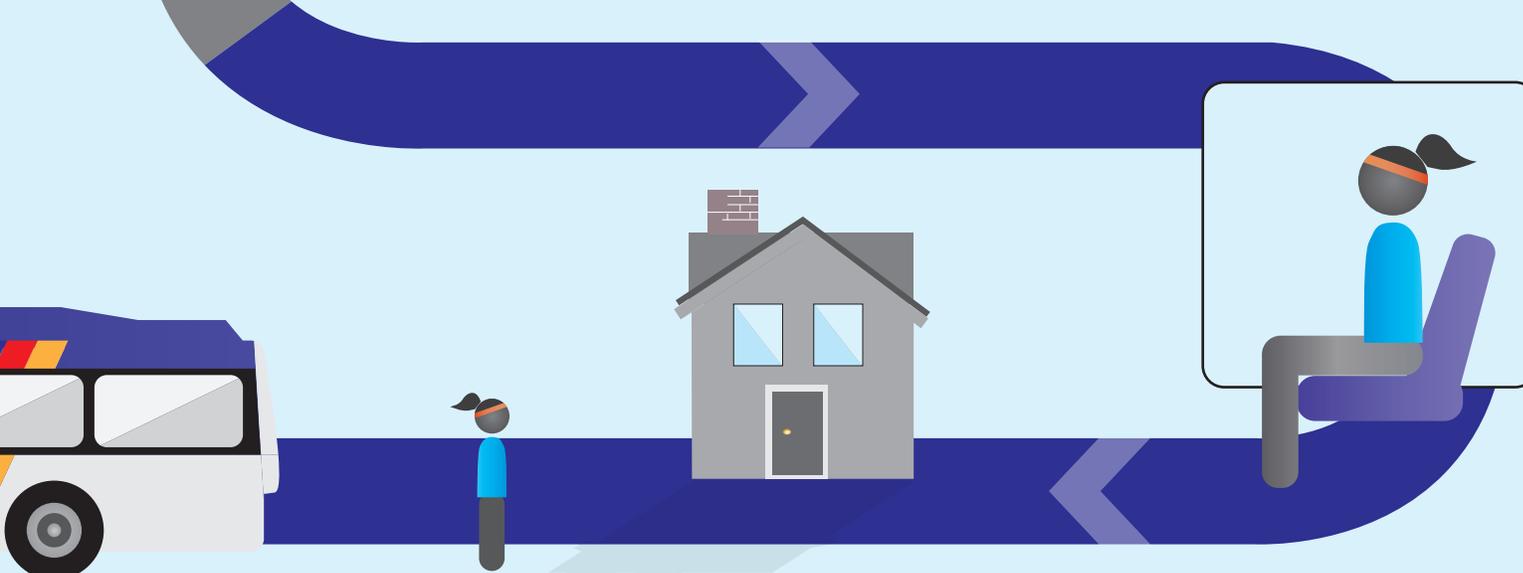


Need for equitable transit service for all.

Transit trips for persons of color are often longer and require a higher number of transfers. For Black/African American riders, trips average 40% longer than white riders. This suggests Madison should evaluate transit routes to ensure all communities are being served equitably.

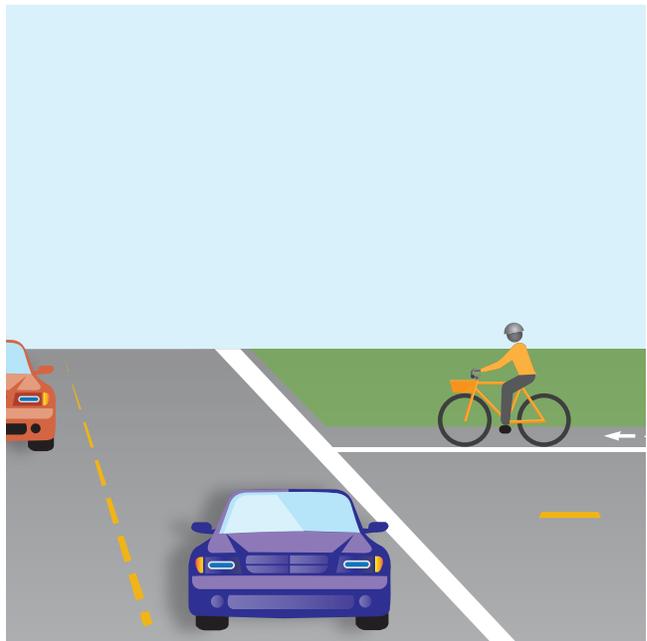


For Black/African American riders, trips average **40% longer** than white riders.



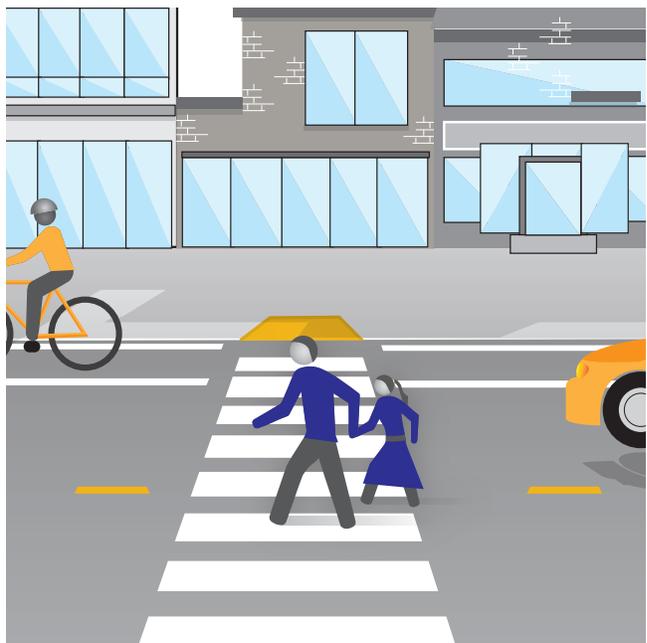
Barriers in the bicycle network.

Despite the robust bicycle network in Madison, several barriers exist that make people feel unsafe, and keep them from using a bicycle. In addition to geographic barriers, highways and other heavily used roadways create barriers. In some instances, these are physical, and in others, it's a barrier created by a lack of safety. These gaps in the network should be improved to create a safer, more inviting environment for all bicyclists.



Need for a complete pedestrian network.

Approximately 296 miles of streets in Madison do not have any sidewalks or have sidewalks only on one side. This includes about 120 miles of busier streets, streets near schools, and streets near parks, where pedestrian activity is anticipated. The pedestrian network should be improved to limit conflicts between pedestrians and other roadway users.



What is Madison going to do?

The Madison in Motion Plan outlines concrete recommendations based on overarching goals, technical analysis, and public input to ensure the future of Madison reflected the needs and desires of the community.

Specific transportation projects recommended to be implemented as part of the near-term and long-term capital budgets and plans are discussed in Chapter 6 of the Madison in Motion Plan. Some of the flagship recommendations in the plan are highlighted here. These represent opportunities to usher the future of transportation in Madison.



Building and Maintaining Comfortable and Safe Bicycle Infrastructure



Building and Maintaining Comfortable and Safe Pedestrian Infrastructure





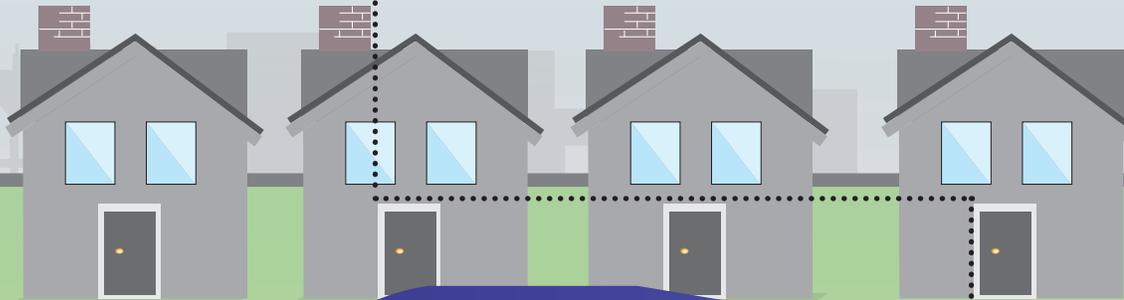
Improving the Public Transit System in Madison and throughout the Region

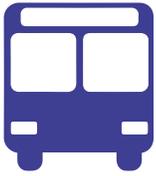


Ensuring Land Use and Transportation System Coordination



Building and Maintaining Streets and Roadways for All Users



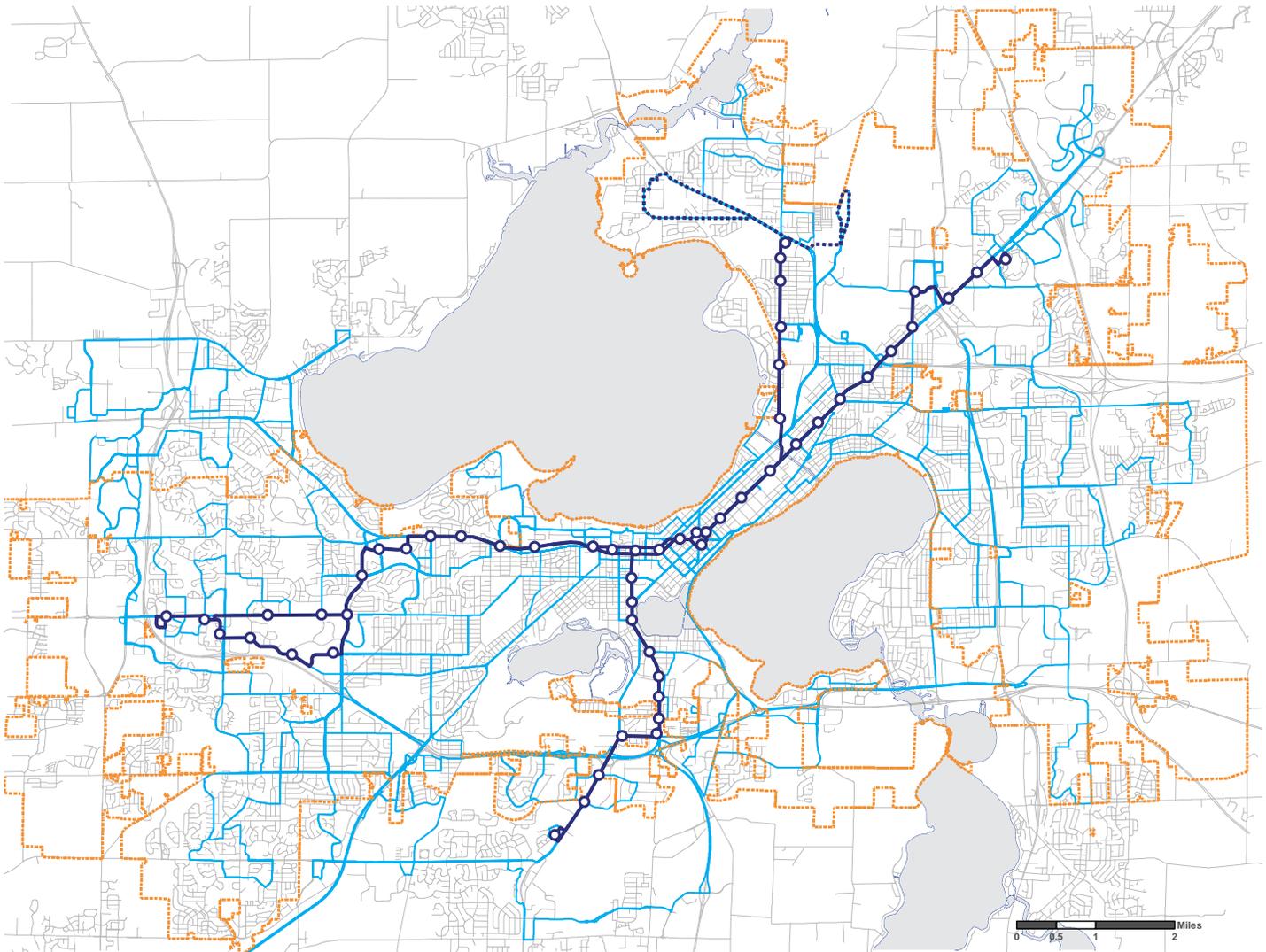


IMPROVING THE PUBLIC TRANSIT SYSTEM IN MADISON AND THROUGHOUT THE REGION

Madison's transit mode split is among the highest when compared with cities of similar size. Considering the growing ridership over the past decade, the transit system must continue to evolve to serve the community and meet increasing demand for alternatives to driving. Three key improvements to the transit system are identified in the Madison in Motion Plan:

- **Route Restructuring** in order to create serve the community with more direct and efficient routes
- **Bus Rapid Transit** to provide high quality, high frequency service along Madison's most in demand corridors
- **Park and Ride** improvements and integration with express bus service in order to provide transit services on a regional level





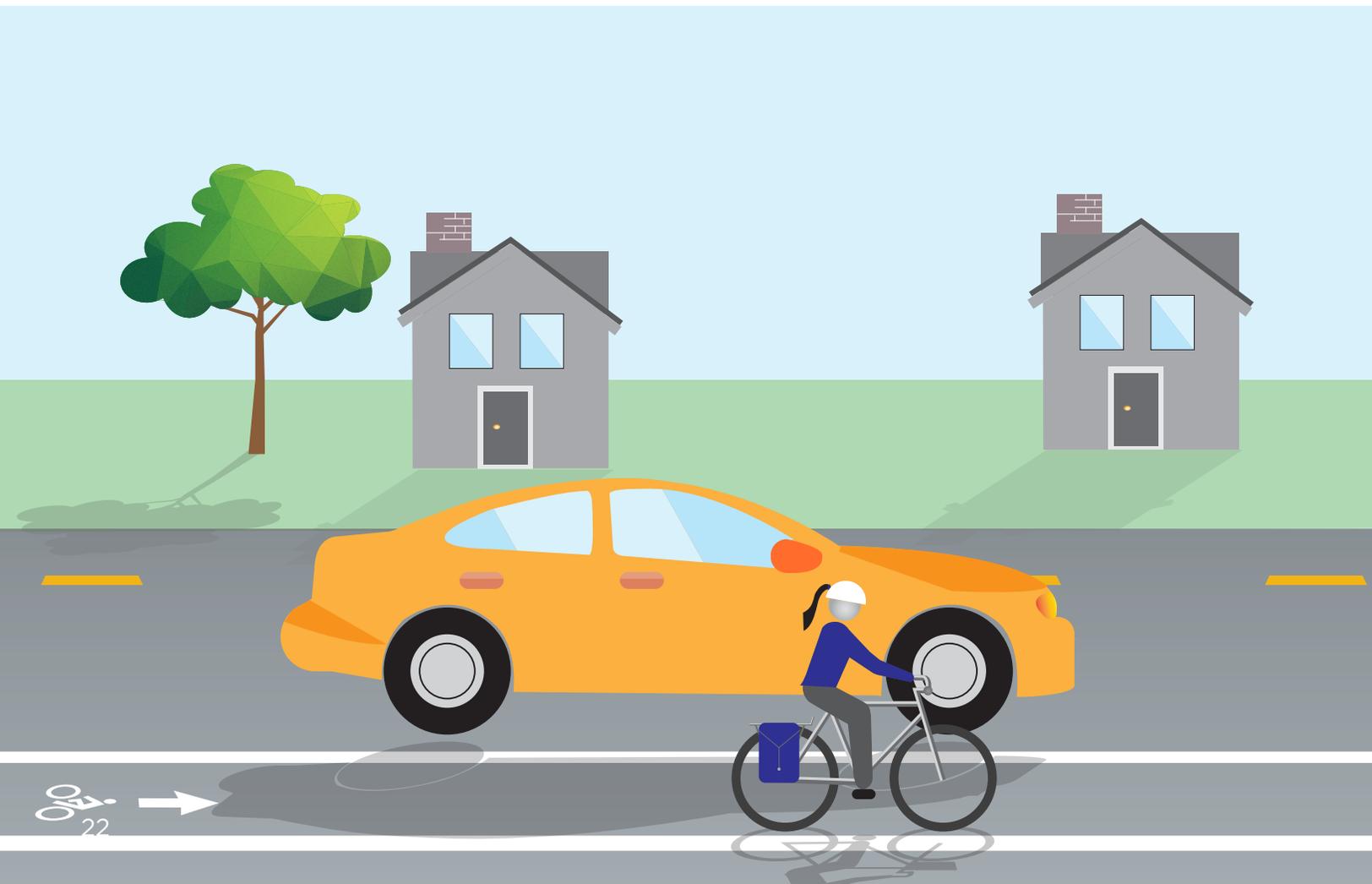
BUS RAPID TRANSIT

- Routes
- Potential Extensions
- BRT Stations
- Metro Transit Routes
- Madison City Limits



BUILDING AND MAINTAINING COMFORTABLE AND SAFE PEDESTRIAN INFRASTRUCTURE

Despite the designation as a Platinum Bicycle Friendly Community, only 6% of trips are accomplished via bicycle. In order to fully utilize the hundreds of miles of bicycle facilities in Madison, gaps and barriers in the network must be bridged. More importantly, all facilities must be made safe and comfortable enough for any rider, young or old, recreational or casual, to use. This will motivate potential bicyclists that may be reluctant to bike on-street in traditional bicycle lanes, especially those on streets with higher traffic volumes or speed. Creating a network of more accessible bicycle infrastructure will further provide alternatives to driving in an environment with limited opportunities to expand roadway capacity.





Map 11 Existing and Proposed Bikeways

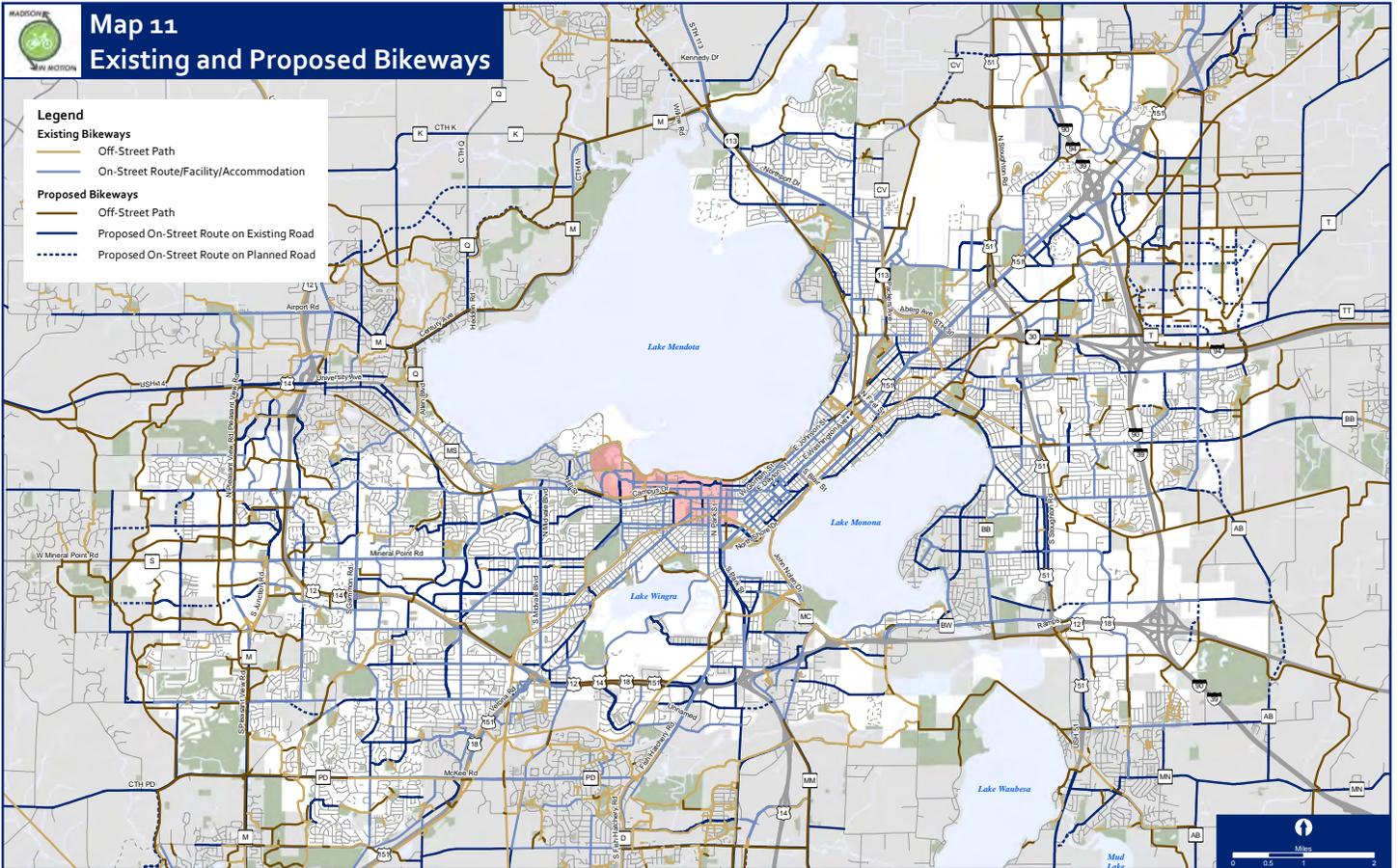
Legend

Existing Bikeways

- Off-Street Path
- On-Street Route/Facility/Accommodation

Proposed Bikeways

- Off-Street Path
- Proposed On-Street Route on Existing Road
- Proposed On-Street Route on Planned Road





BUILDING AND MAINTAINING COMFORTABLE AND SAFE PEDESTRIAN INFRASTRUCTURE

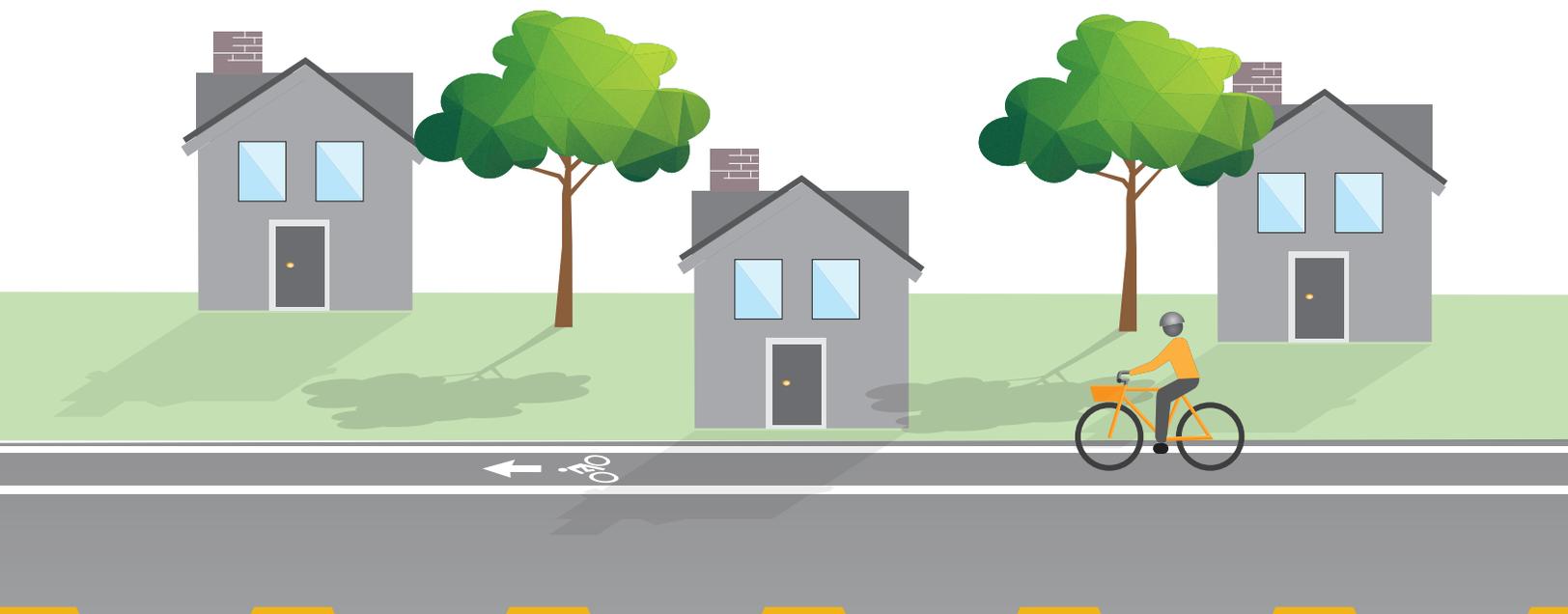
Sidewalks are used by people of all ages and physical abilities, and are used on some part of nearly every trip, where available. In addition to filling gaps in the pedestrian network, the pedestrian experience must be improved citywide. Enhanced street crossings, traffic calming strategies, and improved maintenance of sidewalks can all contribute to the improvement of the pedestrian infrastructure. Furthermore, pedestrian infrastructure will be critical for the success of redevelopment areas that promise to bring high levels of transit service and amenities.





ENSURING LAND USE AND TRANSPORTATION SYSTEM COORDINATION

As Madison prepares for anticipated population growth in the next several decades, development should be coordinated with the transportation system to maximize efficiencies. Redevelopment in areas of high transit service should include a mix of uses including residential options and other amenities. Eleven activity centers (visualized in the map) have been identified by the City of Madison as primary centers of population growth, most along high transit activity corridors. In addition to synchronizing transit access and land uses, affordable housing and senior housing should be integrated into the identified activity centers. This will allow for aging baby boomers to relocate into walkable communities, and will limit displacement caused by increasing demands for urban living.





Sustainable Madison Transportation Master Plan

General Scenario Assumptions

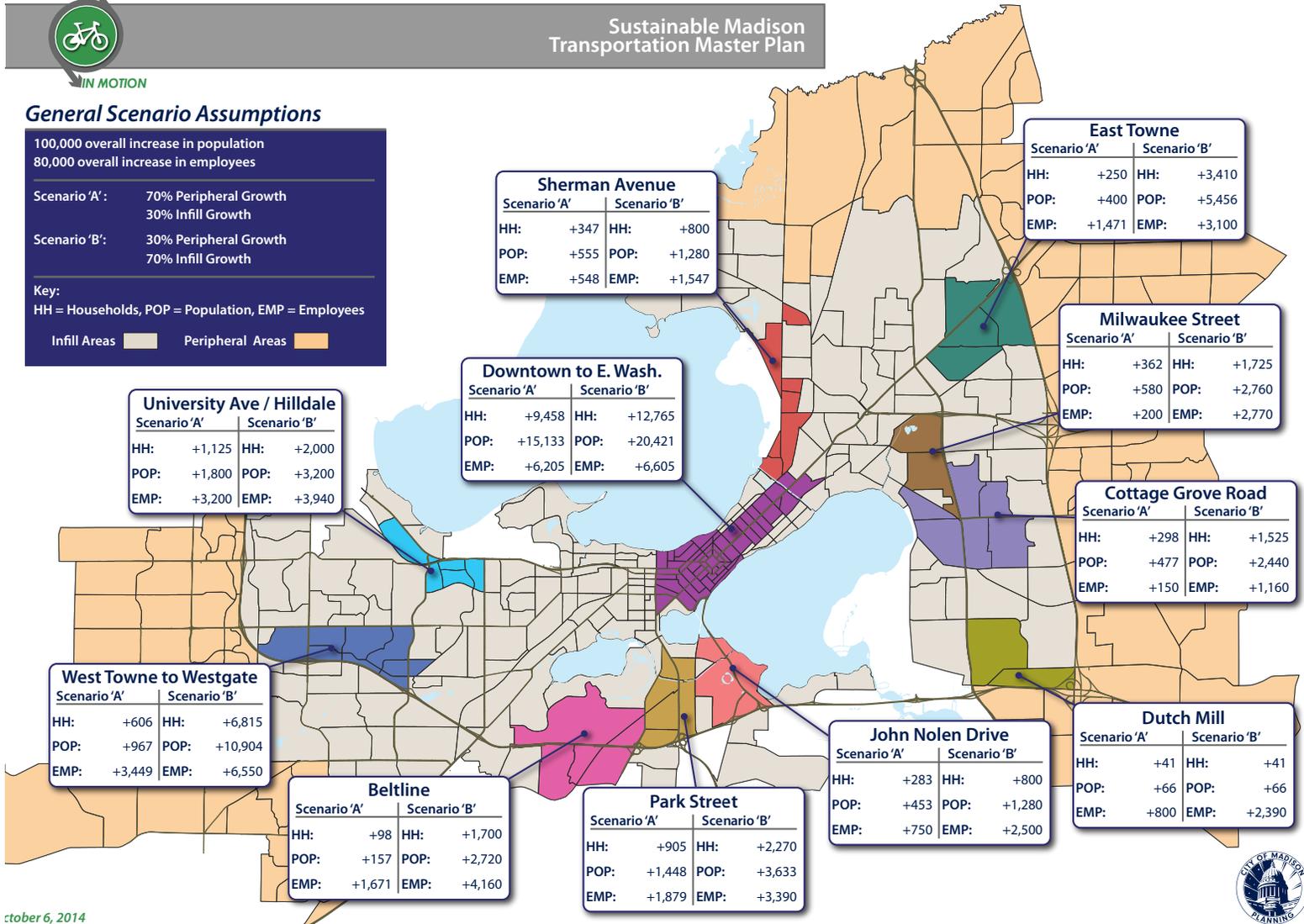
100,000 overall increase in population
80,000 overall increase in employees

Scenario 'A': 70% Peripheral Growth
30% Infill Growth

Scenario 'B': 30% Peripheral Growth
70% Infill Growth

Key:
HH = Households, POP = Population, EMP = Employees

Infill Areas Peripheral Areas



October 6, 2014





BUILDING AND MAINTAINING STREETS AND ROADWAYS FOR ALL USERS

To create better and safer streets for all road users, complete streets designs and components should be considered when redesigning and maintaining existing streets. Streets, particularly those that bypass activity centers, should facilitate people for cars, bikes, and of course, people first. Streets should be designed in a way that balances the needs of residents, pedestrians, cyclists, and motorists as determined by the local context.

