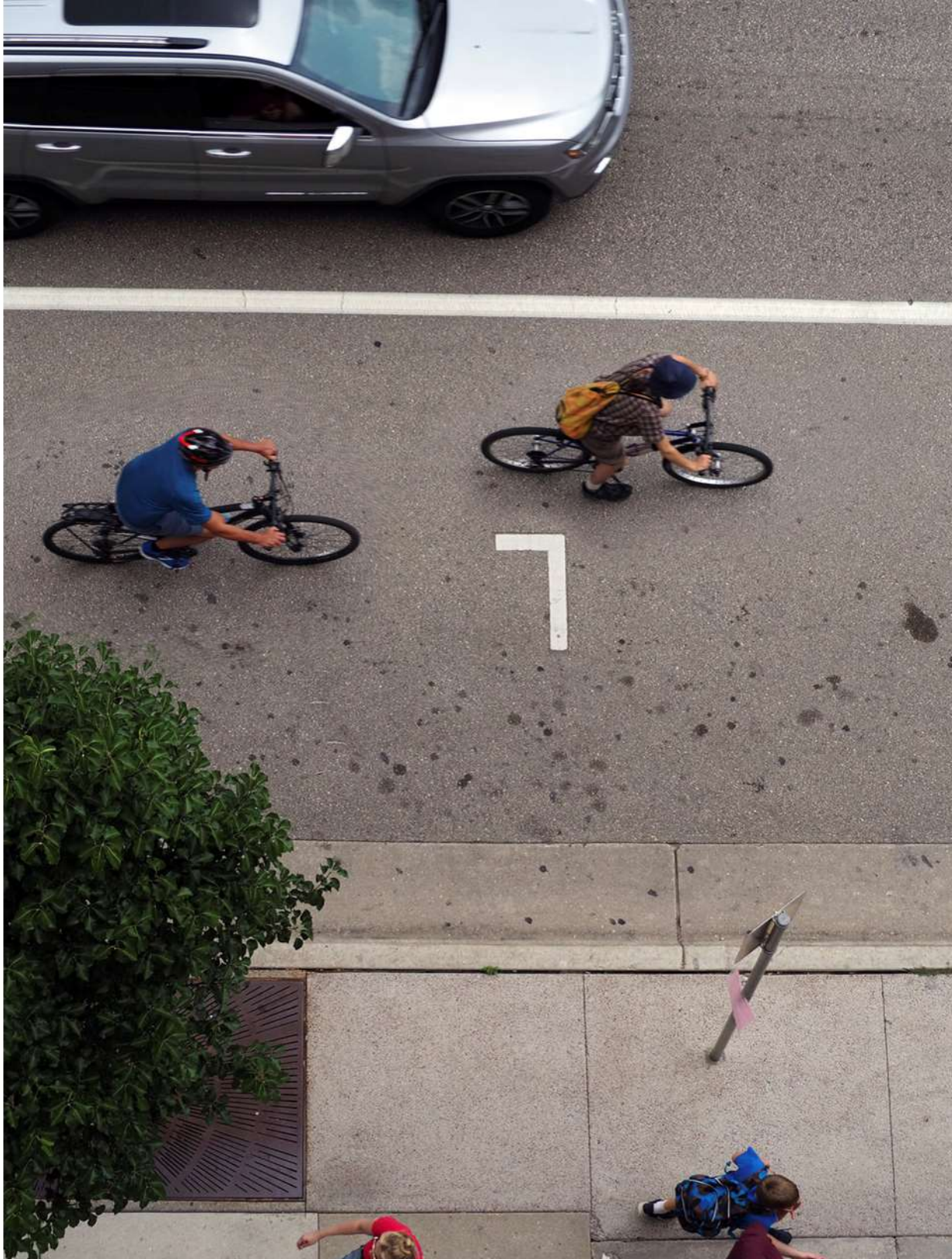
CITY OF MADISON

COMPLETE GREEN STREETS GUIDE

DECEMBER 2022



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Acronyms and Definitions

AASHTO American Association of State Highway Transportation Officials

ADA Americans with Disabilities Act

ADT Average Daily Traffic

BMP Stormwater Best Management Practice

BRT Bus Rapid Transit

DGI Distributed Green Infrastructure

EPA Equity Priority Area

FHWA Federal Highway Administration

HAWK High-Intensity Activated Crosswalk Beacon

HCM Highway Capacity Manual

LOS Level of Service

Madison Area MPO Madison Area Metropolitan Planning Organization

MUTCD Manual on Uniform Traffic Control Devices

NACTO National Association of City Transportation Officials

NRT Neighborhood Resource Team

PHB Pedestrian Hybrid Beacon

PROWAG Public Rights-Of-Way Accessibility Guidelines

ROW Right-of-Way

RRFB Rectangular Rapid Flashing Beacon

VMT Vehicle Miles Traveled

WisDOT Wisconsin Department of Transportation

85th percentile speed The speed at which 85 percent of motor vehicle traffic travels at or below. This is a common measurement used to determine whether people are driving at or near the intended speed of a street and to the set speed limit; see *target speed*

Controlled Intersection An intersection of two streets with signals or signs directing traffic on one or both streets to stop or yield. A "fully controlled" intersection refers to either a traffic signal or an all-way stop. A "partially controlled" intersection refers to stop signs on the approaches of one street (typically the lower-traffic street).

Controlled Crossing A crossing for people walking, rolling, or biking at a traffic signal, stop sign (for the cross traffic), or HAWK or PHB.

Hardscaped An area, often in the terrace, that is *primarily paved*. It may include trees in tree wells and other forms of vegetation in planters.

Landscaped An area, often in the terrace, that is *primarily vegetated* and composed of grasses, shrubs, trees, and other forms of vegetation.

Protected Bike Lane, also called Separated Bike Lane by the FHWA, is a bike lane with a vertical element (such as parked cars, a curb, or flex posts) separating it from motor vehicle traffic.

Right-of-Way The publicly-owned land in which a street exists currently or in the future. Right-of-way typically includes sidewalks, terraces, and the roadway and sometimes extends beyond the sidewalks.

Roadway The portion of a street between the curbs intended for the conveyance or storage (parking) of motorized and non-motorized vehicles.

Separated Bike Lane See "Protected Bike Lane"

Street The entirety of a transportation corridor, including the roadway, pedestrian spaces, landscaped areas, and even building facades; a holistic concept in which transportation, land use, character, economics, and quality of life should be considered equally.

Target Speed The speed at which people are expected to drive; the target speed is intended to become the posted speed limit.

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Companion Documents

The following documents were developed during the Complete Green Streets Guide process to inform the development of this guide. They are available on the City of Madison's Complete Green Streets webpage.

- Street Stats (existing conditions)
- Equity Engagement and Framework Summary Report
- Distributed Green Infrastructure & Tree Canopy Guidance Report

Information contained in this document is for planning purposes and should not be used for final design of any project. All results, recommendations, and commentary contained herein are based on limited data and information and on existing conditions that are subject to change. Existing conditions have not been field-verified. Further analysis and engineering design are necessary prior to implementing any of the recommendations contained herein.

1.Introduction & Overview

1.1. Vision: Why we created a Complete Green Streets Guide

Streets in Madison move people, but are also our largest public spaces. Neighbors, business owners, bicyclists, transit users, and the health of our streams and lakes all have a stake in how that public space is allocated. Should valuable street space go toward parking or bike lanes? Bus lanes or street trees? Rain gardens or sidewalks with café dining? The answer varies in different situations, but how do we make those decisions?

The conventional approach to street design did not help us answer these questions. The traditional street design process focused on moving traffic—everything else is squeezed into the remaining space. This resulted in more driving, more severe crashes, fewer mobility choices, inconsistent solutions, and inequities—people of color and people with low incomes are more likely to be disproportionately impacted by these negative outcomes.

Purpose of this Guide

Madison has a history of designing streets to accommodate all modes of travel and developing and maintaining a safe, efficient, economical, equitable, and sustainable transportation system for Madison's residents and visitors. In 2009, the City of Madison reaffirmed the City's commitment to Complete Streets in Resolution 09-00997 and directed staff to follow to the extent possible Complete Streets concepts. However, the policy alone did not provide adequate guidance for implementing Complete Streets consistently over time.

With significant growth and development, rising concerns about safety, and increased awareness of disparities, Madison needed a more detailed approach to designing streets that reflects our community's values and priorities. This Complete Green Streets Guide builds upon Resolution to provide a more detailed framework for implementing Complete Streets while also considering the green infrastructure needs to address sustainability goals. In 2022, the City of Madison adopted a Vision Zero Action Plan with a goal to eliminate serious and fatal traffic crashes and this guide supports Vision Zero by prioritizing safety for all users over high speeds for those who choose to drive.

The Complete Green Streets approach provides a consistent process for planning, designing, building, and operating streets in a way that better reflects our community values and increases safety and equity. By adopting this Complete Green Streets Guide, the City is committing to designing and operating the entire right of way to prioritize safety, connectivity for people traveling whether they are walking, taking transit, biking, or driving and ensuring the green infrastructure needs of a resilient city. This Guide is intended to consistently and equitably apply Complete Green Streets principles to the entire street network.

When we use the word "street," we are referring to the sidewalks, terraces, roadway, and everything in between. As a more holistic approach to design, the Complete Green Streets Guide provides:

	A process centered in community values
	Clear direction on priorities
	Defined street types to use as starting point for design
	Explicit equity framework and associated process
	Flexible tool that will evolve over time as Madison evolves

Principles of Complete Green Streets

Complete Green Streets are for everyone, no matter who they are or how they travel. There is no one design of a Complete Street. Instead, each street design considers the specific context of the community, neighborhood, and street. A Complete Street is designed and operated in a way that prioritizes safety, comfort, and access to destinations for all people who use the street. Green streets are part of healthy, equitable urban design that views streets as vital public spaces. Incorporating green elements in streets improves mental and physical health through better air quality, valuable shade and beautification, and contact with nature in areas where access to parks is limited. Green infrastructure is also part of designing for resilience and is critical for climate change mitigation and adaptation.

1.2. What problems are we addressing?

Safe, connected, and resilient streets are critical to the quality of life, health, and mobility of residents and visitors to the City of Madison. Streets play an important role in moving people and goods, supporting environmental sustainability, economic activity and facilitating a wide array of uses and activities. The majority of public space is made up of City streets and the importance of these spaces requires a design approach that considers that multiple roles that streets serve. However, since the end of World War II, American street design has focused on moving cars and other motor vehicles. This approach has resulted in numerous unintended consequences, including:

More driving (and no less traffic congestion). Prioritizing moving traffic typically results in more lanes and higher speed limits, which in turn leads to a phenomenon known as "induced demand" which means the easier it is to drive on a street, the more people tend to drive there.

Speeding is common. Recently constructed streets often provide parking that is rarely used, may include bike lanes, and have ample travel lane widths. This leads to wide open streets that encourage (and often result in) speeding. The City regularly receives complaints on recently-constructed streets, which were supposed to support neighborhoods, that are broken from the start.

Crashes are more severe. Crashes that occur at higher speeds tend to be more severe and result in more fatalities. This is not just due to speeding; streets with higher posted speed limits (35 miles per hour or greater) see more severe crashes than streets with lower speed limits. Moreover, Black residents of Dane County are more likely to be injured or killed in motor vehicle crashes. These are key reasons why Madison has adopted Vision Zero.

Pedestrians are not well accommodated. Some adults may feel comfortable walking unprotected in the street. But people in our community have a full range of abilities. Children, people with disabilities, older adults, and a variety of other community members should not have to compete with cars by walking in a travel lane. These users are unprotected and vulnerable to injury with any crash. In Madison, people of color are more likely to live near a critical gap in sidewalk than the average Madisonian.

Bicyclists are not well accommodated. Many of our community members, including those without access to a car and children, rely on bicycles to get to their destinations, school, and activities. Yet these users often must travel on streets with minimal or no bike accommodations. A child or adult ought to be able to go to the library without the risk from an impaired or a distracted driver.

Water and air pollution is increasing. Simply put, more driving results in more emissions, petroleum consumption, and oil/gasoline spills. This impacts local air quality, greenhouse gas emissions, and water quality in our lakes. People who live in neighborhoods adjacent to high-speed, high-traffic highways, industrial areas, and polluted waterways (for example, Darbo-Worthington and Allied Drive) disproportionately suffer from the effects of water and air pollution.

Neighborhoods are impacted, especially communities of color. Streets with more traffic and faster traffic are noisier, less safe, and more polluted. And people of color and people with low incomes statistically are more likely than the average Madisonian to live near a high-traffic street in Madison, less likely to live near high-frequency transit, and, as mentioned above, more likely to be involved in a severe crash.

Competing Priorities

Most street reconstructions take place in a fixed amount of right of way, with a streetscape based on the street width. During the reconstruction planning process, street users, residents, advocate for what they think should be accommodated in the design. This has often led to motor vehicles taking priority, modes not being accommodated, and street trees being removed. The decisions have historically not been based on a policy or value system that represents the community as a whole and favors the input from residents who have the time to show up to multiple meetings to advocate for their preferences.

Although the City of Madison has been recognized as a leader in its walk, transit and bike networks, differing levels of connectivity and safety exist across the community. The implementation of the Complete Streets policy has been inconsistent and has not always led to the intended outcomes. The City has also committed to sustainability goals to increase our tree canopy and address climate change concerns, which also compete for space in the street.

The Complete Green Streets Guide was designed to provide a clear, consistent framework to help City staff and community members weigh tradeoffs and make decisions amidst competing priorities.

Complementary Programs

The City of Madison has multiple programs and funding sources used to improve the safety and multimodal access provided by our streets. However, compared to Complete Green Streets, these programs are reactive to immediate needs and discrete challenges.

Vision Zero – Madison has set a goal of achieving zero traffic deaths by 2035 under the Vision Zero campaign. Vision Zero is an approach—successfully implemented in multiple European countries—that reduces and ultimately eliminates traffic deaths through proven safety strategies. Under Madison's Vision Zero plan, the City is looking at the street segments with the most severe and fatal crashes. The City will invest in a safe systems approach, including re-engineering those segments to slow vehicle speeds and making intersections safer for people walking, biking and driving. The strategies and actions in the Vision Zero campaign will include ways to eliminate disproportionate impacts of unsafe streets on low-income people and people of color.

Safe Streets Madison – Safe Streets Madison is a new program in 2022 that combines and replaces the prior Neighborhood Traffic Management / Traffic Calming program, the Pedestrian / Bicycle Enhancements program, and the Safe Routes to School program. This new combined program focuses on implementing traffic safety measures (such as speed humps, mini traffic circles, pedestrian refuge islands, and more) in a fair and equitable manner to eliminate traffic deaths and serious injuries on City streets. The program also focuses on improving connectivity by closing gaps in the pedestrian and bicycle networks in a fair and equitable manner, ensuring they are accessible for all ages and abilities.

1.3. Complete Green Streets: A New Approach

Elements of the Complete Green Streets Guide

The City of Madison developed this Guide to provide policy and design guidance to staff, consultants, decision makers, developers, community groups and residents on the planning, design, and operation of streets. The Complete Green Streets Guide is intended to inform all projects, while recognizing that each project is unique and that tradeoffs often impact final design decisions.

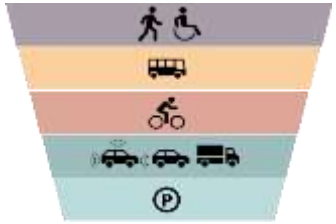
This guide includes six key elements that incorporate context and the needs of various modes, identify what should be prioritized in different situations, and guide how to make tradeoffs when the project is faced with physical or financial constraints. The Complete Green Streets Guide elements include:

Street Values (Section 1.4)

Articulates how community values guide street design and shape all aspects of decision making in Complete Green Streets.

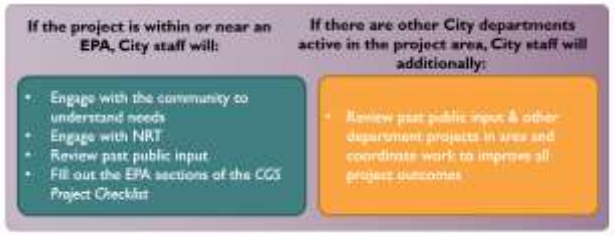
Modal Hierarchy (Section 1.5)

Builds upon the street values and illustrates the order in which the City of Madison accommodates the various street users and uses by default across the street network.



Equity Framework (Section 3)

Increase coordination and accountability to ensure outcomes are equitable for People of Color and people with low incomes.



Overlays (Section 4)

Includes priority networks and area overlays that prioritize different modes (forming a system of complete networks that are well connected, safe, equitable, and reliable) and stationary uses (including tree canopy and green infrastructure).

Street Types (Section 5)

Provides context-based starting points for street design that span the spectrum of current and future streets in Madison. Identifies context-based priorities and guides allocation of space.

Design Parameters (Section 6)

Identifies minimum, maximum, and preferred values for things like sidewalk and terrace widths, target speeds, etc.

Street Type	Total Walkway Width (per side)*		Total Flex Zone Width (per side)**		Total Travelway Width***			Total Right-of-Way Width		Typical ADT (motor vehicles)
	Pref.	Min.	Pref.	Min.	Max.	Typ.	Min.	Typ.	Min.	
Urban Avenue	6'	5'	15'	6'	102	96'	74'	150'	88'	>20,000
Boulevard	5'	5'	10'	6'	102'	80'	58'	92'	66'	>14,000
Parkway	12-17'	5' if side walk	12'	6	86'	46-66'	26'	108'	66'	>10,000
Mixed-Use Connector	6'	5'	15'	4'	40'	40'	30'	94'	54'	3,000 to 15,000
Community Main Street	8'	5'	20?	4'	40'	40'	20'	64'	50'	10,000 to 20,000
Community Connector	5'	5'	10'	6'	50'	28'	24'	68'	44'	3,000 to 14,000
Mixed-Use Neighborhood Street	6'	5'	16'	8'	22'	20'	20'	64'	42'	<3,000
Neighborhood Street	5'	5'	16'	6'	22'	20'	20'	62'	38'	<3,000
Neighborhood Yield Street	5'	5'	16'	4'	18'	14'	14'	56'	32'	<1,000
Civic Space	12'	10'	15'	6'	34'	Varies	20'	Varies	46'	<2,000
Neighborhood Shared Street (Woonerf)	5'†	4'†	20'†	19'†	NA†	NA†	NA†	25'	23'	<500

Overview of the Decision-Making Process

The elements of the Complete Green Streets Guide work together to form a consistent decision-making process for identifying design priorities and guiding tradeoffs. This process allows design flexibility to respond to local context and community preferences while maintaining focus on the principles, values, and hierarchy of Complete Green Streets.

Step 1. Identify any overlays and street types that apply to the project area

Identify overlays. Consult the overlay maps to see which apply to your project.

Learn more in Section 4. Overlays

&

Determine street type. Consult street type map and descriptions to identify the street type.

Learn more in Section 5. Street Types and Street Zones

Step 2. Assign street zone priorities

Follow the Guide to determine zone priorities, typical elements, and how overlays influence design.

Learn more in Section 5. Street Types and Street Zones

Step 3. Allocate space

Use tables to allocate space for all needed street elements, providing more space in priority zones.

Learn more in Section 6. Design Parameters

If space is constrained, return to Step 2 and determine tradeoffs.

Step 4. Design

Once tradeoffs have been made and a concept has been identified that includes appropriate design and space priorities, the detailed design process can begin.

Unexpected challenges can arise during the design process—changes should be compatible with the design priorities identified in this process.

Projects in or near Equity Priority Areas

If a project is in or near an Equity Priority Area (EPA), there are additional public involvement, interdepartmental coordination, and documentation requirements.

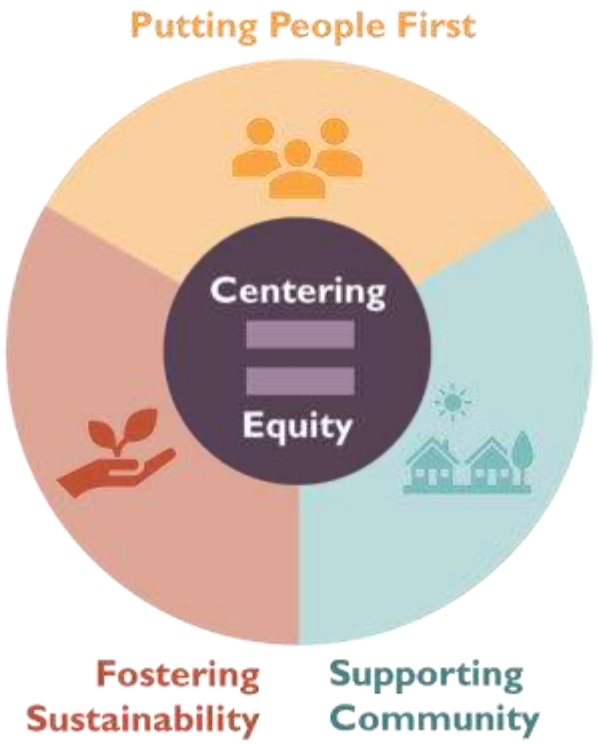
Learn more in Section 3. Equity Framework

1.4. Street Values

Street values are based on public input and articulate how community values should guide street design. Street values shape how we make decisions and what we prioritize in our transportation system. These values will guide all decisions related to the design, operation, and use of streets and transportation in the City of Madison. The Complete Green Streets Guide was shaped by extensive community outreach through the "Let's Talk Streets" initiative. This outreach, described in Section 2, informed the following street values for Madison:

- **Putting people first**: prioritize safety, comfort, and well-being, which de-emphasizes speed and convenience
- **Supporting community**: create safe, welcoming places and emphasize short trips and access to local destinations
- **Fostering sustainability**: promote walking, biking, and transit and use streets to expand the urban tree canopy and clean stormwater
- **Centering equity**: engage inclusively, provide access to opportunities, prioritize, and support the needs of historically underserved people (race, culture, age, income, and gender identity)

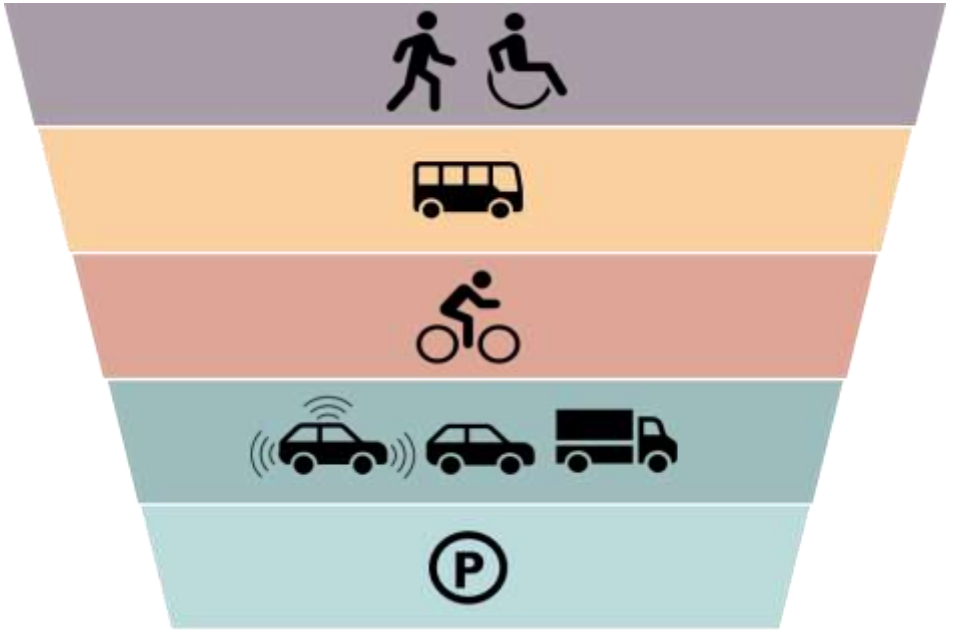
With Complete Green Streets, the City of Madison commits to centering equity in street design and operation of street spaces to ensure that all people have safe access, additional resources are invested in low income and racially diverse neighborhoods, and that tradeoffs and decision do not disproportionately burden low-income people and people of color.



"I take the bus and walk. Crossing streets without a crosswalk is hard. I have problems knowing when it's ok to cross, a driver will have to wave at me to go. I feel more comfortable with other pedestrians. When a bike is behind me, I can't sense it, unless they say something via bell or voice. I sometimes have anxiety about making it across the street in time. I prefer the visual and audio street signals. I almost never jaywalk because I depend on good crosswalks for my safety. I cross Johnson and Gorham every day to get to and from the bus to work." – Survey Respondent Comment, Summer 2021

1.5. Modal[1] Hierarchy

The modal hierarchy illustrates the order in which the City of Madison accommodates the various street users and uses by default across the street network. *It is a way of translating street values into design decisions.*



Foundational to multimodal transportation and available to everyone, the safety and comfort of people walking and using mobility aids is at the top of the hierarchy and is the most important aspect of street design in Madison. Transit is second on the hierarchy, due to its crucial role in moving people of all ages and abilities, including those who cannot or do not drive or bike. Biking will be a top priority after walking on many streets (especially streets without transit) and is prioritized above driving and parking by default. All non-transit motor vehicle uses are at the bottom, including autonomous vehicles, electric vehicles, freight, and parking.

While Madison is known as a city that prioritizes biking, it is placed below transit on the modal hierarchy. This is because transit operates on a limited set of streets and suboptimal conditions on a portion of a transit route can significantly impact the quality of transit. Biking, on the other hand, is allowed on all city streets and is therefore much more flexible in terms of routing. In other words, where a tradeoff must be made between biking and transit, transit will generally be prioritized, and biking accommodated on a nearby, comfortable route.

On some streets, the priority of uses will be different, based on context and overlays. Furthermore, emergency services are not included on the hierarchy because they will be accommodated at all levels. The hierarchy represents the default starting point and broad City policy.

[1] The words "modal" and "mode" refer to the ways people travel (transit, walking, biking, driving, etc.).

1.6. How the Guide will be Used

Building Better Streets

In the past, street design decisions were often made in ways that consider individual conditions/properties without recognition of how street segments fit into the overall network for transit, biking, and walking. These location specific decisions sometimes did not reflect the values of the entire community. The Complete Green Streets Guide and ordinance is meant to provide a transportation system that reflects community values while moving people. Key concepts promoted by Complete Green Streets include:

- **Human Centered Streets**, acknowledging the travel needs of unprotected users (people walking and biking). A street should provide safe accommodations for everyone.
- **Right-sized Streets**, that are not overbuilt. Often new street construction has provided additional capacity (parking, travel lanes) that *might* be needed in the future. This has created streets prone to speeding, long pedestrian crossing distances, and neighborhood streets that draw traffic. Streets should be designed for *today's* needs, with additional right of way reserved for the future if needed.
- **Green Infrastructure**, that helps our right of way become both sustainable and a welcoming public place.

Process

The Complete Green Streets Guide, and corresponding ordinance, is meant to be the starting point for all street designs and area plans. The guide acknowledges the individuality of each street type, while still promoting community transportation and equity values. Staff will use the guide to develop street design alternatives that are consistent with the guide. The Transportation Commission will then have the opportunity to review and select design concepts for street construction and reconstruction that are consistent with the community values incorporated in the Complete Green Streets Guide.

In instances where street designs need to vary from the parameters identified in this Guide to address a specific issue, the Transportation Commission will have the authority to approve the variance.

Guide Updates

The Transportation Commission has the ability to modify the Complete Green Streets Guide to address unforeseen challenges and remain current with state-of-the-art street design practices. As implementation occurs, it may become apparent that some parameters or elements are limiting and should be modified.

One of the more regular types of updates will be changes to the overlays. These should be considered for update on an annual basis, or any time relevant plans are created or updated. For example, the Transit Priority Network should be updated if the transit route network is significantly changed and the All Ages and Abilities Bike Network should be updated when the City's bike plan is updated. The Board of Public Works will have the ability to approve updates to the Tree Canopy and Green Infrastructure Priority Area overlays. The City is evaluating the Equity Priority Area overlay so it will likely require an update soon. For each of these, the primary way an update will occur will be for the City to publish a new map of the overlay either within this document or on the City's Complete Green Streets webpage.

Sub-Area Plans

Sub-Area Plans will recommend street types based on the Complete Green Streets Guide. Sub-area plans and plats that recommend street facilities and right of way widths that vary from the Complete Green Streets Guide will only be included if approved by the Transportation Planning and Policy Board. This structure helps ensure that broad community values are not overridden by site specific concerns, yet provides flexibility.

2. Background / Context

2.1. History of Street Design Practices

In the United States, our streets—and therefore our cities—largely reflect our car-oriented culture. Cars are an important part of the transportation system, but our efforts to make driving easier have come at a cost. Historically, our streets were much more people-centered and multifunctional. The photos below show how a once-vibrant American commercial street evolved over time to replace walking and window shopping with driving and parking lots.

A typical American downtown commercial street in the 1920s

This street design favors:

- Business and commerce
- Public life
- A variety of transportation modes

The same street, 100 years later

This street design favors:

- People passing through
- Corporate or large-scale institutions
- Travel by car

The photos above reflect a prevalent trend in cities across the country, including Madison. There are a variety of factors that led to these outcomes. Several are described on the following pages. *In short, conventional street design does not reflect Madison's community values.*

How did our streets become so automobile-oriented?

Cities were seen as problems, and cars were the solution

The vibrant street of the 1920's was seen by many elites as polluted, crowded, and prone to disease outbreaks. At the same time, cars were becoming more affordable and common on city streets. Automakers promoted cars as solutions to urban problems, and it was believed they would help bring us to a utopian future.

Federal initiatives favored highway building

Federal and state governments intervened in the design of our transportation systems. Through programs such as the highly subsidized interstate highway system, billions of dollars have been spent building roads that are free to use, while rail travel and transit have received substantially less funding by comparison. This is one reason why we consciously or subconsciously believe streets are primarily, or only, for moving traffic.

Functional classification became the primary consideration

The advent of the interstate system, "modern" highways, and growing auto ownership led to classifications, and standards that greatly increased mobility for motor vehicles. Streets and highways are classified as principal arterials, arterials, collectors, and local roads (see map to the right).

Functional classifications are primarily based on amount of expected daily traffic (traffic volumes) with the presumption that as traffic volumes increase, so should traffic speed. Each classification has a set of design standards that focus on moving cars, with only modest consideration given to other modes such as biking and walking. Additionally, Level of Service (LOS) was used as a guide for designing street capacity. This metric prioritized minimizing delay for motor vehicles on our streets, with little reference to pedestrian, bike, or transit accommodations and safety.

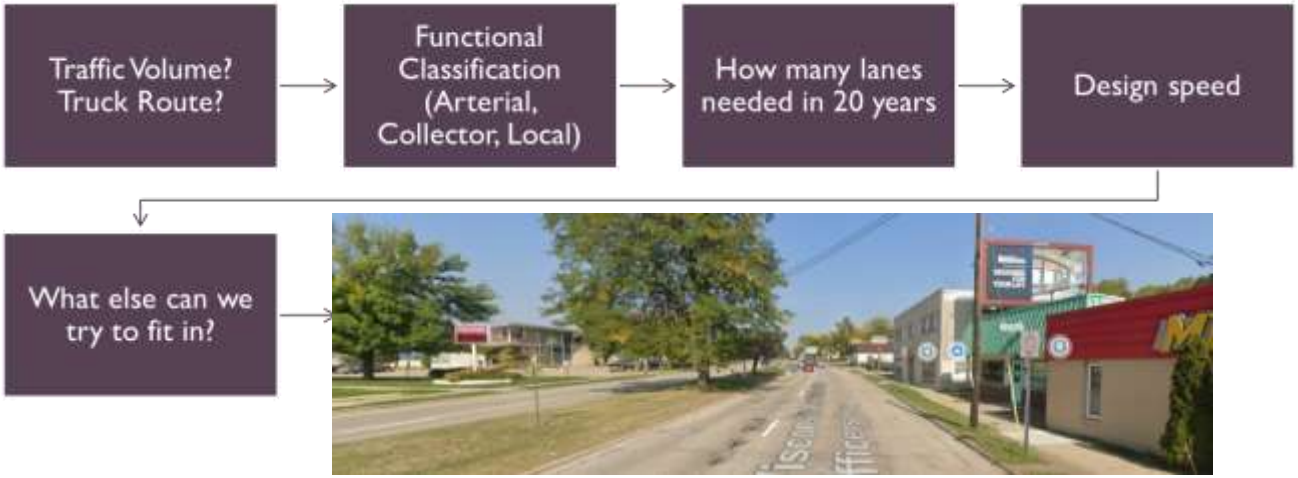
These standards have been incorporated into Madison's General Ordinances, which have guided street construction and reconstruction for decades. As a result, Madison's street design practices have been trending toward wider streets, which allow faster driving. An example is illustrated to the right. Both streets shown are two-lane neighborhood streets, one constructed in the 1920s and the other in the 2010s. The street constructed in the 2010s is 20 feet wider than the 1920s street. The wider street encourages faster motor vehicle speeds, lengthens pedestrian crossing distances, increases impervious areas, and is more expensive to build and maintain.

28 feet wide

48 feet wide

Conventional approach to street design

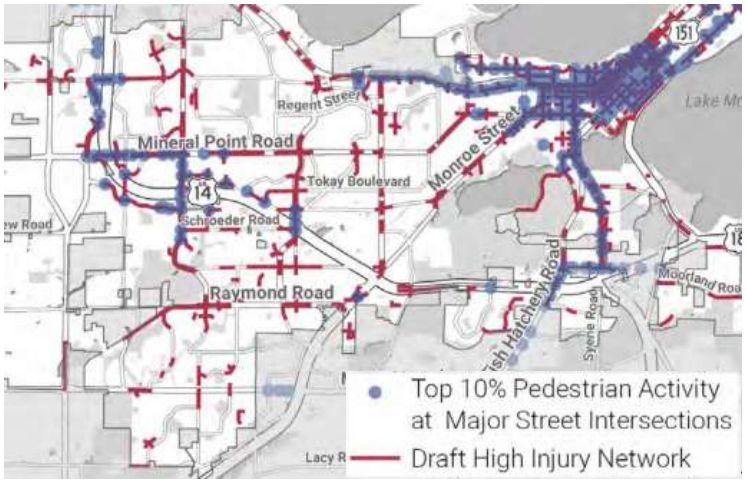
The factors described on the previous page led to what is now the conventional approach to street design, which prioritizes speed and convenience for drivers and managing rush hour traffic, then figuring out what else can be accommodated in the publicly owned right-of-way for people walking and biking, or for other resources such as treen canopy and green infrastructure. This approach to making decisions is based on past values that have been institutionalized in design manuals, standard practices, college curriculum and funding programs. While the City of Madison has been a leader in making streets better for walking and biking, many aspects of this conventional approach have been part of our decision-making for most of the past century.



South Park Street is an example of how the conventional approach to street design focuses on moving traffic and results in streets that are car-dominated and unappealing for walking, biking, and window shopping.

What have been the results of the conventional approach to street design in Madison?

An evaluation of Madison's transportation system (see the Street Stats report on the Complete Green Streets webpage) identified critical sidewalk gaps (many of which are former parts of townships annexed by the City over the last few decades), high levels of pedestrian crossings at some of Madison's most dangerous intersections, gaps in the bicycle network, transit operations that are slowed by motor vehicle traffic, high speed limits, and a variety of other conflicts. Notably, this analysis also identified significant racial disparities in terms of safety and access (these disparities are discussed further in Section 3).



Madison has fundamentally changed how some streets function

You only have to look at the history of State Street to see that it is possible to re-envision how a street works—if it's a street and an area we deem to be important enough. More recently, the re-design of University Avenue west of Whitney way transformed the street into a multimodal corridor. Dean Avenue near Monona Grove High School is a neighborhood street that the City rebuilt to keep traffic speeds very slow. Complete Green Streets provides a framework for Madison to re-envision how all our streets work, with a focus on achieving the street values described in Section 1.4.

State Street, 1915

Source: Wisconsin Historical Society

State Street, 1960s

Source: Richard Hurd

State Street, present

Dean Avenue, 2020

Dean Avenue, 2022

2.2. How Community Input Shaped this Guide

Madison undertook a broad engagement project called "Let Talk Streets" to gather more information for several ongoing projects, including this Guide. Let's Talk Streets outreach included online surveys, a virtual open house, and focused in-person meetings and engagement in the Allied Drive, South Park Street, and Darbo-Worthington neighborhoods. Engagement spanned three phases designed to understand community values (listening phase); confirm those values (reflecting phase); and then check the details (testing phase) to make sure the process results in the outcomes the community wants. Additional input was garnered at community events, such as Parks Alive, through the summer of 2022.

Listening Phase (Summer 2021)

We asked a variety of questions during the listening phase to begin identifying the community values that should determine how streets in Madison are designed. During this phase, we had:

- A virtual project launch event (June 2021)
- An online survey with 202 responses (June-July 2021)
- Two focus groups/walking engagement sessions
- One youth meeting with students from Wright Middle School

A screenshot from the virtual project launch event, where participants provided their thoughts about streets in Madison.

Key takeaways from this phase

- Madison's streets should prioritize the safety and comfort of people, even if that means making driving less convenient.
- Being able to safely cross streets, access nearby destinations, and promote neighborhood quality of life are important objectives.
- There are disparities in the quality and completeness of multimodal infrastructure in neighborhoods with higher concentrations of people of color (these disparities are quantified in Section 3).
- Prioritizing transit is an equity issue. Many people of color and people with low incomes in Madison rely on transit to access jobs and other destinations. Over time, zoning and land use decisions have simultaneously encouraged developers to build employment and shopping destinations farther from the city center, while also facilitating the construction of affordable apartments in areas that are geographically isolated from the rest of Madison. Convenient and quick transit that connects those places has not been provided.

These takeaways shaped the creation of *Street Values* (Section 1).

Reflecting Phase (Fall 2021)

During the reflecting phase, we followed up with additional surveys and engagement to confirm the *Street Values* and gain input to guide the creation of the *Modal Hierarchy* by confirming that the safety and comfort of people walking should be the highest priority. This phase included:

- An online survey with 527 responses
- An online survey for people with disabilities with 60 responses
- In-person engagement in the Allied Drive area, Darbo Worthington Neighborhood, and Just Dane.

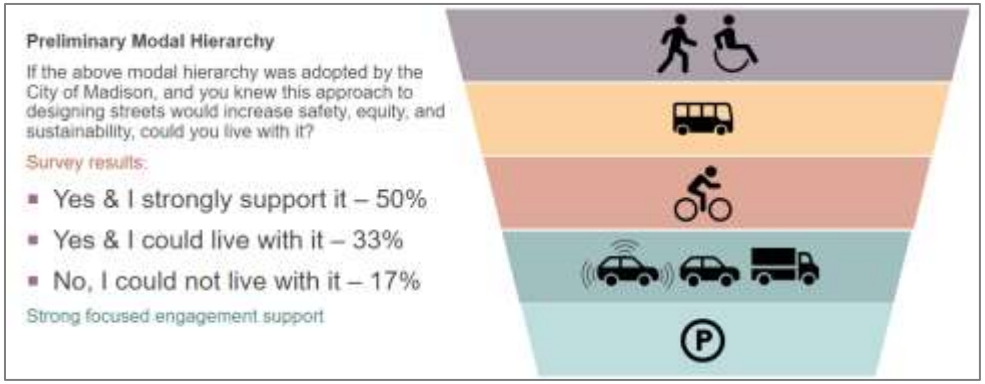
Key takeaways from this phase

- People are willing to accept lower speed limits to increase safety.
  - 75 percent support 20 mile per hour speed limits in neighborhoods.
- Safety and comfort are more important than speed and convenience.
- 88 percent of respondents approve of a modal hierarchy that puts walking on top, then transit, then biking, and driving on the bottom.
  - Space for biking and space for trees is seen as more important than space for on-street parking in most situations.
- People with disabilities especially find it challenging to cross streets, especially due to driver impatience.

The primary reason why some people did not support the preliminary modal hierarchy had to do with concerns about loss of on-street parking. Some people interpreted the hierarchy as signaling a large-scale removal of parking across the city, including on neighborhood streets and shopping streets (e.g., Monroe Street or Williamson Street). However, that is NOT the intent of this modal hierarchy. In fact, there are relatively few instances in which bike lanes would be placed on neighborhood streets, since most of those streets are suitable for biking without bike lanes. Similarly, on streets with small, local businesses (Main Streets in the street typology; see Section 5), the importance of on-street parking is well-recognized and is a high priority.

There's an irony in how I'm responding in that philosophically, I 100% agree with these things, prioritizing foot, bike then vehicle traffic in that order, but I know, when I'm late, trying to get somewhere and driving my car, I will be irrationally annoyed. But I think that's okay.

– Comment on online survey question about travel modes.



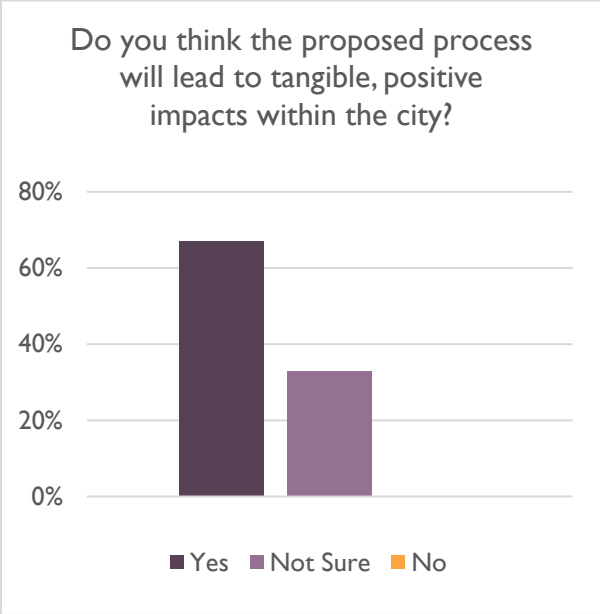
Respondents to the online survey agreed with the shared values proposed for this process/guide/manual:

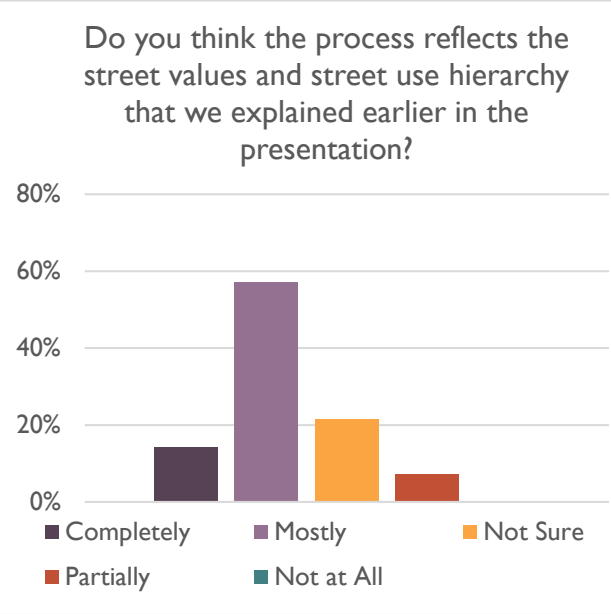
- **Putting people first:** *prioritize safety, comfort, and well-being which de-emphasizes speed and convenience* **(78% agreed)**
- **Supporting community:** *create safe, welcoming places and emphasize short trips and access to local destinations* **(86% agreed)**
- **Fostering sustainability:** *promote walking, biking, and public transit and use streets to expand the urban tree canopy and clean stormwater* **(87% agreed)**
- **Centering equity:** *engage inclusively, provide access to opportunities, prioritize and support the needs of historically underserved people (race, culture, age, income, and gender identity* **(82% agreed)**

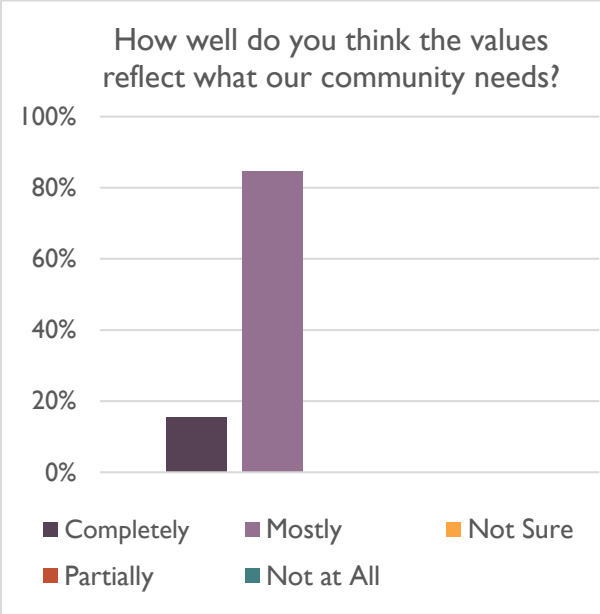
A secondary reason (reported by a much smaller proportion of respondents) some people did not support the preliminary modal hierarchy is because they would prefer biking to be above transit. However, since transit quality can be greatly impacted by even small detours and biking is much more flexible in terms of route choice, the decision was made to keep transit above biking on the hierarchy.

Testing Phase: (Fall 2022)

The final phase of public engagement entailed presenting the various components of this guide to stakeholders and the public for input. During this phase we held an online public meeting to review the guide, provided the video of the meeting for reviewing later, asked people to take a survey, and facilitated four focus group meetings (two community groups and two professional groups) prioritized toward engaging with people of color.







Key takeaways from this phase

- Overall people support the Complete Green Streets Guide and think it will lead to better outcomes.
- The equity process and framing of Equity Priority Areas (see Sections 3 and 4.2) were well-received.
- Several people conveyed that the topic of street design and the information presented are both complex, but that they mostly understood what was presented.
- There is skepticism—but also hopefulness—that these changes to the process will have a positive impact on neighborhoods and people, especially for neighborhoods that have and are experiencing inequities.
- Participants of color are very interested in the details but are less connected to conventional City communication channels. As a takeaway, the City of Madison is advised to spend more time engaging with, discussing, and getting input on projects in Equity Priority Areas. Since many people in this group are renters, it is important to intentionally notify and meet with residents, not just property owners/landlords.

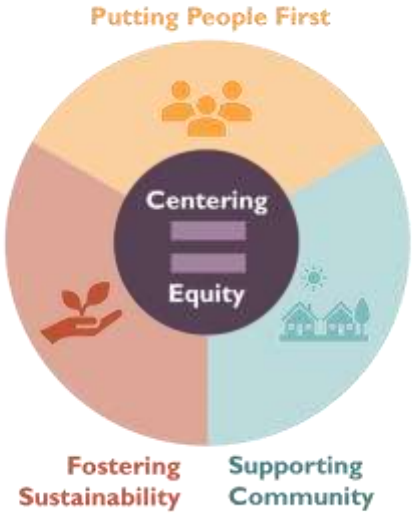
3. Equity Framework

3.1. Defining "Equity" in the Context of Streets and Transportation

In adopting the *Street Values* shown below, Madison is committing to design streets in a way that centers equity. Complete Green Streets expanded on this value to create a framework that defines a holistic approach to street design that reflects the City's definition of equity (see textbox).

For streets and transportation, centering equity means that Madison will:

- Design and operate street spaces so that people, including all racial and ethnic groups, can enjoy them, access jobs and opportunities, and use them safely.
- Move toward justice and fairness in neighborhoods that have experienced (past and present) racial and economic exclusion, by investing additional time, coordination, and resources in those neighborhoods.
- Remove barriers that have isolated neighborhoods from the transportation network and decreased the safety of people living nearby.
- Ensure that tradeoffs and decisions on transportation projects do not disproportionately burden low-income people and people of color.



City of Madison Equity Definition:

Equity is just and fair inclusion into a society in which all, including all racial and ethnic groups, can participate, prosper, and reach their full potential. Equity gives all people a just and fair shot in life despite historic patterns of racial and economic exclusion.

(Adopted from www.policylink.org for the City of Madison Comprehensive Racial Equity Analysis Tool)

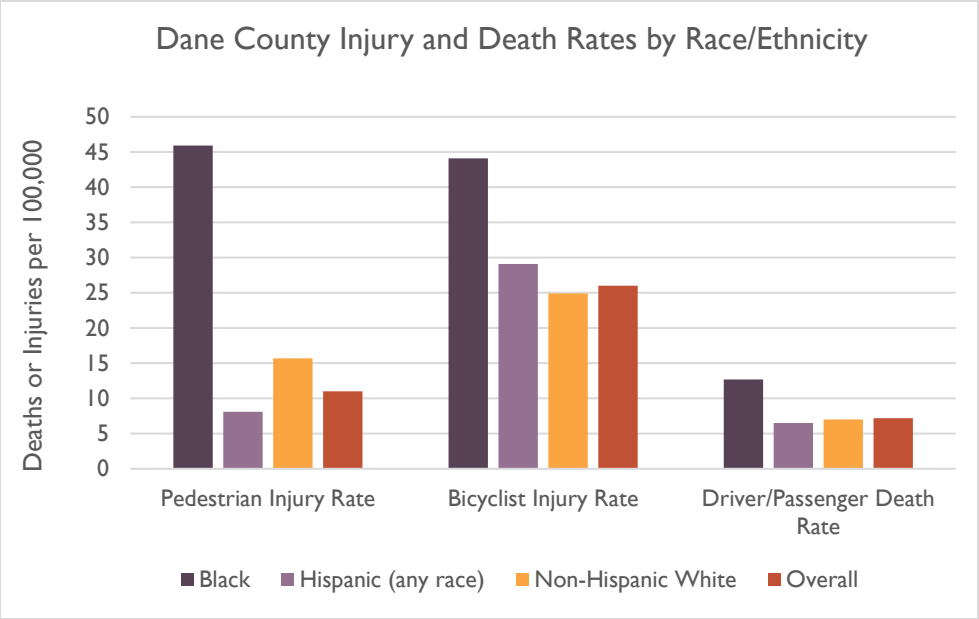
Residents in the Darbo-Worthington area, shown above, are frustrated by the circuitous routes and difficult access to get to nearby locations. Urban planning and highway construction have cut off some of Madison's most vulnerable communities from surrounding neighborhoods.

3.2. Racial Disparities in Streets and Transportation in Madison

The Complete Green Streets Equity Framework is a way of repairing the harm that has occurred as a result of traditional approaches to street design in Madison. Black and Hispanic residents of Madison are:

- More likely to live in a neighborhood that is disconnected from the greater street network
- Less likely to have convenient transit service
- More likely to live near a high crash street
- More likely to be a victim of a roadway crash
- Less likely to have sidewalks

These disparities must be taken into account when the City decides where and how streets and transportation systems should be designed.



Black residents of Dane County are more likely to be injured in walking or biking crashes and more likely to be killed in motor vehicle crashes. Source: Vision Zero Action Plan

Racial Disparities in Mobility and Access Measures (larger disparities are highlighted in darker shading)

Mobility and Access Measures	Asian	Black	Hispanic	Native American	Pacific Islander	Other Race.	White	Total
Population	17,000	16,400	15,900	800	100	6,300	176,000	**232,500**
Percent of People living within 1/8 mile of High-Injury Network	57%	66%	62%	63%	*	62%	57%	**58%**
Percent of people living within 1/8 mile of priority sidewalk gap	25%	32%	33%	25%	*	29%	25%	**26%**
Percent of people living within ¼ mile of high-frequency transit	35%	13%	16%	13%	*	19%	20%	**21%**
Percent of people living within 1/8 mile of regional bike path	17%	21%	19%	13%	*	19%	20%	**20%**

Demographic data: 2010 Census and Space Informatics Lab at University of Cincinnati, * Sample size too small for accurate analysis.

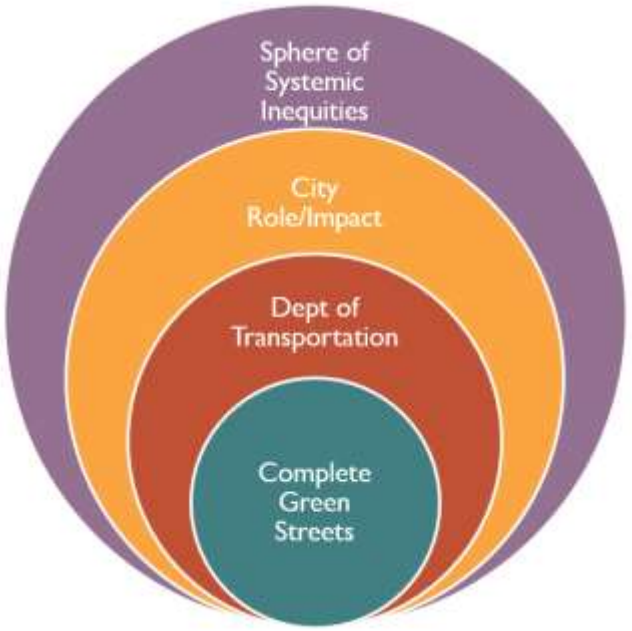
3.3. Systemic Inequities and Intersectionality

Some neighborhoods in Madison experience systemic inequities. The City needs to pay special attention in those areas, and prioritize them for investment across all departments (for example, parks, health, housing, and utilities).

During the community input sessions in the South Park Street and Darbo-Worthington neighborhoods, we uncovered spheres of intersectional inequities in some neighborhoods that ripple into and beyond individual street design:

- Racial disparities in mobility and access
- Less influence over city processes
- Less investment

We also heard how street projects—without consideration of these broader challenges or issues that residents in these neighborhoods face—can exacerbate inequities and mistrust of city staff and processes. These impacts and concerns are most present in Equity Priority Areas (EPAs), which comprise an overlay discussed and mapped in Section 4. Because these neighborhoods experience greater levels of systemic inequalities, the EPA overlay is the highest priority overlay in the Complete Green Streets Guide.



Understanding the Spheres of Influence and How they Impact Street Design Projects in EPAs	*How the City Should Address these Concerns when Engaging in Street Design Projects in EPAs*
Sphere 1: Complete Green Streets design process. Residents may have specific concerns that relate to street design such as the need for street lighting, safer pedestrian crossings, and street design that discourages speeding.	Use the RESJII Public Participation Guide to engage with community members. Complete the EPA questions on the *CGS Project Checklist* (see Section 7.2) to ensure that the quality of outcomes for the surrounding community are as good or better than recent street design projects on similar streets in other neighborhoods.
Sphere 2: Residents may have concerns about things that can be addressed by the Department of Transportation, but don't relate to a street design project, such as more convenient transit with shorter wait times, or permits for on-street parking.	Coordinate with other groups and divisions in the Department of Transportation to address residents' concerns. Document the concerns on the *CGS Project Checklist* and any coordination with other agencies.
Sphere 3: Residents in EPAs may be dealing with issues that the City can address, but are outside of the purview of the Department of Transportation, such as policing and public safety, or lack of maintenance or greenery in parks. Residents have limited time and bandwidth to navigate different City agencies to address these concerns. Residents are frustrated when the City addresses problems in the neighborhood in a piecemeal way, if at all.	Share information and coordinate with Neighborhood Resource Teams and other departments doing work in the neighborhood to ensure residents' concerns are being or will be addressed. Document the concerns on the *CGS Project Checklist* and any coordination with other agencies.
Sphere 4: Residents in EPA neighborhoods may be dealing with systemic social inequities outside of the immediate control of the City of Madison—like unemployment, poverty, and state and US highways that cut the neighborhood off from the rest of the community.	Where concerns may be addressed in larger city or regional plans or policies (such as improving neighborhood connectivity), document the concerns and share with other City departments.

3.4. Equity Process

The Complete Green Streets Equity Framework establishes a more holistic approach to addressing the inequities that intersect in these neighborhoods. In short, if a street project is within or near an EPA, it triggers additional process steps including engaging with the appropriate Neighborhood Resource Team (NRT) throughout the project and completing additional elements of the *Complete Green Streets (CGS) Project Checklist*. Specifically for EPAs, the Checklist requires City staff to:

- Use the City's RESJII Public Participation Guide to assist in developing an engagement plan appropriate for the project.
- Identify and document opportunities to work together with other departments on engagement.
- Identify how previous plans or engagement efforts in the area help inform priorities or concerns for the project.
- Document feedback on the engagement and design process.
- List issues or concerns identified that were *not* addressed by the street project, along with listing departments or staff notified of the issues.

See Section 7.2 for more information on the project development checklist.

For any street project in or near an EPA, City staff involved in the street project should coordinate with other City departments to identify whether other projects are ongoing in the area. If they are, efforts should be made to coordinate work and find ways to enhance the cumulative outcomes in terms of safety, quality of life, and access.

If the project is within or near an EPA, City staff will:

- Engage with the community to understand needs
- Engage with NRT
- Review past public input
- Fill out the EPA sections of the *CGS Project Checklist*

If there are other City departments active in the project area, City staff will additionally:

- Identify other City projects in the area (including from other departments) and coordinate work

4. Overlays

A high quality, safe multimodal transportation system consists of several networks, each of which serves a particular transportation mode. Complete Green Streets networks create an intertwined collection of streets that emphasize different modes to ensure Madison has safe, high-quality, accessible, reliable, and connected transportation facilities for everyone. Modal Networks prioritize the safety and convenience of specific transportation modes in specific corridors and require trade-offs in the street design and operation for other modes.

Streets and their rights-of-way also intersect with and play significant roles in the quality and completeness of the areas and locations they pass through, including in many ways unrelated to transportation. They serve as opportunities for placemaking, social interaction, landscaping, and environmental enhancement. Streets can also have significant negative impacts on communities and the character of a place if planned and designed solely to move traffic.

Streets, therefore, must be designed to reflect the broader context of the street's role in serving various modes, the non-transportation priorities for street rights-of-way based on location within the city, and do so in a way that rebuilds equity in neighborhoods that have experienced negative impacts. To facilitate meeting this need, Complete Green Streets includes six overlays that influence design decisions in various ways. These overlays reflect key multimodal network needs and priorities for environmental elements in alignment with the Street Values (Section 1.4).

Overlays influence design decisions and the priority of various elements. The specific design influences of each overlay are described for each street type in Section 5.

For example, a street of the Boulevard type that is on the Transit Priority Network will prioritize dedicated transit lanes and high-comfort pedestrian crossings, which may require fewer motor vehicle travel lanes and/or fewer dedicated turn lanes.

The order in which the overlays are listed to the right is important. It reflects a hierarchy of overlays—which reflects the Street Values and Modal Hierarchy—which can be used to guide tradeoffs, when the priorities of multiple overlays conflict.

Equity Priority Areas
(includes additional process elements)

Transit Priority Network
(prioritizes transit on high frequency transit corridors)

All Ages and Abilities Bike Network
(key corridors to prioritize high-comfort bikeways)

Tree Canopy Priority Areas
(influences width and design of terraces)

Green Infrastructure Priority Areas
(influences width and design of terraces)

National Highway System & Truck Routes
(higher traffic streets)

4.1. Equity Priority Areas (EPAs)

EPAs include neighborhoods with higher densities of people with low incomes and people of color. They are often neighborhoods that have historically received less investment which has compounded into continued and ongoing disparities.

When a street project is initiated in an EPA, additional process, engagement, and coordination steps are required, as described in Section 3. City staff will document these efforts in the internal *CGS Project Checklist*.

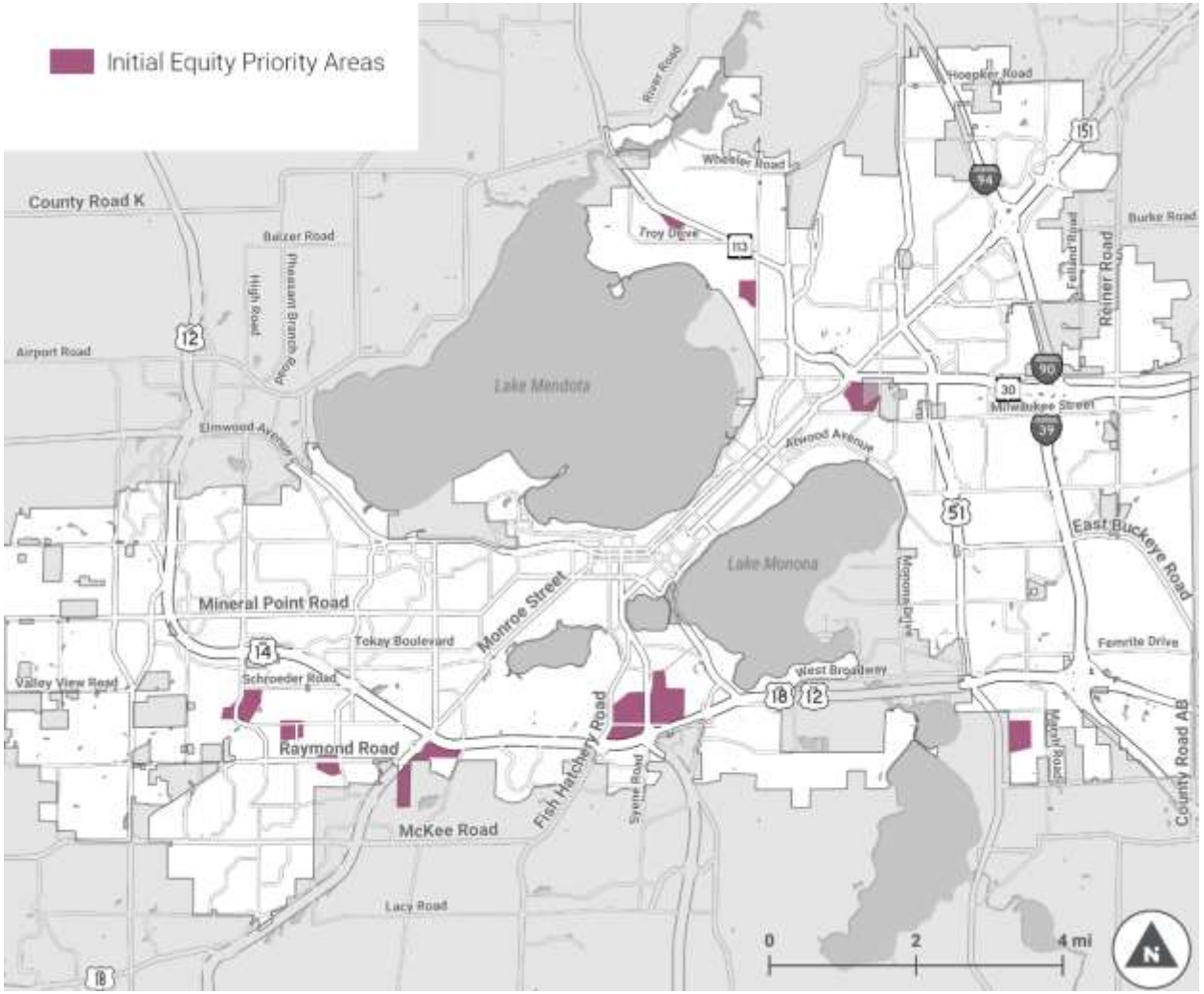
Prioritizing Capital Projects

To work toward addressing the disparities that are present, street projects and other public investments should be prioritized in and around EPAs.

The City of Madison should review project prioritization practices (e.g., the Capital Improvement Program (CIP) and Transportation Improvement Program (TIP)) to prioritize projects that are in or near EPAs.

Future Updates

The initial EPA locations are based on Madison's Neighborhood Resource Team Focus Areas. The City has initiated a process to review these areas and expand the EPA overlay in the future.



Initial Equity Priority Areas

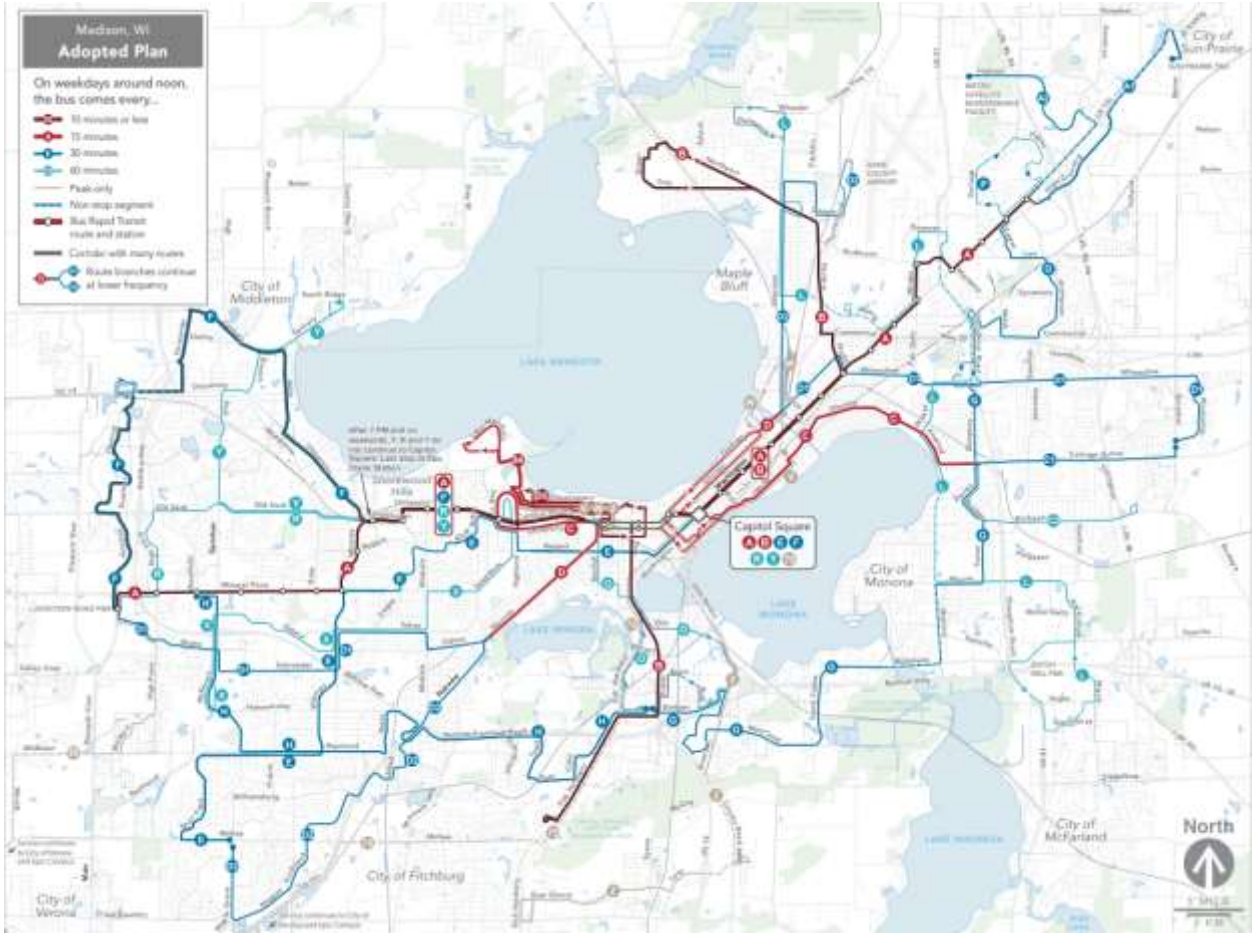
4.2. Transit Priority Network

The Transit Priority Network identifies Metro Transit high-frequency routes that serve as the key corridors in providing high quality transit service throughout the city. The Transit Priority Network includes the Bus Rapid Transit routes and other routes with 15-minute frequency.

The goal of this network is to ensure maximum efficiency for transit operations and access to transit stops for people walking. Influences of this overlay may include providing dedicated transit lanes, transit signal preemption, pedestrian and crossing enhancements, etc. and may necessitate removing on-street parking, reducing the number of motor vehicle lanes, narrowing terraces, etc. Since the majority of transit riders arrive at stops and stations by foot, this overlay also prioritizes the safety and comfort of people walking to and from transit. Other priorities (other modes, non-transportation priorities for the right-of-way, etc.) should not negatively impact transit operations or the safety of accessing stops/stations by pedestrians.

Future Updates

The initial Transit Priority Network is based on the 2023 Metro Transit Network Redesign. Future transit plan updates will trigger changes to the Transit Priority Network.



Initial Transit Priority Network (BRT Routes and other routes with 15 minute or less frequency (red lines)

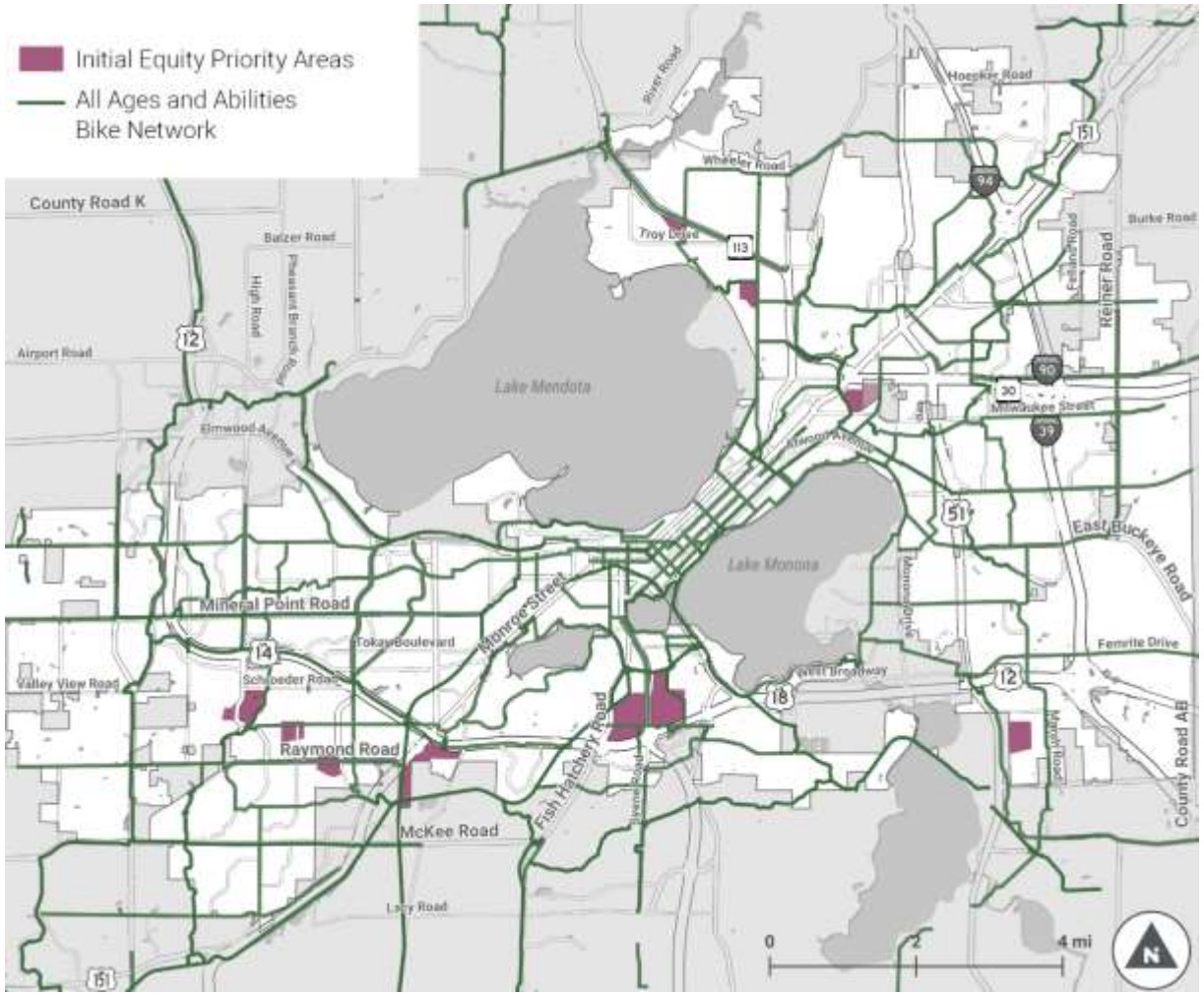
4.3. All Ages and Abilities Bike Network

The All Ages and Abilities Bike Network identifies streets and paths that provide a complete bike network of low-stress bikeways—comfortable for people ages 8 to 80—between neighborhoods, key destinations within Madison, and to adjacent municipalities. A continuous network is essential for bicyclists of all ages and abilities to travel throughout the city and is critical in increasing the number of people who choose to bike.

The All Ages and Abilities Bike Network map serves as a long-term planning level document and is an aspirational concept for a complete system. When the network is completed, it will improve bicycle connectivity for a broad range of users to travel by bike. This overlay helps focus efforts toward improving the most important streets for safe connectivity and provides guidance for City infrastructure projects and for working with the Wisconsin Department of Transportation (WisDOT) to improve bicycle facilities.

Future Updates

The initial All Ages and Abilities Bike Network is based on primary bikeways identified in the 2015 Greater Madison MPO Bicycle Transportation Plan, with modifications and additions to account for changes since 2015 and ensure appropriate connectivity across the city. The All Ages and Abilities Bike Network will be updated regularly including during Bicycle Plan updates and sub-area plan updates.



Initial All Ages and Abilities Bike Network

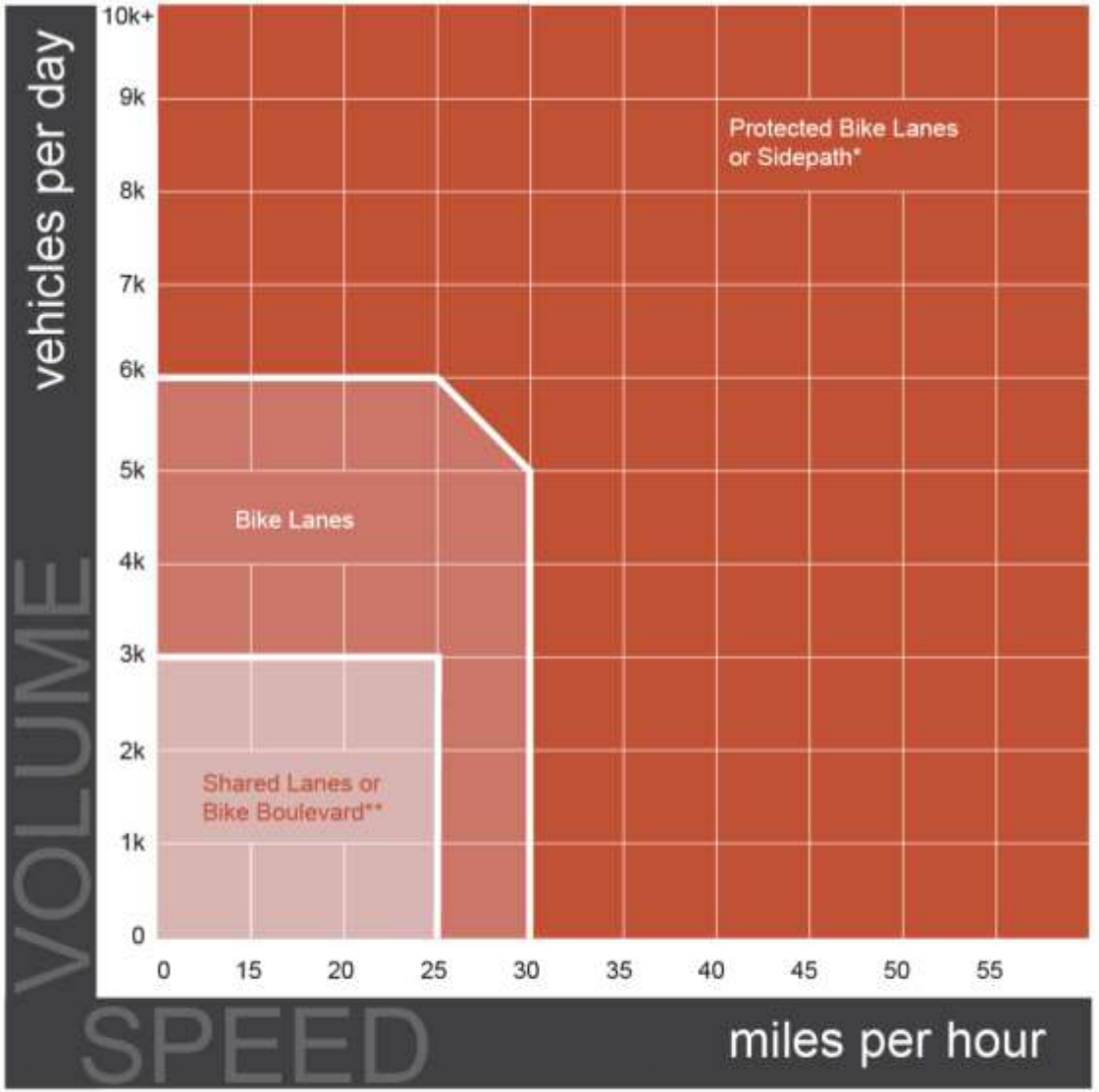
What About Streets Not on the Network?

Streets not on the All Ages and Abilities Bike Network are also important to support safe bicycling throughout the City. The baseline goal for all City streets is to provide All Ages and Abilities Bike accommodations. *When constraints or other modal priorities limit the ability to provide an All Ages and Abilities bike facility, streets will be built to the lowest stress level possible, per the street type and travel way widths recommended in this guide.* Only in rare circumstances will bike facilities not be accommodated as part of a street design, and that would only occur with approval from the Transportation Commission, as that would be a deviation from the modal hierarchy (which applies to all streets—placing biking above motor vehicles) and typical street types.

Designing All Ages and Abilities Bikeways

The design of bikeways on the All Ages and Abilities Bike Network considers the speed and volume of the different types of traffic along a corridor. As the volume and speeds increase, separation between bicycles and motor vehicles needs to increase to ensure the route is safe and comfortable for all users. This means that often the All Ages and Abilities Bike Network includes protected bike lanes, paths, and low-volume local streets. The City will use the matrix to the right—which is shaped by FHWA's "All Ages and Abilities" criteria for bicycle facilities—for selecting bicycle facility types for all types of streets.

Additional consideration will be given to the overall roadway context and number of motor vehicle lanes as outline in the NACTO Urban Bikeway Design Guide when selecting an appropriate bike facility.



*To determine whether to provide a shared-use path or separated bike lane, consider pedestrian and bicycle volumes or, in the absence of volume, consider land use.
**The preferred traffic volume for bike boulevards and shared lanes is 2,000 vehicles per day or less. Above this volume, additional considerations should be made to reduce speeds and/or limit the possibility for potential future increases in vehicle volumes.

Bike facility selection thresholds for All Ages and Abilities.

4.4. Tree Canopy Priority Areas

Tree canopy priority areas identify locations with low amounts of existing tree canopy coverage where tree planting in the right-of-way is viable.

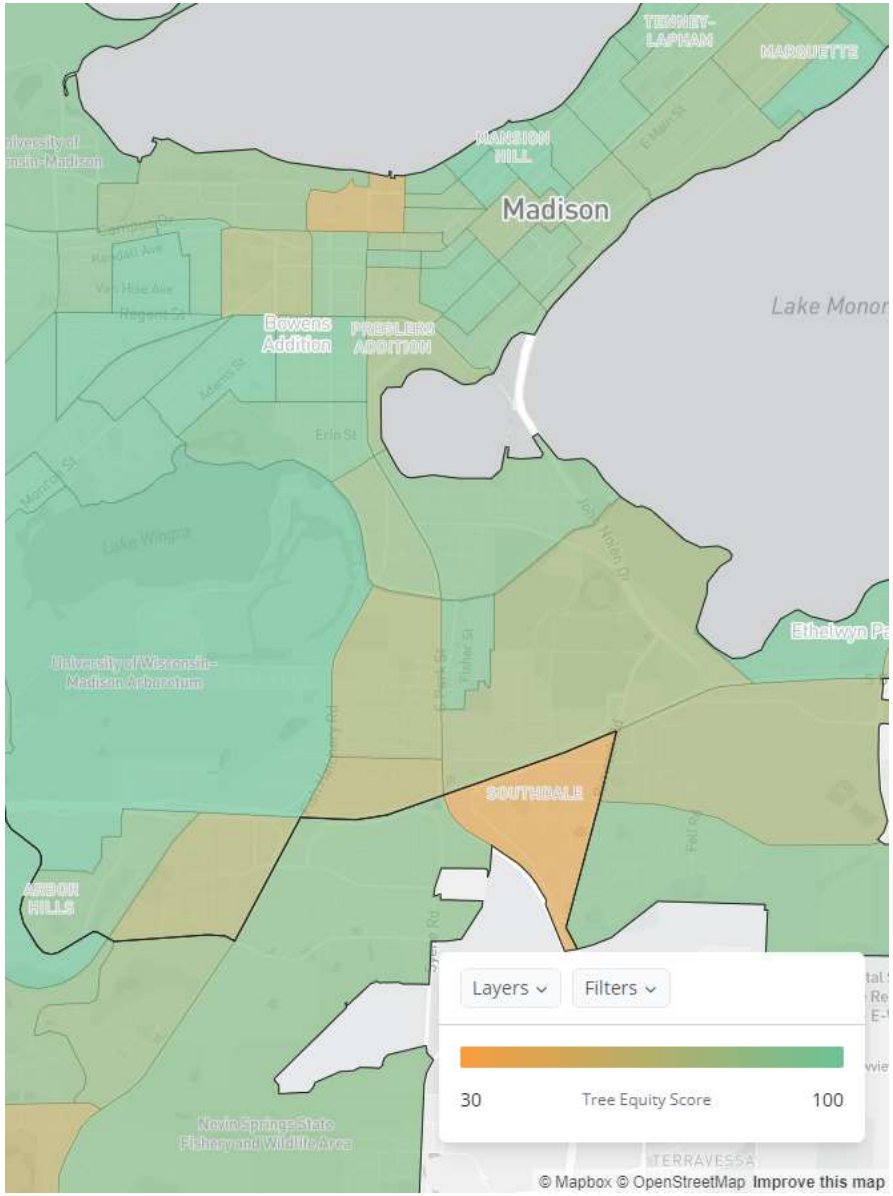
The intent of this overlay is to help the City of Madison move toward its citywide goal of 40 percent tree canopy coverage. As of 2022, the City is at 9 percent (according to the Tree Equity Score data provided by American Forests). The overlay, and the guidance provided in the separate *Enhanced Distributed Green Infrastructure & Tree Canopy Guidance Report* help identify appropriate solutions for planting trees while reducing conflicts with other right-of-way priorities.

Tree canopy priority is defined in the table below. Priority level is determined by averaging the two components of the Tree Equity Score data. For example, a street in an area with 37% canopy coverage and a Tree Equity Score of 45 would be considered "Moderate" priority for increasing tree canopy as part of the street project.

To the extent possible, the City seeks to provide terraces that support trees and green infrastructure on all streets. This overlay identifies areas where wider terraces and canopy are prioritized, as well as triggering the use of engineered "suspended pavement" solutions to provide adequate soil volumes in constrained environments. Consideration should be given in the High priority areas for expanding the Flex Zone beyond even the preferred widths by reallocating space from the Travelway, where feasible. At minimum, consideration should be given to reducing travel lane, turn lane, and/or median widths.

Tree Canopy Priority	Existing Percent Tree Canopy in Surrounding Area[1]	Tree Equity Score[1]
High	<15%	40 to 75
Moderate	15% to 35%	75 to 90
Low	>35%	90 to 100

[1]Current canopy cover and Tree Equity Score can be viewed at Treeequityscore.org



Tree Size, Terrace Width, and Suspended Pavement Appropriateness Per Street Type – *High Priority Canopy Areas*

The intent in Canopy Priority areas is to make cross sectional trade-offs that maximize terrace area needed for improved tree canopy.

		Street Typology	Optimal Tree Size (No Overhead Utility Conflicts[2])	Recommended Terrace Width (ft)[1]	Terrace Minimum Width (ft)[3]	Suspended Pavement Use ○: Yes ●: Maybe ■: No
	Arterial	Urban Avenue	Narrow or Large	12	8	●
		Boulevard	Narrow or Large	12	8	●
		Parkway	Large	10 to 12	8	■
Collector		Mixed-Use Connector	Narrow or Large	10 to 12	8	●
		Community Main Street	Narrow or Large	10 to 12	8	○
		Community Connector	Narrow or Large	10 to 12	8	●
	Local	Mixed-Use Neighborhood Street	Narrow or Large	10	8	●
		Neighborhood Street	Large	10	8	■
		Neighborhood Yield Street	Large	10	8	■
		Civic Space	Narrow or Large	10	8	○
		Neighborhood Shared Street[4]	Narrow or Large	NA	NA	●

[1]2019 *Urban Forestry Task Force Report*

[2]Limited to ornamental trees where there are higher voltage electric overhead line(s)

[3] Terrace Minimum Width should be no less than 8 feet without the use of suspended pavement, which would allow for large tree plantings in a narrower terrace width. All options to provide the required terrace width must first be exhausted before considering suspended pavement system.

[4]Consider curb extensions with street trees or limiting to private property tree planting only, if trees desired.

Note: Use of suspended pavement would be evaluated on a case by case basis given existing site conditions, context, and available budget

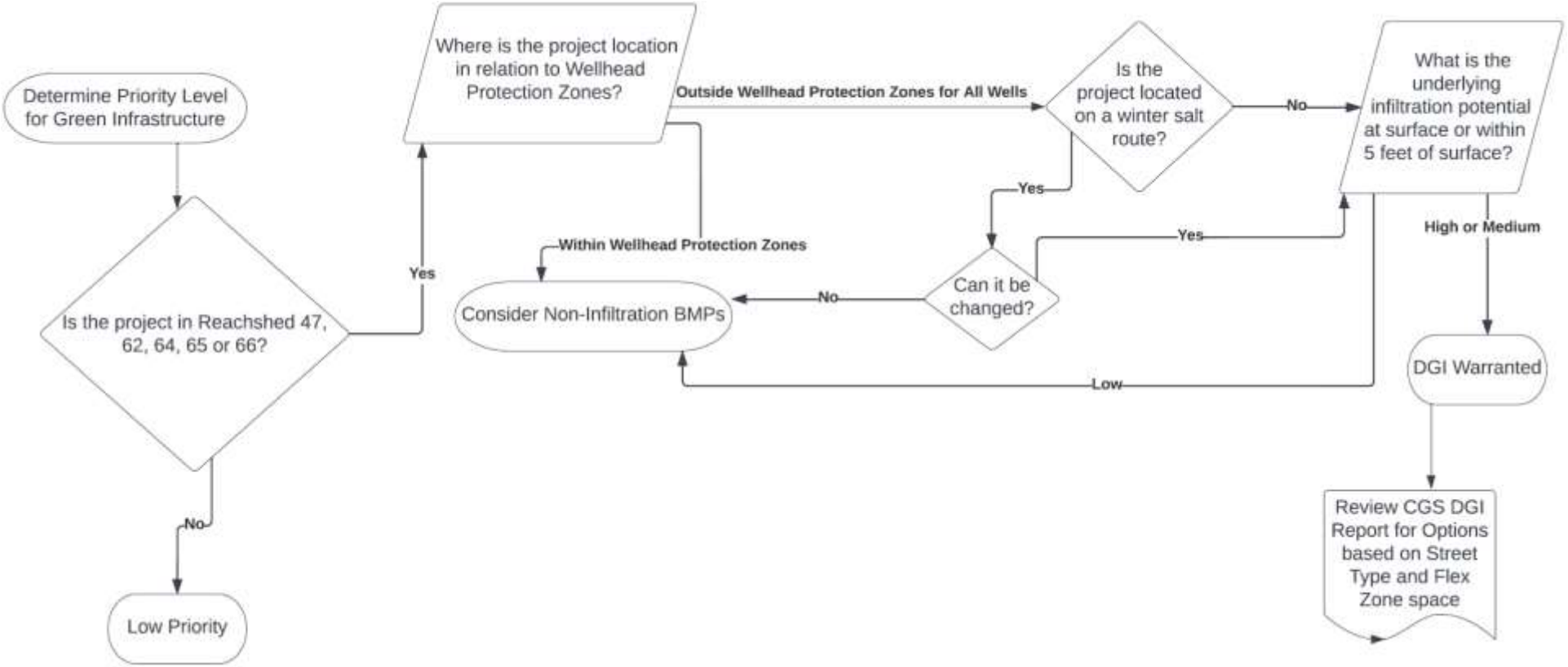
Tree Size and Terrace Width Per Street Type – *Retrofit Areas, outside of Canopy Priority Areas*

		Street Typology	4' to 6' Terrace, No overhead Utility Conflicts	4' to 6' Terrace, Overhead Utility Conflicts	6' or Greater Terrace, No overhead Utility Conflicts	6' to 8' Terrace, Overhead Utility Conflicts
	Arterial	Urban Avenue	Narrow	Ornamental	Narrow or Large	Ornamental
		Boulevard	Narrow	Ornamental	Narrow or Large	Ornamental
		Parkway	Narrow	Ornamental	Large	Ornamental
Collector		Mixed-Use Connector	Narrow	Ornamental	Narrow or Large	Ornamental
		Community Main Street	Narrow	Ornamental	Narrow or Large	Ornamental
		Community Connector	Narrow	Ornamental	Narrow or Large	Ornamental
	Local	Mixed-Use Neighborhood Street	Narrow	Ornamental	Narrow or Large	Ornamental
		Neighborhood Street	Narrow	Ornamental	Large	Ornamental
		Neighborhood Yield Street	Narrow	Ornamental	Large	Ornamental
		Civic Space	Narrow	Ornamental	Narrow or Large	Ornamental
		Neighborhood Shared Street[4]	Narrow	Ornamental	Narrow or Large	Ornamental

4.5. Green Infrastructure Priority Areas

The Green Infrastructure Priority Area overlay is intended to identify appropriate and viable locations for Distributed Green Infrastructure (DGI) for stormwater management and water quality improvement and appropriate engineering solutions. Priority for DGI is determined using the flowchart below, which considers the soil's ability to infiltrate water, proximity to drinking water supply, winter salting routes, flood mitigation needs, and available space. In areas that warrant DGI, it has priority over other Flex Zone uses (e.g., on-street parking, sidewalk cafes, etc.) depending on the presence of other overlays and the unique priorities of each street type. In these areas, consideration should also be given to expanding the Flex Zone beyond even the preferred widths by reallocating space out the Travelway, where feasible (at minimum considering reducing travel lane, turn lane, and/or median widths).

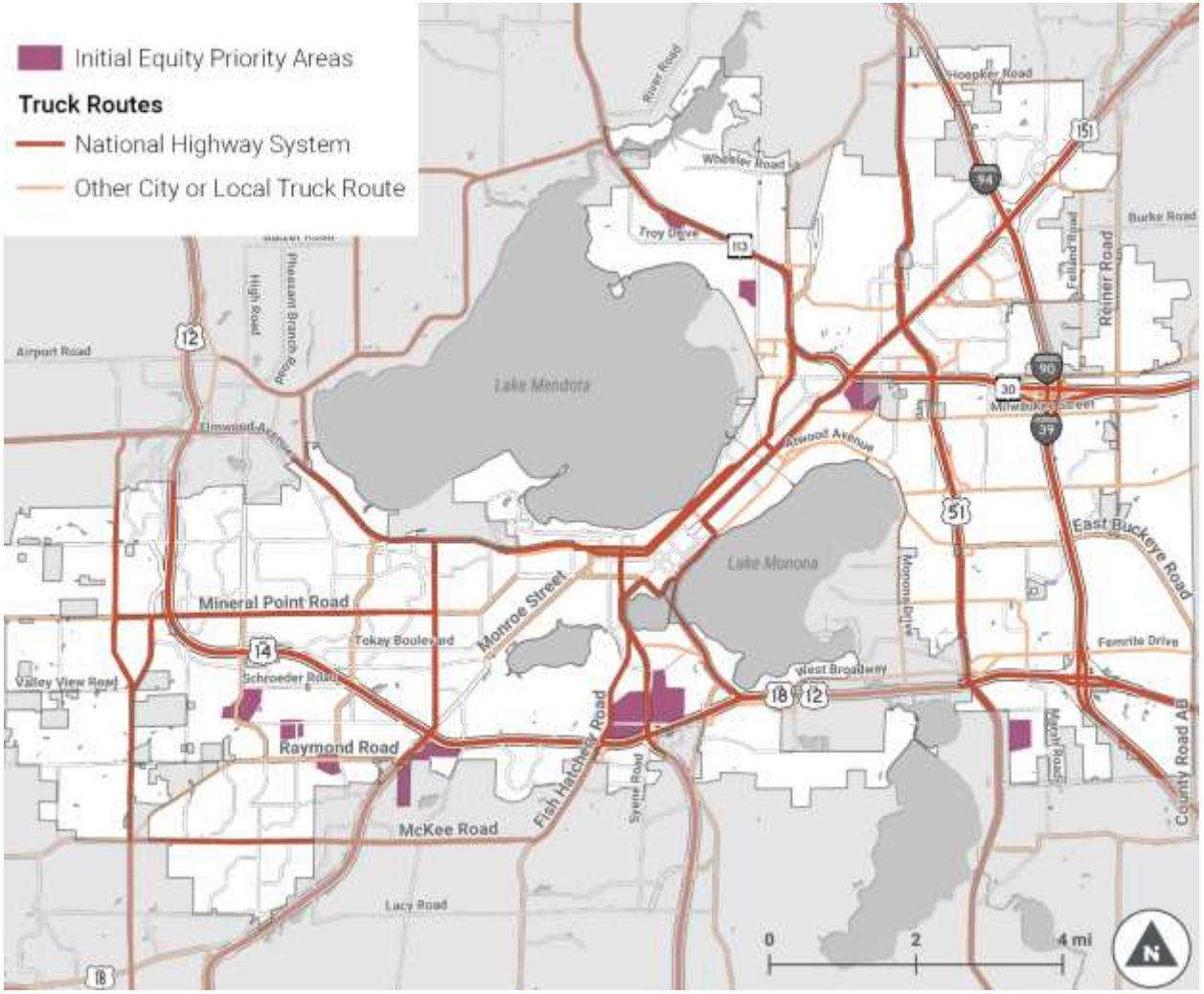
Once viability for DGI has been determined, potential treatments are provided in the separate *Enhanced Distributed Green Infrastructure & Tree Canopy Guidance Report*. Treatment options include permeable and non-permeable solutions, depending on context and constraints.



4.6. National Highway System & Truck Routes

The National Highway System (NHS) is a network of highways, including the Interstate Highway System, and other main arterials and principal highways that connect ports, truck terminals, major public transportation and airports, and military installations. The NHS carries more than 75 percent of the nation's heavy truck traffic. Changes to NHS routes, especially in the City of Madison, are infrequent and would only occur through collaboration with WisDOT and the Greater Madison MPO. The Federal Highway Administration has design standards ("controlling criteria") for streets and highways in the NHS. However, controlling criteria for non-freeways with speed limits of 45 mph or below only include design speed based on functional classification and design loading structural capacity.

Other City or local truck routes are other streets that Madison or Dane County have designated for use by larger trucks to travel through or access destinations in the area. In Madison, all truck routes are marked with retroreflective tape on all signposts to help truck drivers navigate through the City and avoid residential streets. To accommodate larger vehicles, truck routes often (but not always) have wider lanes and larger intersections than streets that are not truck routes.



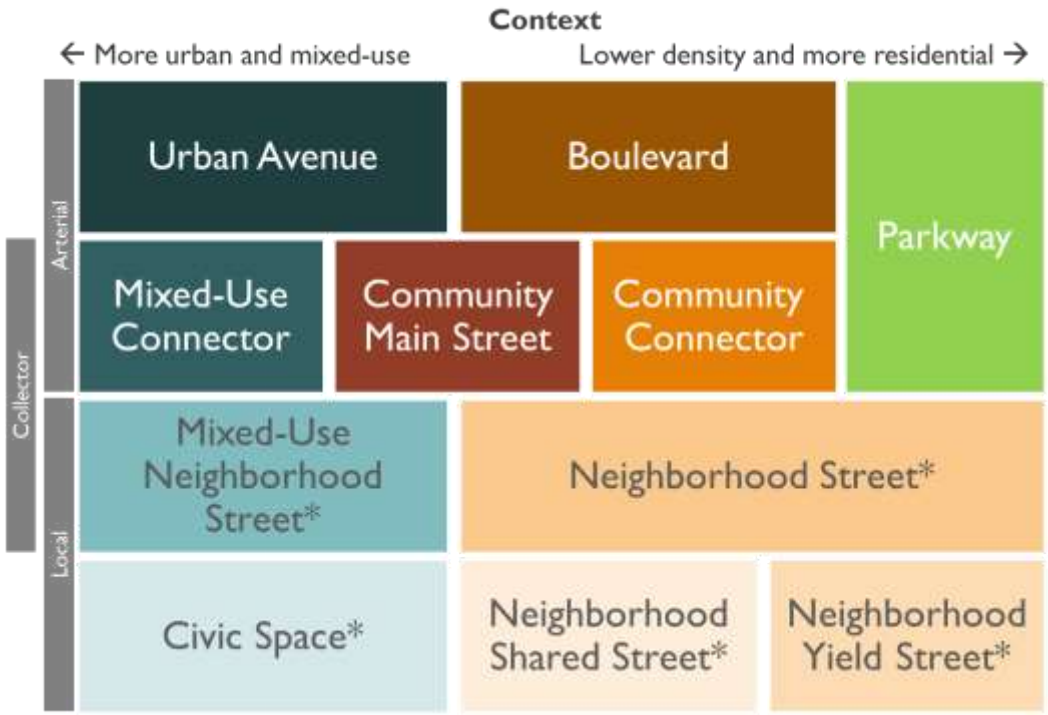
Streets and Highways in the National Highway System and Other Local Truck Routes

All of the non-freeway streets identified in the map should have dimensions, intersection turning radii, and other design features that accommodate routine use by small tractor trailers with wheelbases in the 65- to 70-foot range (often denoted as WB-67). For example, such routes may be designed in such a way that trucks may need to encroach into adjacent lanes, while avoiding encroachment into oncoming vehicle lanes on primary street or on side streets at signalized intersections.

5.Street Types and Street Zones

Street types are starting points for street design and therefore play a central role in Complete Green Streets. They are the primary way in which the Complete Green Streets principles—including the *Street Values* and *Modal Hierarchy*—reflect unique contexts. Complete Green Streets includes a collection of 11 street types that describe the spectrum of current and future streets in Madison. These types are arranged in at right to illustrate how they correspond with the spectrum of contexts (land use and development patterns) and the spectrum of street intensities (arterials, collectors, and local streets). By incorporating different street types, the Complete Green Streets guide addresses individual characteristics associated with a street, rather than superimposing a generic modal hierarchy. It makes the program context sensitive.

Each street type is flexible and provides guidance for the overall design of a street. The street types ensure that all modes of travel are safely accommodated, while some prioritize different modes and uses based on context. Importantly, the street types and recommended characteristics are intended to be *aspirational* and reflect how our streets *should* be designed based on our values, which may differ from how many of our streets are designed today. In some instances, reconstructions of existing streets may not be able to achieve the full aspirational design recommendations due to constraints that developed from past street designs, but the flexibility of the street types will provide appropriate guidance on how to redesign these streets based around our values.



Street types organized by context and intensity.

***Most of these are not mapped, unless applied on a collector, All Ages and Abilities Bike Network, or some unique circumstance. Selecting these street types must be based on context, including current and target traffic speeds and volumes, as identified in Section 6.2.**

Because land use and development patterns can change throughout the length of a corridor, multiple street types may be applied to different segments of a single roadway project. For example, East Washington Avenue is an "Urban Avenue" nearer downtown, but changes to a Boulevard east of Starkweather Creek. Street design elements will change accordingly, reflecting the designated street type and its priorities.

Each street type includes:

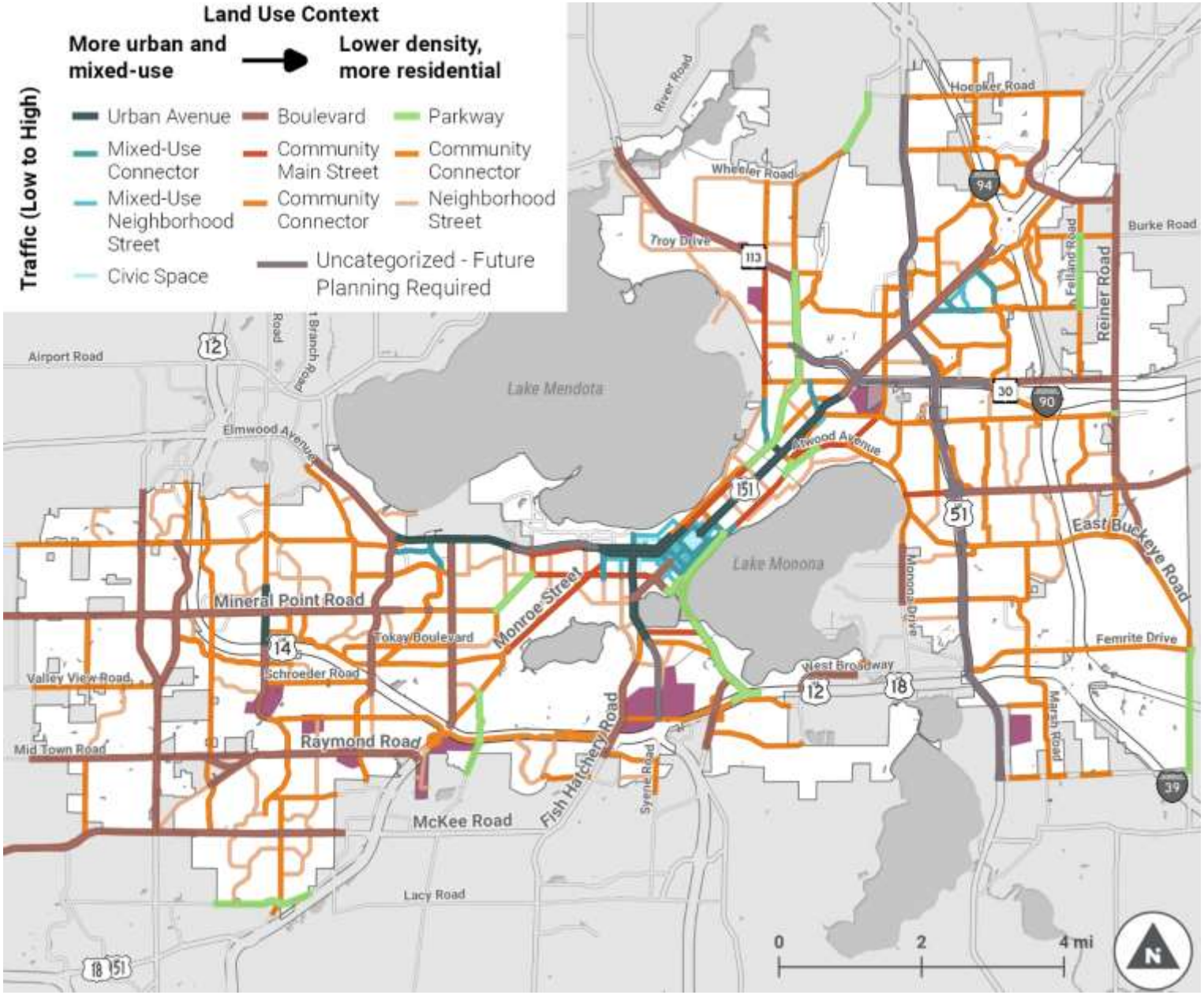
- One or more graphic representations of ideal designs
- Description of appropriate context
- Priorities for different zones within the street
- Identification of the typical design elements that should be included in the street design
- Description of how each *Overlay* influences or changes design priorities for the street type.

5.1. Street Type Map

(Initial Map – November 2022)

The street type map illustrates the street types as applied to streets in Madison and its future growth and annexation areas. The map to the right shows street type assignments at the time the Complete Green Streets Guide was adopted. The street type map will evolve and change over time as development and land use plans change. Sub-area plans, instead of recommending typical sections, will instead designate a street type that may have multiple cross sections that achieve desired objectives.

What's a Sub-area Plan?
Madison recently adopted a new framework in how it approaches planning for areas of the city. The new framework establishes 12 Area Plan geographies. The city will update these sub-area plans every 10 years to ensure planning recommendations are timely and relevant.



Initial street type map. The street type map will be updated regularly and be available online.

5.2. Street Zones

The term "street" refers to the entire right-of-way, including sidewalks, terraces, and the roadway. For design guidance and decision-making purposes, streets are divided into three zones, each describing the relative priorities between the zones and the typical elements that should be included in each.

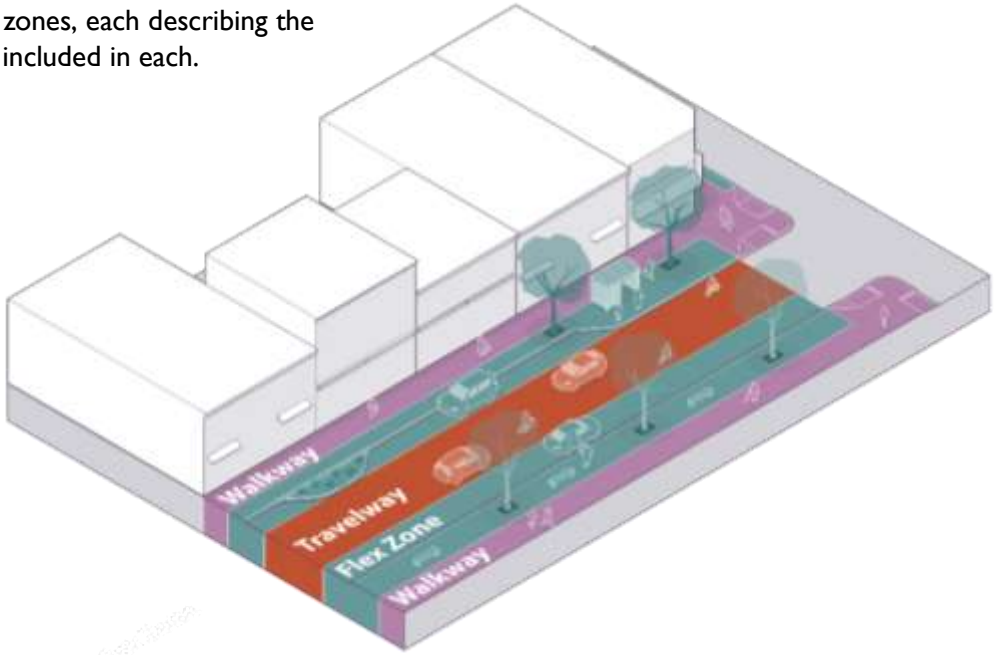
Each street zone is color coded to illustrate the concept:

Walkway or **pathway** is the space where people walk and is comprised of the sidewalk and a frontage buffer (a paved or landscaped space between the sidewalk and adjacent buildings). The Walkway may be designed as a pathway shared by people walking and biking. The defined widths for the Walkway—defined for each street type on the following pages—represent just one side of the street.

Flex Zone is a variable space comprising the terrace (measured from edge of sidewalk to back of curb) and any on-street parking or loading. The design of this space may vary significantly depending on context and *Overlays*. This space includes most non-linear elements of the street, such as trees, sidewalk cafes, bike racks and Bcycle stations, loading zones, on-street parking, etc. As such, the elements included in this space can share the same portion of the right-of-way, alternating back and forth. The defined widths for the Flex Zone—defined for each street type on the following pages—represent just one side of the street. However, the combined total of the Flex Zone for both sides of the street could be combined and split asymmetrically between the two sides of a street. An example of when this could occur is if the street would have parking on one side of the street.

Travelway is the primary portion of the roadway dedicated to movement of people and goods. It includes on-street bikeways, travel lanes, any dedicated transit lanes, medians, and turn lanes. The Travelway can be split by the Flex Zone for parking-protected bike lanes. The defined widths in the following tables for each street type represent the Travelway for both directions on a two-way street.

In short, **movement** (walking, biking, transit, driving) happens in the **Walkway** and **Travelway**. **Stationary uses**, such as parking, sidewalk cafes, landscaping, etc. occur in the **Flex Zone**, which can be terrace, part of the roadway, or both.



Flex Zone: a space for a variety of uses

The flex zone can accommodate a variety of uses that can alternate along a street, sharing the same part of the cross section.

- Terrace*
- Bus shelters
- Sidewalk cafes and displays
- Bcycle stations
- Bike racks
- Green infrastructure
- Street trees
- Parking
- Loading zones
- Right turn lanes
- Peak hour lanes

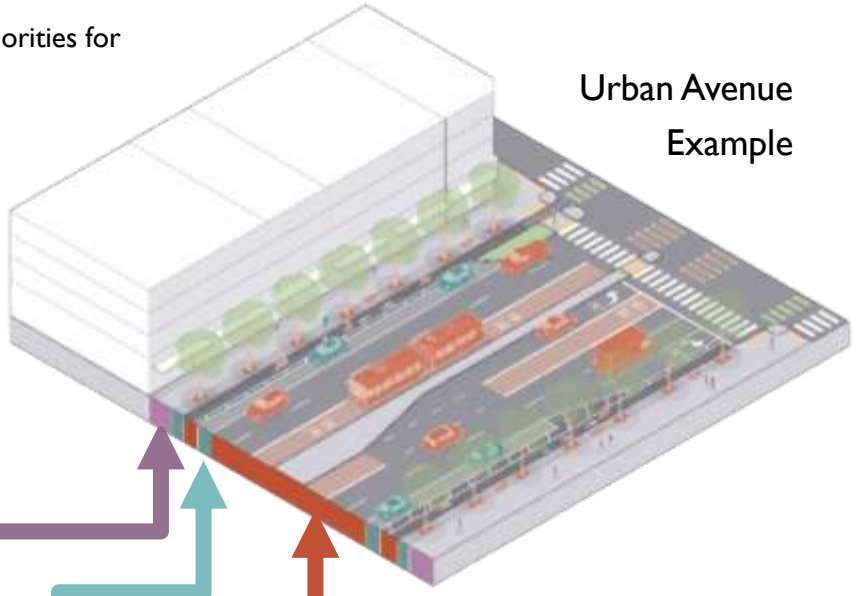
*All streets have at least a minimum street buffer, based on street type. For flexibility in sidewalk placement, the flex zone can be "split" to exist on both sides of the Walkway zone.

5.3. How to Read the Street Types

This diagram highlights the key elements of the street types and how they guide design priorities for street projects.

Each street type graphic illustrates the location and relative size of each street zone, with color-coding.

Urban Avenue Example



Each street type identifies the relative priority of each zone, as well as what is typically provided in each zone, specific to that street type.

Walkway High Priority	Flex Zone Medium Priority	Travelway High Priority	Additional Considerations
Sidewalks wider than 6' preferred with buildings close to or touching the sidewalk.	Street trees, bike racks, and enhanced transit stops. Parallel on-street parking. Loading zones, if needed, should be provided around the corner on intersecting minor streets.	Dedicated transit lanes, protected bike lanes, typically 2 travel lanes per direction, and medians.	Pedestrian and bicycle crossing spacing, crosswalk visibility, snow storage. Parking will require adding 8' to Flex Zone per side.

Each street type describes how overlays influence design priorities, specific to that street type.

Equity Priority Area – City staff will use the RESJII Public Participation Guide to develop a plan a Area. Staff will also work with, Neighborhood Resource Teams and other departments doing work on the Complete Green Streets Project Checklist to ensure that the quality of outcomes for the su street design projects on similar streets.

Transit Priority Network – Transit lanes and signal preemption are prioritized. Providing transit travel lanes if space is constrained. If the street is on the NHS or Truck Route, lane reductions or c Transportation. Designs will prioritize controlled crossings (signals or rectangular rapid flash beac prioritized over on-street parking and floating bus stops or bus bulbs may be used to accommodate that do not require buses to merge back into traffic.

5.4. Urban Avenue

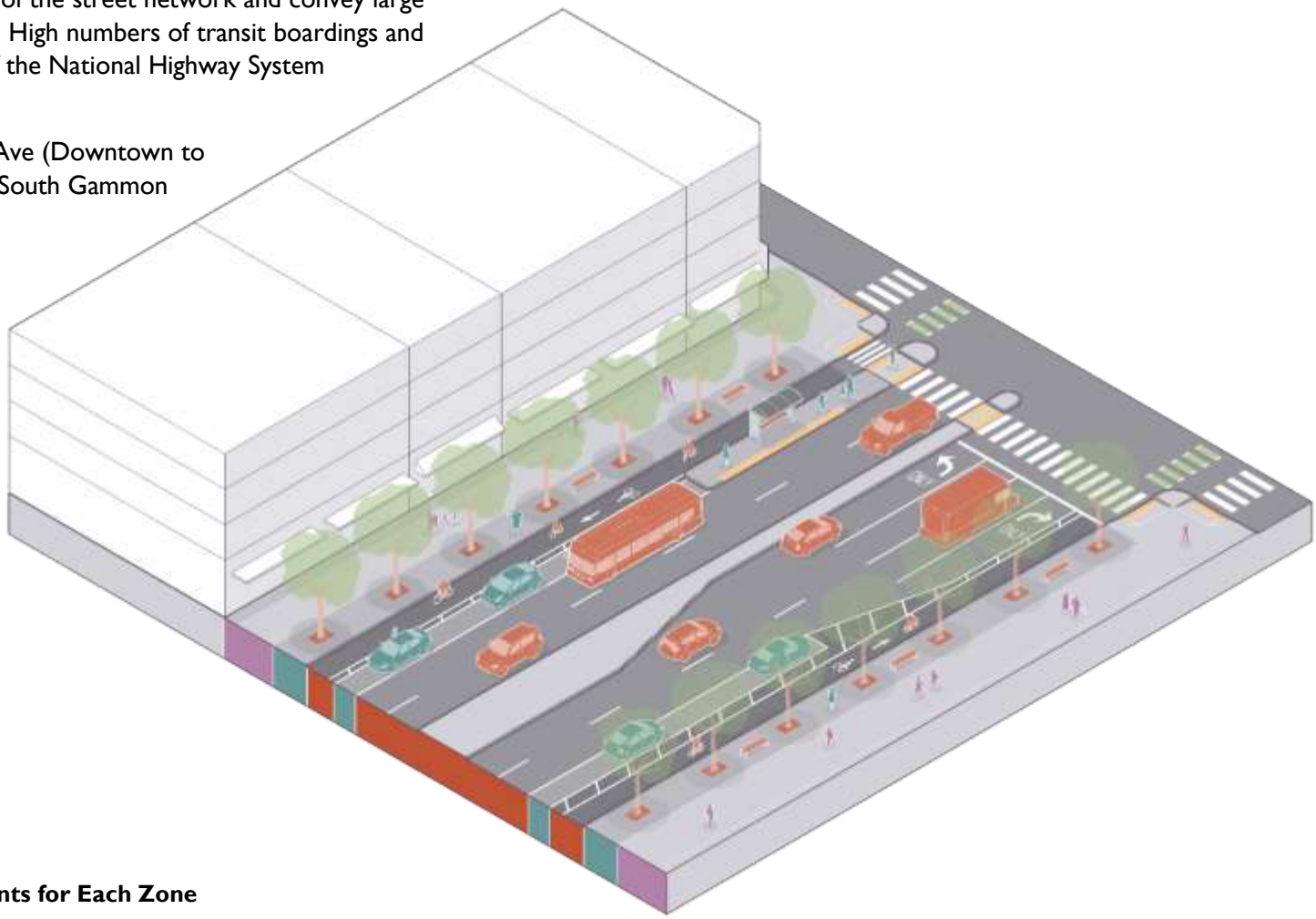
Major streets that serve as backbones of the street network and convey large numbers of people via multiple modes. High numbers of transit boardings and amount of cross traffic. May be part of the National Highway System and/or serve as a Truck Route.

Example Streets: East Washington Ave (Downtown to Starkweather Creek); University Ave; South Gammon (at West Towne)

Context: Downtown and other corridor-oriented large scale mixed use. High density, consolidated parcels.

Functional Classifications: Arterials

Target Speed: 25 mph



Zone Priorities and Preferred Elements for Each Zone

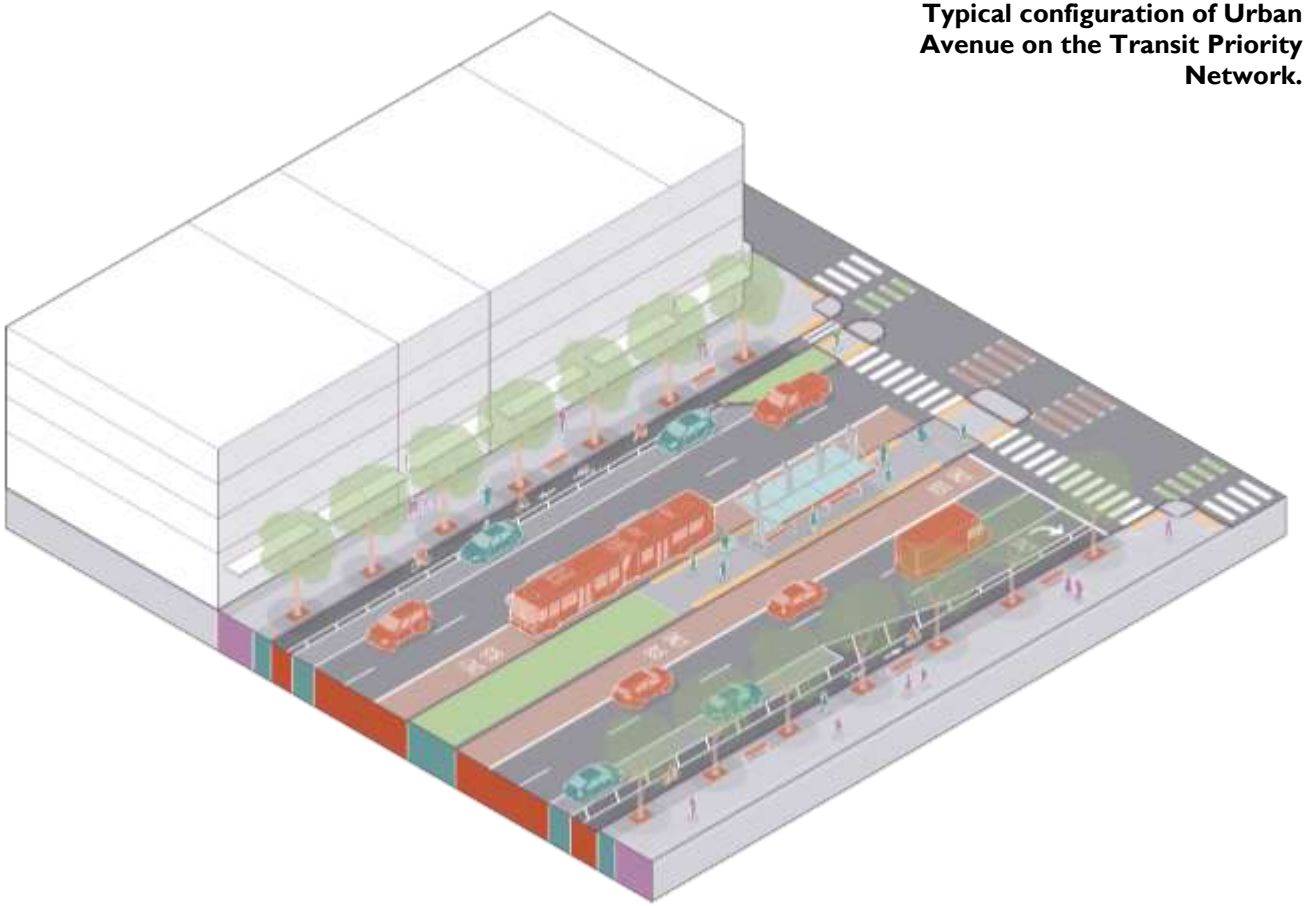
Walkway High Priority	**Flex Zone** Medium Priority	**Travelway** High Priority	**Additional Considerations**
Wide sidewalks with buildings close to or touching the sidewalk.	Street trees, bike racks, and enhanced transit stops. Parallel on-street parking. Loading zones, if needed, should be provided around the corner on intersecting minor streets.	Dedicated transit lanes, protected bike lanes, typically 2 travel lanes per direction, and medians.	Pedestrian and bicycle crossing spacing, crosswalk visibility, snow storage. Parking will require wider Flex Zones.

Overlay Influence

The approach to designing an Urban Avenue changes when the street overlaps one or more overlays:

Equity Priority Area – City staff will use the RESJII Public Participation Guide to develop a plan and engage with community members in the Equity Priority Area. Staff will also work with Neighborhood Resource Teams and other departments doing work in the neighborhood. Staff will complete the EPA questions on the *CGS Project Checklist* to ensure that the quality of outcomes (for safety, accessibility, and quality of life) in the surrounding community are as good or better than recent street design projects on similar streets.

Transit Priority Network – Transit lanes and signal preemption are prioritized. Providing transit lanes may require reducing the number of motor vehicle travel lanes if space is constrained. Transit lanes may be "center running" as shown in the graphic to the right. If the street is on the NHS or Truck Route, lane reductions or changes may require collaboration with WisDOT. Designs will prioritize controlled crossings (signals or rectangular rapid flash beacons) within 100 feet of transit stops. Transit shelters are prioritized over on-street parking and floating bus stops or bus bulbs may be used to accommodate loading and unloading. Designs will prioritize in-lane stops that do not require buses to merge back into traffic.



Typical configuration of Urban Avenue on the Transit Priority Network.

All Ages and Abilities Bike Network – Protected bike lanes will be provided. If space is constrained, on-street parking will be removed or provided on one side only, or provided inset into the terrace in distributed parking bays, while taking into consideration potential impacts on existing trees. In areas where sufficient off-street parking is available, the provision of an abundance of seldom-used on-street parking is discouraged as it leads to increased motor vehicle speeds. If parking removal does not provide adequate space, additional reductions can be made in the number and/or width of travel lanes, dedicated transit lanes (if the street is not on the Transit Priority Network), medians, and center turn lanes. If the street is part of the NHS or Truck Route, lane changes may require collaboration with WisDOT. Protected intersections will be provided, as feasible. Bike parking and bikeshare stations are priorities for the Flex Zone.

Canopy Priority Area – For High and Moderate priority areas (see Section 4.4), terrace width will be at least 8 feet (preferably 12 feet) from the sidewalk to the back of the curb, and suspended pavement use will be considered where needed. Consult the *Enhanced DGI and Tree Canopy Guidance* document for additional guidance.

Green Infrastructure Priority Area – It is likely that only nonpermeable treatments will be considered as appropriate. As the use of these streets typically requires salt use in the winter and also includes higher vehicle loading. Consult the Green Infrastructure Priority Area Flow Chart (Section 4.5) for additional guidance.

NHS & Truck Routes – Motor vehicle capacity will be a consideration and reviewed to consider impacts on other streets if lane reductions are implemented. If needed, turn lanes can be added. If space is constrained, on-street parking may be removed or provided on only one side or in parking bays. If additional space is needed, the median (part of the Travelway) or terrace (part of the Flex Zone) may be reduced. Truck turning encroachment into adjacent lanes and all receiving lanes, while avoiding encroachment into oncoming vehicle lanes on primary street or on side streets at signalized intersections, is preferred to enlarging corner radii. Curb radii can be enlarged when justified by turning templates. An adequate walkway must be provided and may require reducing the Flex Zone. Use signal phasing to reduce conflicts between motor vehicles and pedestrians, providing full separation. High traffic volumes should not result in higher design speeds or greater corner radii at intersections.

5.5. Boulevard

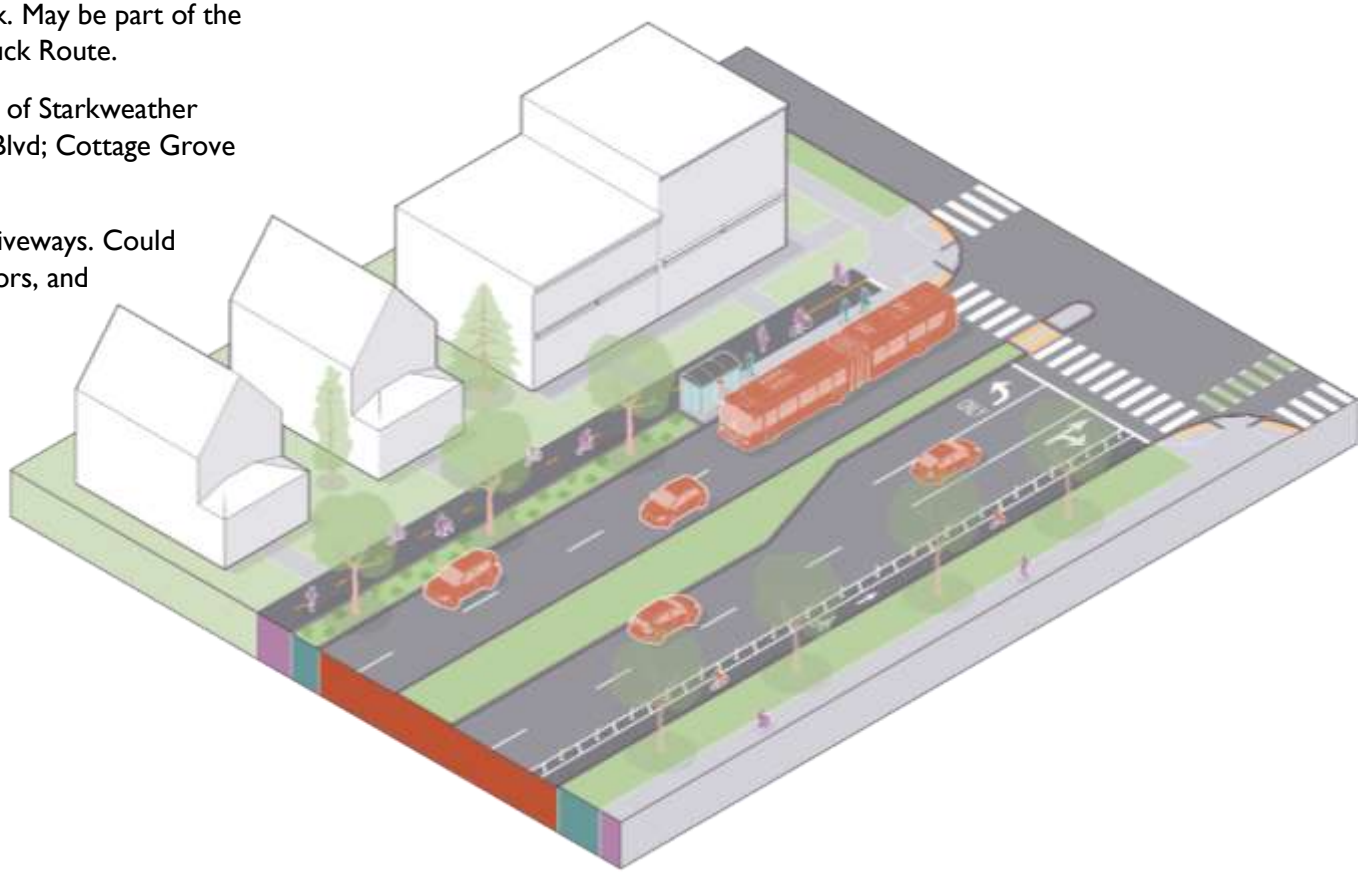
Connecting major streets conveying large numbers of people. Frequently part of the Transit Priority Network. May be part of the National Highway System and/or serve as a Truck Route.

Example Streets: East Washington Ave (east of Starkweather Creek); Mineral Point; Whitney Way; Midvale Blvd; Cottage Grove (east of Stoughton Rd)

Context: Areas with longer blocks and few driveways. Could be edges of neighborhoods, commercial corridors, and new mixed-use.

Functional Classifications: Arterials

Target Speed: 25-30 mph



Zone Priorities and Preferred Elements for Each Zone

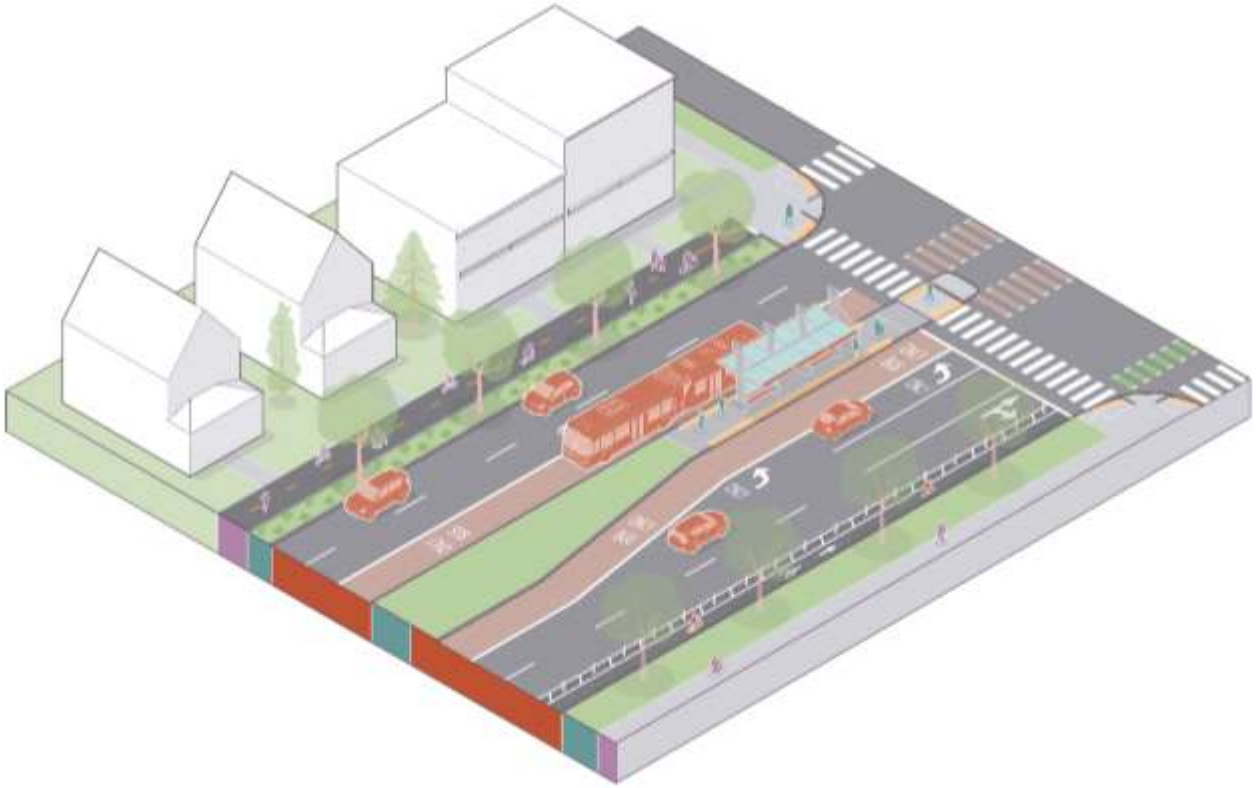
Walkway Medium Priority	**Flex Zone** Low Priority	**Travelway** High Priority	**Additional Considerations**
Standard 6' sidewalks with buildings offset from the sidewalk by landscaping (or parking in some already-developed areas). May be a shared-use path instead of a sidewalk on one or both sides.	Landscaped terrace with street trees and enhanced transit stops.	Appropriate transit accommodations, protected bike lanes, typically 2 travel lanes per direction, and medians.	Pedestrian and bicycle crossing spacing, crosswalk visibility, snow storage. Median width to allow for trees.

Overlay Influence

The approach to designing a Boulevard changes when the street overlaps one or more overlays:

Equity Priority Area –City staff will use the RESJII Public Participation Guide to develop a plan and engage with community members in the Equity Priority Area. Staff will also work with Neighborhood Resource Teams and other departments doing work in the neighborhood. Staff will complete the EPA questions on the *CGS Project Checklist* to ensure that the quality of outcomes (for safety, accessibility, and quality of life) in the surrounding community are as good or better than recent street design projects on similar streets.

Typical configuration of Boulevard on the Transit Priority Network.



Transit Priority Network – Transit lanes and signal preemption are prioritized. Providing transit lanes may require fewer motor vehicle travel lanes if space is constrained. If the street is also part of the NHS or Truck Route, changes to add transit lanes may require collaboration with WisDOT. Terrace widths will be increased where feasible to accommodate wider buffer space between the Travelway and Walkway. Enhanced crossings (high-visibility crosswalk markings, curb extensions, rapid-flashing beacons, raised intersections, grade separated crossings, etc.) are provided within 100 feet of transit stops. Transit shelters are prioritized over other Flex Zone uses at transit stops. Designs will prioritize in-lane stops that do not require buses to merge back into traffic.

All Ages and Abilities Bike Network – Protected bike lanes or a sidepath(s) will be provided; sidepath(s) would be accommodated by moving designated space from the Travelway zone into the Walkway zone. If space is constrained, the bikeway is prioritized over Flex Zone uses, starting with the removal of on-street parking, inset into the terrace with the use of intermittent parking bays, and then considering narrowing the terrace. In areas where sufficient off-street parking is available, the provision of seldom-used on-street parking is discouraged. If reductions to the Flex Zone do not provide adequate space, additional reductions will be made in the number and/or width of travel lanes, dedicated transit lanes (if the street is not part of the Transit Priority Network), medians,

and center turn lanes. If the street is part of the NHS, redesignation of lane use may require collaboration with WisDOT. Protected intersections will be provided, as feasible. Bike parking and bikeshare stations are priorities for the Flex Zone.

Canopy Priority Area – For High and Moderate priority areas (see Section 4.4), terrace width will be at least 8 feet (preferably 12 feet) from the sidewalk to the back of the curb. Consult the *Enhanced DGI and Tree Canopy Guidance* document for additional guidance.

Green Infrastructure Priority Area – It's likely that only nonpermeable treatments will be considered as appropriate, as the use of these streets typically requires salt use in the winter and also includes higher vehicle loading. Consult the Green Infrastructure Priority Area Flow Chart (Section 4.5) for additional guidance.

NHS & Truck Routes – Motor vehicle capacity will be a consideration and reviewed to consider impacts on other streets if lane reductions are implemented. If needed, turn lane(s) can be added. If space is constrained, reductions will first occur within the median (while still retaining adequate pedestrian refuge at crossings). If additional space is needed, the terrace (Flex Zone) may be reduced. An appropriate bikeway and adequate walkway should still be provided and may require further reducing the Flex Zone. A sidepath on one or both sides may be more space-efficient than separate sidewalks and bike lanes. Use signal phasing to reduce conflicts between motor vehicles and pedestrians, providing full separation. High traffic volumes should not result in higher design speeds or greater corner radii at intersections. Truck turning encroachment into adjacent lanes and all receiving lanes, while avoiding encroachment into oncoming vehicle lanes on primary street or on side streets at signalized intersections, is preferred to enlarging corner radii. Curb radii can be enlarged when fully justified by turning templates.

5.6. Parkway

Connecting multi-modal corridors that convey large numbers of people, near open spaces / water with a focus on minimizing impacts to nearby greenspace / water. May be part of the National Highway System and/or serve as a Truck Route.

Example Streets: John Nolen; Campus Drive; Eastwood; Packers Ave; Seminole Hwy

Context: Alongside parks, lakes, etc. Possibly in some areas with significant building setbacks.

Functional Classifications: Arterials; Collectors

Target Speed: 25-35 mph

Zone Priorities and Preferred Elements for Each Zone

Walkway Medium Priority	**Flex Zone** Low Priority	**Travelway** High Priority	**Additional Considerations**
Path typical on at least one side with 12'-14' preferred path width. Locations with buildings are offset from the sidepath or sidewalk by landscaping. May have a 6' sidewalk on one side.	Wide landscaped terrace with street trees. If flex zone is too narrow to support healthy trees, plant trees outside of the right-of-way.	Typically, 2 travel lanes per direction with tree-lined medians. (Biking typically accommodated via sidepath in the Walkway zone.)	Crossing locations, sidepath needs for both sides of Travelway, terrace buffer between path and Travelway. Speed management.

Overlay Influence

The approach to designing a Parkway changes when the street overlaps one or more overlays:

Equity Priority Area – City staff will use the RESJII Public Participation Guide to develop a plan and engage with community members in the Equity Priority Area. Staff will also work with Neighborhood Resource Teams and other departments doing work in the neighborhood. Staff will complete the EPA questions on the *CGS Project Checklist* to ensure that the quality of outcomes (for safety, accessibility, and quality of life) in the surrounding community are as good or better than recent street design projects on similar streets.

Transit Priority Network – Transit lanes and signal preemption are prioritized and may require fewer travel lanes if space is constrained. Path widths will be increased where feasible—and separated paths for walking and biking may be provided—to accommodate foot traffic and reduce conflicts with people biking. One side may be a 5-7' sidewalk. Enhanced crossings (high-visibility crosswalk markings, curb extensions, rapid-flashing beacons, grade-separated crossings, etc.) are provided within 100 feet of transit stops. Enhanced transit shelters will be provided and collocated with bikeshare stations and other amenities as feasible. Designs will prioritize in-lane stops that do not require buses to merge back into traffic.

All Ages and Abilities Bike Network – A sidepath on one or both sides will be provided. If space is constrained, the sidepath(s) is prioritized over other Flex Zone uses. Enhanced crossings (high-visibility crosswalk markings, curb extensions, rapid-flashing beacons, grade-separated crossings, etc.) will be provided at all intersections or at least every 1,000 feet to increase bike connectivity. Bike parking and bikeshare stations may be provided in the Flex Zone.

Canopy Priority Area – For High and Moderate priority areas (see Section 4.4), terrace width will be at least 8 feet (preferably 10 to 12 feet) from the sidewalk to the back of the curb. Consult the *Enhanced DGI and Tree Canopy Guidance* document for additional guidance.

Green Infrastructure Priority Area – It is likely that only nonpermeable treatments will be considered as appropriate, as the use of these streets typically requires salt use in the winter and includes higher vehicle loading. Consult the Green Infrastructure Priority Area Flow Chart (Section 4.5) for additional guidance.

NHS & Truck Routes – Motor vehicle capacity will be a consideration and reviewed to consider impacts on other streets if lane reductions are implemented. If space is constrained, reductions will first occur within the median (while still retaining adequate pedestrian refuge at crossings). If additional space is needed, the terrace (Flex Zone) may be reduced. An appropriate bikeway and adequate walkway must still be provided and may require further reducing the Flex Zone. Use signal phasing to reduce conflicts between motor vehicles and pedestrians, providing full separation. High traffic volumes should not result in higher design speeds or greater corner radii at intersections. Truck turning encroachment into adjacent lanes and all receiving lanes, while avoiding encroachment into oncoming vehicle lanes on primary street or on side streets at signalized intersections, is preferred to enlarging corner radii. Curb radii can be enlarged when justified by turning templates.

5.7. Mixed-Use Connector

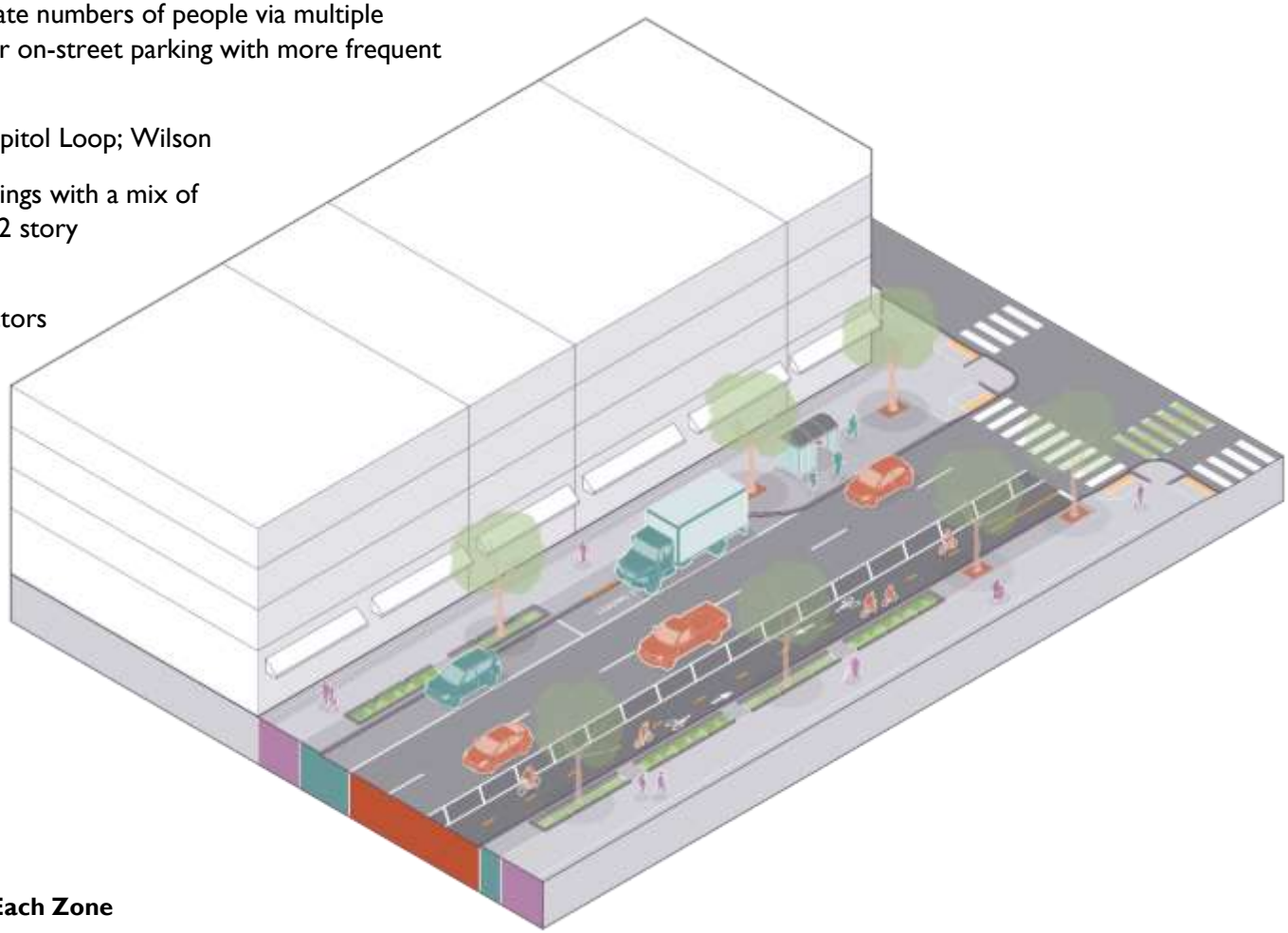
Streets that provide access and convey moderate numbers of people via multiple modes. Often includes transit. High demand for on-street parking with more frequent turnover

Example Streets: Bassett; Broom; Outer Capitol Loop; Wilson

Context: Often surrounded by 3+ story buildings with a mix of residential, office and commercial, alongside 1-2 story buildings/homes.

Functional Classifications: Arterials; Collectors

Target Speed: 25 mph



Zone Priorities and Preferred Elements for Each Zone

Walkway High Priority	**Flex Zone** Medium Priority	**Travelway** Medium Priority	**Additional Considerations**
Wide sidewalks with buildings close to or touching the sidewalk.	Hardscaped terraces with street trees, bike racks, enhanced transit stops, and sidewalk cafés. Sometimes landscaped terraces. Parallel on-street parking and loading zones (optional).	Bike lanes, 2 travel lanes (including one-way streets). Most existing examples of this street type are one-way.	Vending locations and bikeshare opportunities. Crosswalk enhancements including raised crossings/intersections.

Overlay Influence

The approach to designing a Mixed-Used Connector changes when the street overlaps one or more overlays:

Equity Priority Area – City staff will use the RESJII Public Participation Guide to develop a plan and engage with community members in the Equity Priority Area. Staff will also work with Neighborhood Resource Teams and other departments doing work in the neighborhood. Staff will complete the EPA questions on the *CGS Project Checklist* to ensure that the quality of outcomes (for safety, accessibility, and quality of life) in the surrounding community are as good or better than recent street design projects on similar streets.

Transit Priority Network – Signal preemption is prioritized, and dedicated transit lanes may be considered. Increased sidewalk width where appropriate to accommodate foot traffic. Enhanced crossings (high-visibility crosswalk markings, curb extensions, rapid-flashing beacons, etc.) are provided within 100 feet of transit stops. Transit shelters are prioritized over on-street parking. Designs will prioritize in-lane stops that do not require buses to merge back into traffic.

All Ages and Abilities Bike Network – The bikeway is prioritized over motor vehicle travel lanes and Flex Zone uses. If space is constrained, on-street parking will be removed, placed on one-side or inset into the terrace with parking bays. Parking should only be provided if there is insufficient off-street parking, and minimized when possible. If parking is provided, consideration will be given to configuring it for parking protected bike lanes. For one-way streets, parking might be provided on only one side to make space for a bikeway. If parking removal does not provide adequate space, additional reductions can be made in the number and/or width of travel lanes, dedicated transit lanes (if the street is not on the Transit Priority Network), medians, and center turn lanes. For one-way streets, a two-way protected bike lane or a counterflow bike lane may be considered.

Canopy Priority Area – For High and Moderate priority areas (see Section 4.4), terrace width will be at least 8 feet (preferably 10 to 12 feet) from the sidewalk to the back of the curb and suspended pavement use will be considered. Consult the *Enhanced DGI and Tree Canopy Guidance* document for additional guidance.

Green Infrastructure Priority Area – It is likely that only nonpermeable treatments will be considered as appropriate, as the use of these streets typically requires salt use in the winter and also includes higher vehicle loading. Consult the Green Infrastructure Priority Area Flow Chart (Section 4.5) for additional guidance.

NHS & Truck Routes – Motor vehicle capacity will be a consideration and reviewed to consider impacts on other streets if lane reductions are implemented. If needed, up to two travel lanes per direction can be provided, or turn lane(s) can be added. Where needed and feasible, on-street parking with peak hour restrictions will be considered, to allow the parking lane to function as a travel lane during peak periods. High traffic volumes should not result in higher design speeds or greater corner radii at intersections. Truck turning encroachment into adjacent lanes and all receiving lanes, while avoiding encroachment into oncoming vehicle lanes on primary street or on side streets at signalized intersections, is preferred to enlarging corner radii. Curb radii can be enlarged when justified by turning templates.

5.8. Community Main Street

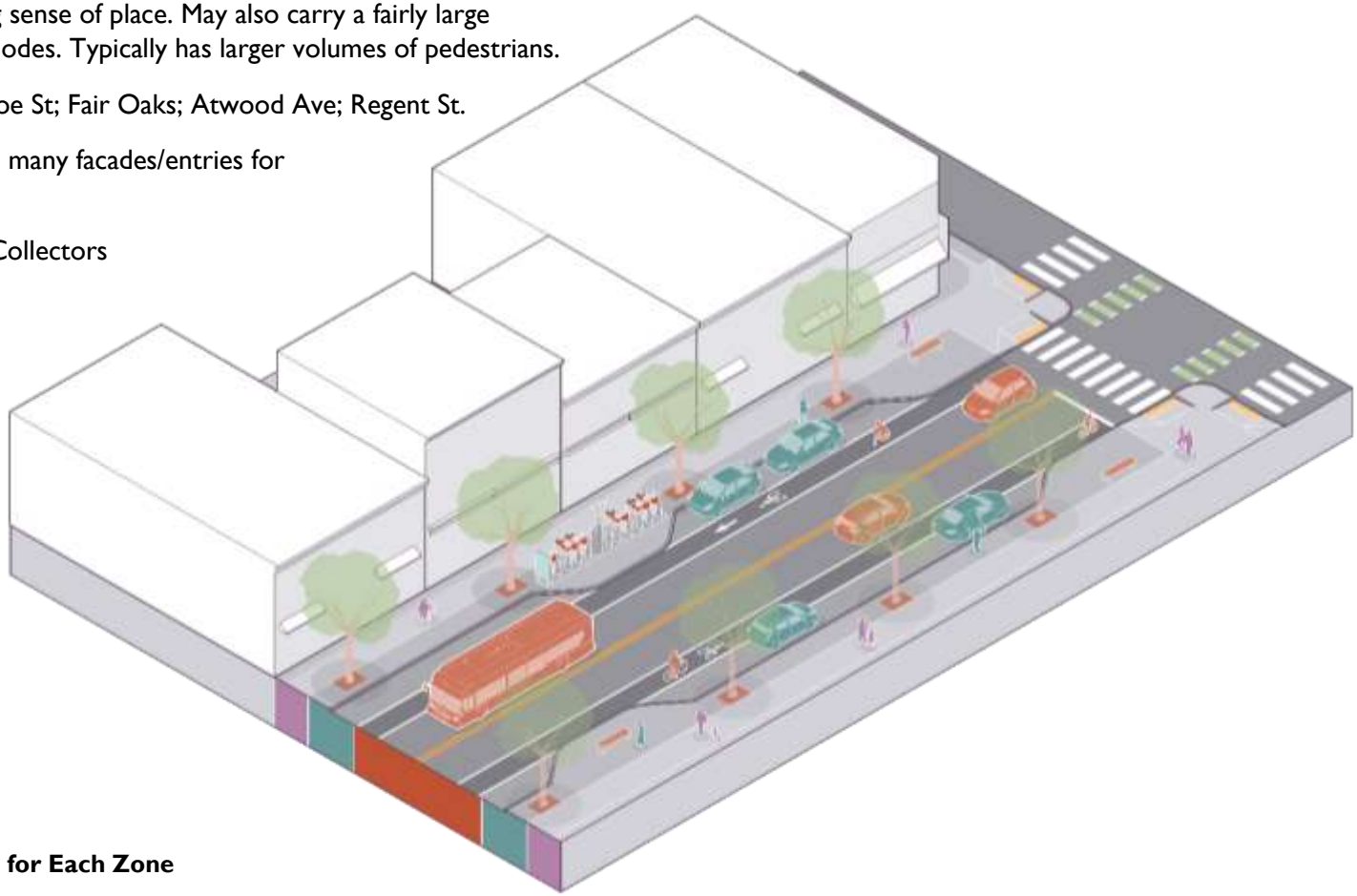
Destination/shopping street with a strong sense of place. May also carry a fairly large number of people by a variety of travel modes. Typically has larger volumes of pedestrians.

Example Streets: Williamson St; Monroe St; Fair Oaks; Atwood Ave; Regent St.

Context: Small/medium scale mixed use, many facades/entries for retail/dining/etc.

Functional Classifications: Arterials; Collectors

Target Speed: 25 mph or less



Zone Priorities and Preferred Elements for Each Zone

Walkway Medium Priority	**Flex Zone** High Priority	**Travelway**	**Additional Considerations**
Wide sidewalks with buildings close to or touching the sidewalk.	Hardscaped or landscaped terrace with street trees, bike racks, enhanced transit stops, and sidewalk cafés. Higher demand for on-street parking more frequent turnover, pedestrian-scale streetscapes and amenities that encourage people to walk. Parking may be a higher priority. Loading zones, if needed, should be provided around the corner on intersecting minor streets.	1 travel lane per direction. Left turn lanes are common at controlled intersections. Bike lanes should be included and may require consideration of parking options on side streets or in structured parking.	Vending locations and bikeshare opportunities. Crosswalk enhancements including raised crossings/intersections. Peak hour traffic volumes and need for peak hour travel lane. Snow storage. Accessible parking.

Overlay Influence

The approach to designing a Community Main Street changes when the street overlaps one or more overlays:

Equity Priority Area – City staff will use the RESJII Public Participation Guide to develop a plan and engage with community members in the Equity Priority Area. Staff will also work with Neighborhood Resource Teams and other departments doing work in the neighborhood. Staff will complete the EPA questions on the *CGS Project Checklist* to ensure that the quality of outcomes (for safety, accessibility, and quality of life) in the surrounding community are as good or better than recent street design projects on similar streets.

Transit Priority Network – Signal preemption is prioritized. Enhanced crossings (high-visibility crosswalk markings, curb extensions, rapid-flashing beacons, etc.) are provided within 100 feet of transit stops. Transit shelters are prioritized over other terrace/Flex Zone uses. Designs will prioritize in-lane stops that do not require buses to merge back into traffic.

All Ages and Abilities Bike Network – If the street is on the All Ages and Abilities Bike Network, a bikeway must be provided. If space is constrained, reductions will be made in the number and/or width of travel lanes, medians, and center turn lanes. If lane reduction does not provide adequate space, on-street parking can be removed from one or both sides, narrowed, or inset into intermittent parking bays. If an All Ages and Abilities Bike Network is unfeasible, , enhanced parallel connections (bike boulevard, shared-use path, etc.) within approximately 500 feet creating the same level of network connectivity should be provided. Direction from the Transportation Commission may be needed.

Canopy Priority Area – For High and Moderate priority areas (see Section 4.4), terrace width will be at least 8 feet (preferably 10 to 12 feet) from the sidewalk to the back of the curb and suspended pavement use will typically be incorporated. Consult the *Enhanced DGI and Tree Canopy Guidance* document for additional guidance.

Green Infrastructure Priority Area – For areas that warrant infiltration (see Green Infrastructure Priority Area flowchart, Section 4.5), DGI treatments will be considered. Consult the *Enhanced DGI and Tree Canopy Guidance* for appropriateness of various DGI treatments.

NHS & Truck Routes – Motor vehicle capacity will be a consideration and reviewed to consider impacts on other streets if lane reductions are implemented. If needed, up to two travel lanes per direction can be provided or turn lane(s) can be added. High traffic volumes should not result in higher design speeds or greater corner radii at intersections. Truck turning encroachment into adjacent lanes and all receiving lanes, while avoiding encroachment into oncoming vehicle lanes on primary street or on side streets at signalized intersections, is preferred to enlarging corner radii. Curb radii can be enlarged when justified by turning templates

5.9. Community Connector

Streets that provide access and convey moderate numbers of people via multiple modes. Often includes transit.

Example Streets: Watts Rd; North Thompson; Buckeye Rd; Milwaukee St; East Gorham; Schroeder

Context: Neighborhoods, ranging from more walkable with short blocks and many driveways to more car-oriented. Includes some commercial and light industrial.

Functional Classifications: Minor Arterials; Collectors

Target Speed: 25 mph or less

Zone Priorities and Preferred Elements for Each Zone

Walkway High Priority	**Flex Zone** Low Priority	**Travelway** Medium Priority	**Additional Considerations**
Standard or wider sidewalks with buildings offset from the sidewalk by landscaping (or parking in some already-developed areas). Sidepath (optional) minimum 8', 12' pref.	Landscaped terrace with street trees. On-street parking may be provided in some locations.	1 travel lane per direction, often with medians or center turn lane; on-street bike facilities	Garbage cart storage space, raised crossings, speed management.

Overlay Influence

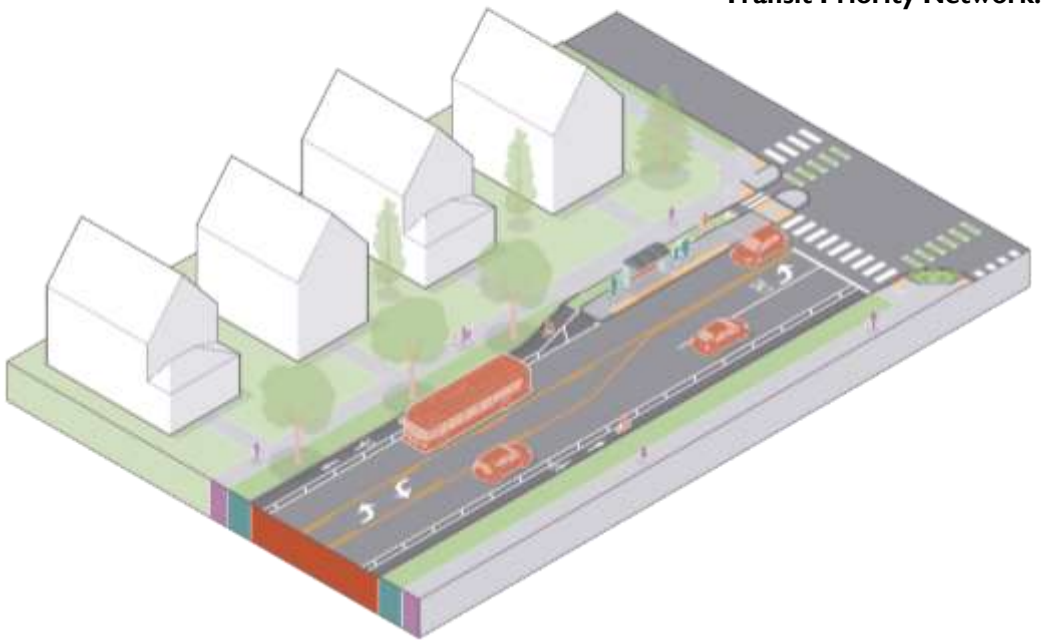
The approach to designing a Community Connector changes when the street overlaps one or more overlays:

Equity Priority Area – City staff will use the RESJII Public Participation Guide to develop a plan and engage with community members in the Equity Priority Area. Staff will also work with Neighborhood Resource Teams and other departments doing work in the neighborhood. Staff will complete the EPA questions on the *CGS Project Checklist* to ensure that the quality of outcomes (for safety, accessibility, and quality of life) in the surrounding community are as good or better than recent street design projects on similar streets.

Transit Priority Network – Signal preemption is prioritized. Enhanced crossings (high-visibility crosswalk markings, curb extensions, rapid-flashing beacons, etc.) are provided within 100 feet of transit stops. Transit shelters are prioritized over other Flex Zone uses. Designs will prioritize in-lane stops that do not require buses to merge back into traffic.

All Ages and Abilities Bike Network – Traffic speeds and volumes will be considered to select a bikeway that accommodates all ages and abilities. This may result in standard bike lanes, protected bike lanes, or a sidepath. If space is constrained, the bikeway is prioritized over Flex Zone uses, starting with the removalnarrowing, or intermittent of parking bays of on-street parking. Subsequent measures would then consider narrowing the landscaped terrace. If reductions to the Flex Zone do not provide adequate space, additional reductions will be made in the number and/or width of travel lanes, medians, and center turn lanes.

Typical configuration of Community Connector on the Transit Priority Network.



Canopy Priority Area – For High and Moderate priority areas (see Section 4.4), terrace width will be at least 8 feet (preferably 10 to 12 feet) from the sidewalk to the back of the curb. Consult the *Enhanced DGI and Tree Canopy Guidance* document for additional guidance.

Green Infrastructure Priority Area – For areas that warrant infiltration (see Green Infrastructure Priority Area flowchart, Section 4.5), DGI treatments will be considered. Consult the *Enhanced DGI and Tree Canopy Guidan*ce for appropriateness of various DGI treatments.

NHS & Truck Routes – Motor vehicle capacity will be a consideration and reviewed to consider impacts on other streets if lane reductions are implemented. If needed, up to two travel lanes per direction can be provided, or turn lane(s) can be added. Where needed and feasible, on-street parking with peak hour restrictions will be considered, to allow the parking lane to function as a travel lane during peak periods. High traffic volumes should not result in higher design speeds or greater corner radii at intersections.

5.10. Mixed-Use Neighborhood Street

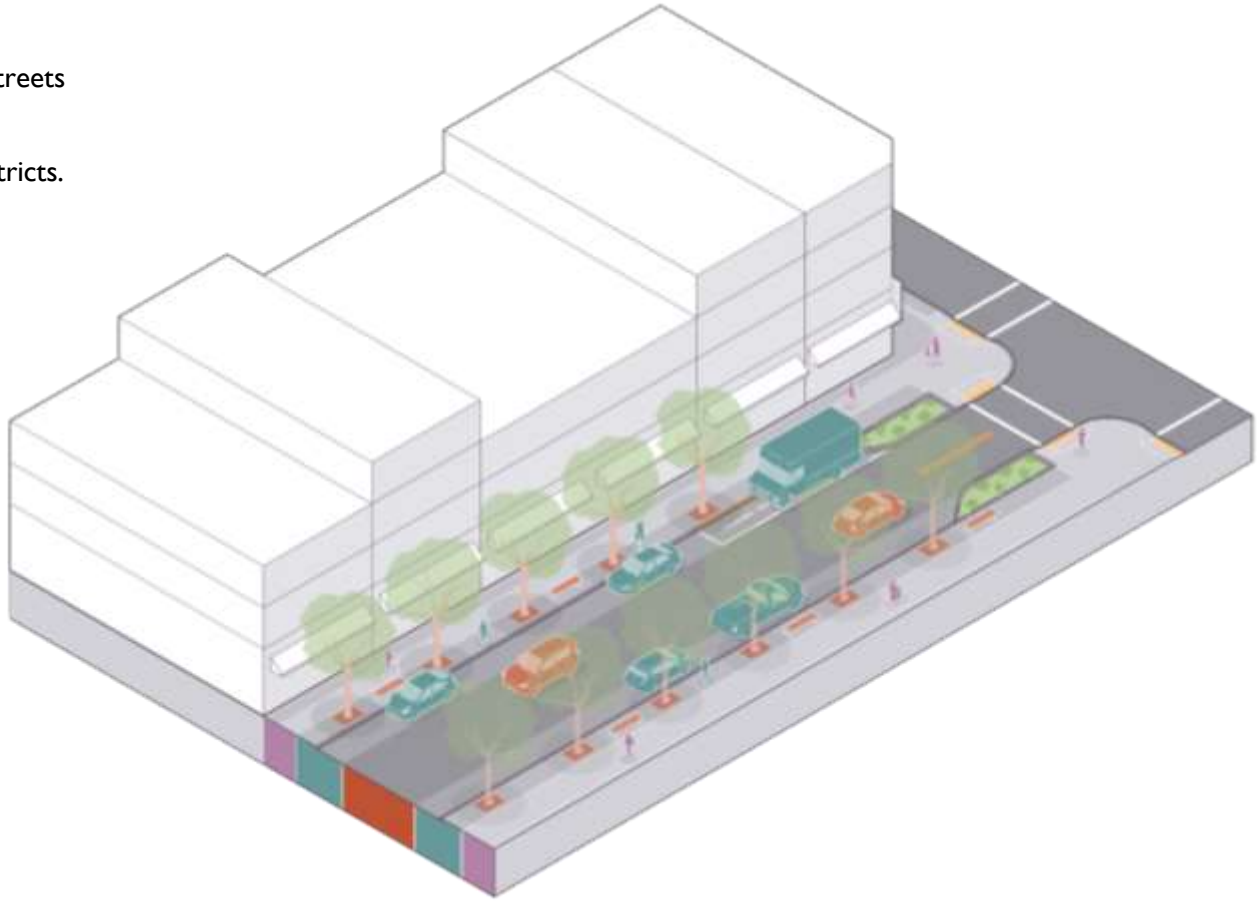
Streets that provide access and convey relatively low numbers of people via multiple modes.

Example Streets: Downtown local streets; internal streets in new mixed-use areas; East Main St

Context: Downtown and mixed-use corridors and districts.

Functional Classifications: Collectors; Locals

Target Speed: 20 to 25 mph



Zone Priorities and Preferred Elements for Each Zone

Walkway Medium Priority	**Flex Zone** High Priority	**Travelway** Low Priority	**Additional Considerations**
Wide sidewalks with buildings close to or touching the sidewalk.	Hardscaped or landscaped terrace with street trees and bike racks. Parallel or diagonal on-street parking. Loading zones, if needed, should be provided around the corner on intersecting minor streets.	Two-way travel without lane markings. No dedicated bikeway unless contraflow bike lanes are necessary, or traffic volumes are above 3,000 ADT.	Speed management, raised crossings and other crosswalk enhancements. Fire lane requirements.

Overlay Influence

The approach to designing a Mixed-Use Neighborhood Street changes when the street overlaps one or more overlays:

Equity Priority Area – City staff will use the RESJII Public Participation Guide to develop a plan and engage with community members in the Equity Priority Area. Staff will also work with Neighborhood Resource Teams and other departments doing work in the neighborhood. Staff will complete the EPA questions on the *CGS Project Checklist* to ensure that the quality of outcomes (for safety, accessibility, and quality of life) in the surrounding community are as good or better than recent street design projects on similar streets.

Transit Priority Network – Signal preemption will be considered if appropriate. Enhanced crossings (high-visibility crosswalk markings, curb extensions, rapid-flashing beacons, etc.) will be considered within 100 feet of transit stops. Transit shelters are prioritized over other terrace/Flex Zone uses near bus stops.

All Ages and Abilities Bike Network – An all-ages-and-abilities bike boulevard will be created by providing traffic calming elements (such as curb extensions or chicanes to reduce speeds) and other appropriate speed and volume management techniques. As feasible, traffic calming measures will be used to reduce the prevailing speed to 20 mph and keep the ADT low (max ADT on a bicycle boulevard is 3,000). Bike lanes (including a counterflow bike lane on one-way streets) can be considered as an alternative approach if volumes and speeds cannot be reduced to these levels.

Canopy Priority Area – For High and Moderate priority areas (see Section 4.4), terrace width will be at least 8 feet (preferably 10 feet) from the sidewalk to the back of the curb and suspended pavement use will be considered. Consult the *Enhanced DGI and Tree Canopy Guidance* document for additional guidance.

Green Infrastructure Priority Area – For areas that warrant infiltration (see Green Infrastructure Priority Area flowchart, Section 4.5), DGI treatments will be considered. Consult the *Enhanced DGI and Tree Canopy Guidance* for appropriateness of various DGI treatments.

NHS & Truck Routes – Not applicable.

5.11. Neighborhood Street

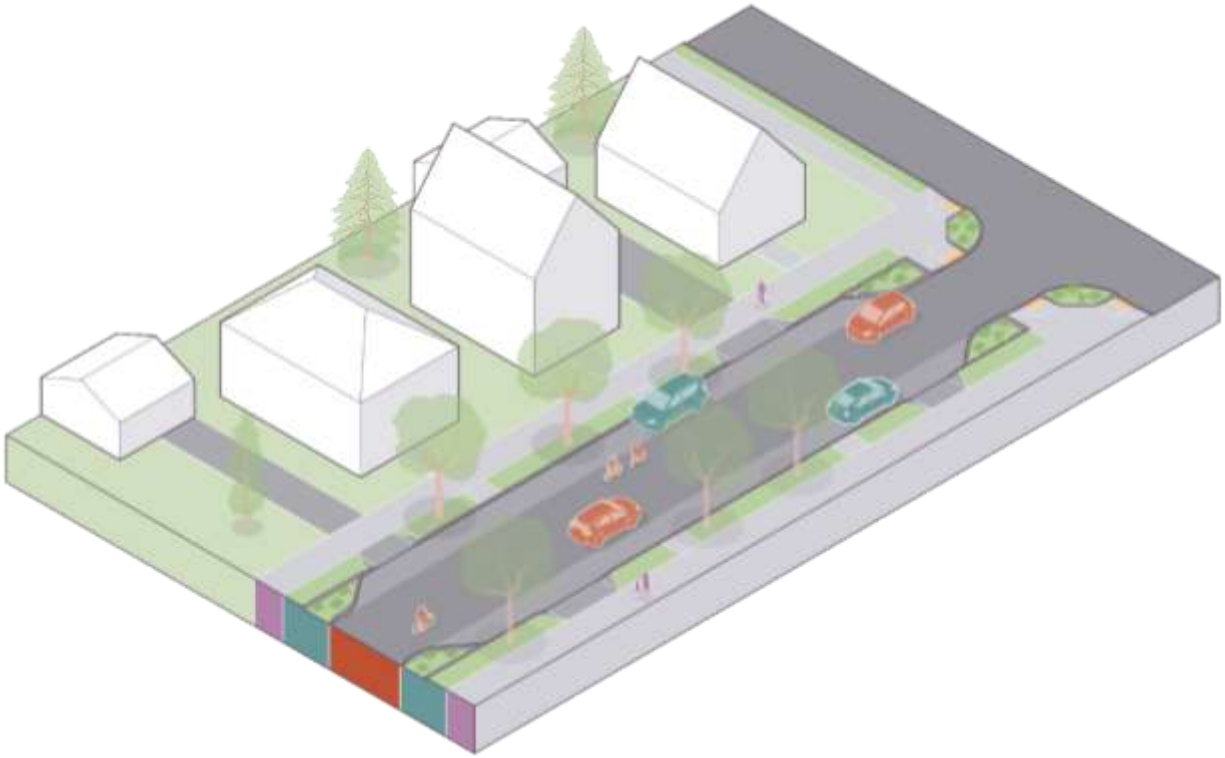
Wider neighborhood streets. Includes some higher-traffic streets and transit routes that should be designed to prioritize neighborhood quality of life. Allows two drivers to pass each other without stopping. These wider streets may encourage speeding and may therefore require traffic calming measures. Neighborhood yield streets (see Section 5.12) are preferable in many situations.

Example Streets: Park Edge Dr; Tree Ln; Allied Dr; Baldwin St; Mifflin St; Shore Dr; Commonwealth Ave; other residential local streets

Context: Residential neighborhoods, including edges of downtown. Industrial areas.

Functional Classifications: Collectors; Locals

Target Speed: 20 mph or less



Zone Priorities and Preferred Elements for Each Zone

Walkway High Priority	**Flex Zone** Medium Priority	**Travelway** Low Priority'	**Additional Considerations**
Standard sidewalks, with landscaping between the sidewalk and homes or buildings. May shift closer to or farther from the street to avoid impacting canopy trees.	Landscaped terrace with street trees. May straddle the walkway when the walkway is close to the street to avoid impacting existing canopy trees. On-street parking on one or both sides common.	Two-way travel without lane markings. No dedicated bikeway unless traffic volumes are above 3,000 ADT.	Speed management, parking demand to determine type and amount of on-street parking.

Overlay Influence

The approach to designing a Neighborhood Street changes when the street overlaps one or more overlays:

Equity Priority Area – City staff will use the RESJII Public Participation Guide to develop a plan and engage with community members in the Equity Priority Area. Staff will also work with Neighborhood Resource Teams and other departments doing work in the neighborhood. Staff will complete the EPA questions on the *CGS Project Checklist* to ensure that the quality of outcomes (for safety, accessibility, and quality of life) in the surrounding community are as good or better than recent street design projects on similar streets.

Transit Priority Network – Enhanced crossings (high-visibility crosswalk markings, curb extensions, rapid-flashing beacons, etc.) will be considered within 100 feet of transit stops. Transit shelters are prioritized over other Flex Zone uses near bus stops.

All Ages and Abilities Bike Network – Generally an all-ages-and-abilities bike boulevard would occur on-street. Additional incorporating geometric elements (such as curb extensions, chicanes to reduce speeds, or diverters) may be needed. As feasible, traffic calming measures will be used to reduce the prevailing speed to 20 mph or less and to keep ADT low (max ADT on a bicycle boulevard is 3,000; 1,000 if transit route). If a bike boulevard is deemed infeasible, an All Ages and Abilities bike accommodation that considers traffic speeds and volumes to select a bikeway that accommodates all ages and abilities. To reduce speeding potential, parking should only be provided if there is high utilization of on-street parking, based on a parking study conducted by staff for existing streets, and minimized to the extent possible through the use of one-side parking or intermittent parking bays.

Canopy Priority Area – For High and Moderate priority areas (see Section 4.4), terrace width will be at least 8 feet (preferably 10 feet) from the sidewalk to the back of the curb. Consult the *Enhanced DGI and Tree Canopy Guidance* document for additional guidance.

Green Infrastructure Priority Area – For areas that warrant infiltration (see Green Infrastructure Priority Area flowchart, Section 4.5), DGI treatments will be considered. Consult the *Enhanced DGI and Tree Canopy Guidance* for appropriateness of various DGI treatments.

NHS & Truck Routes – Not applicable.

5.12. Neighborhood Yield Street

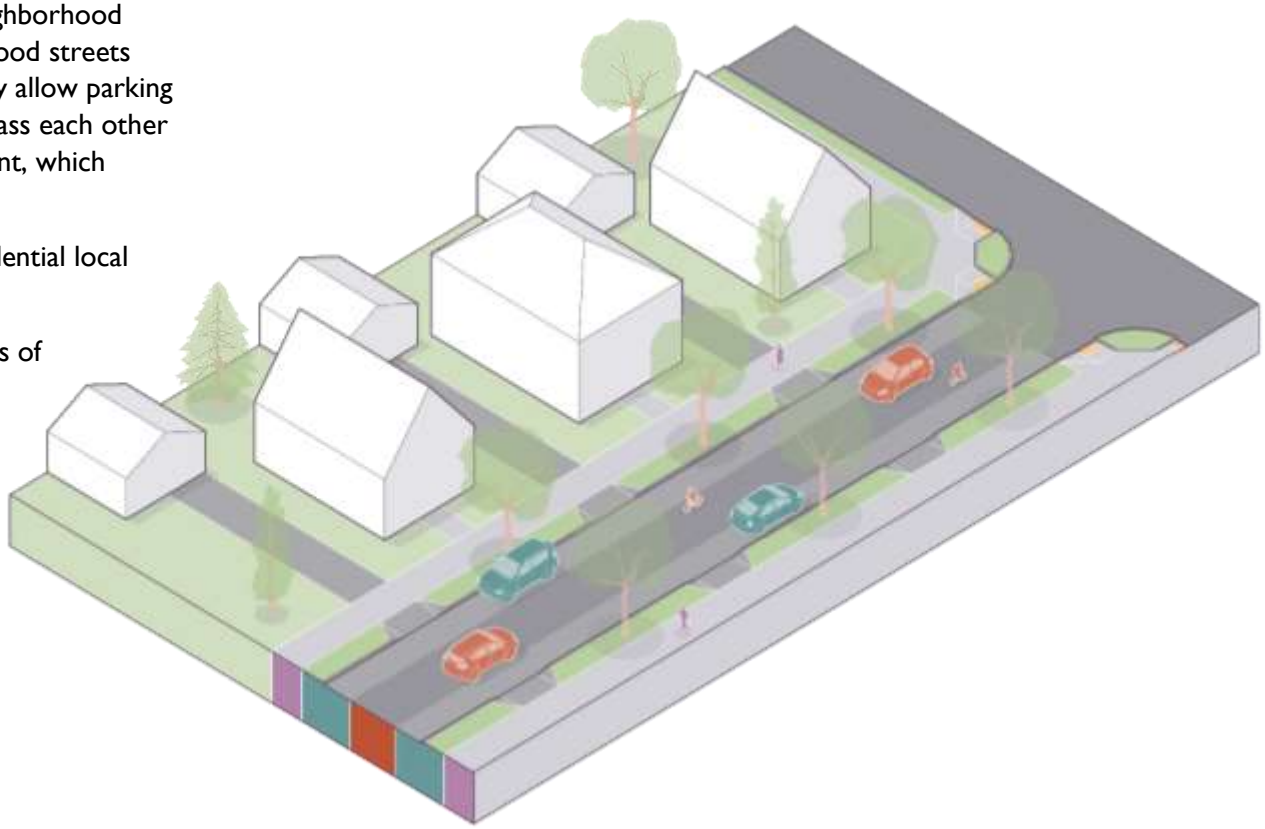
This is the standard street type to be applied on neighborhood streets in new developments. Many older neighborhood streets built before 1945 also fall within this street type. May allow parking on only one side. Does NOT allow two drivers to pass each other (one must give way) when parked vehicles are present, which provides a traffic-calming effect.

Example Streets: Riverside Drive; numerous residential local streets

Context: Residential neighborhoods, including edges of downtown.

Functional Classifications: Locals

Target Speed: 20 or less



Zone Priorities and Preferred Elements for Each Zone

Walkway High Priority	**Flex Zone** Medium Priority	**Travelway** Low Priority	**Additional Considerations**
Standard sidewalks, with landscaping between the sidewalk and homes or buildings. May shift closer to or farther from the street to avoid impacting existing canopy trees. In constrained conditions (e.g., "Court" streets), sidewalk may be located back-of-curb and on only one side.	Landscaped terrace with street trees. May straddle the walkway when the walkway is close to the street to avoid impacting existing canopy trees. On-street parking on one or both sides.	Two-way travel without lane markings, typically requiring one direction to give way to the other. No dedicated bikeway.	Snow emergency zones, parking restrictions, parking demand, emergency access.

Overlay Influence

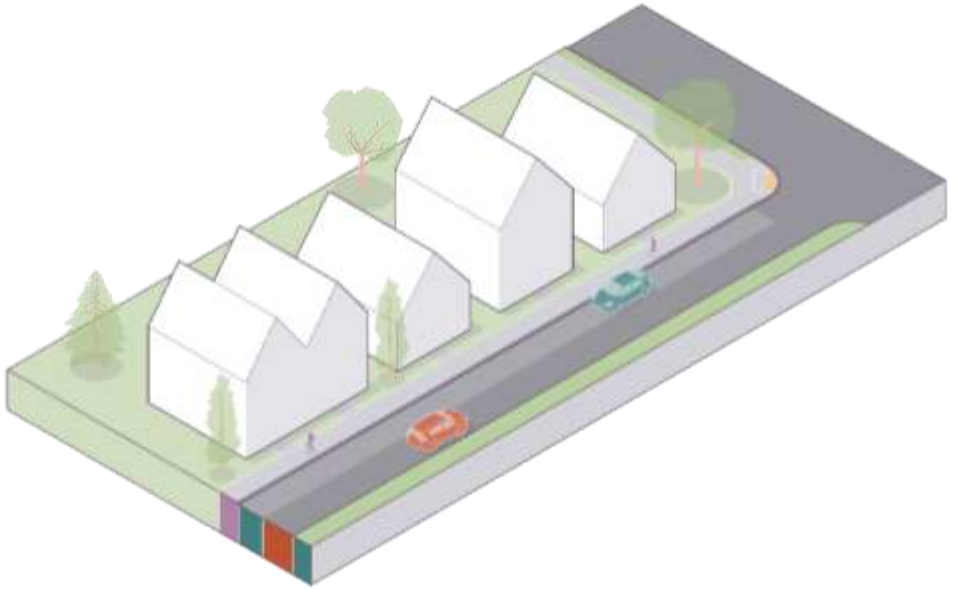
The approach to designing a Neighborhood Yield Street changes when the street overlaps one or more overlays:

Equity Priority Area – City staff will use the RESJII Public Participation Guide to develop a plan and engage with community members in the Equity Priority Area. Staff will also work with Neighborhood Resource Teams and other departments doing work in the neighborhood. Staff will complete the EPA questions on the *CGS Project Checklist* to ensure that the quality of outcomes (for safety, accessibility, and quality of life) in the surrounding community are as good or better than recent street design projects on similar streets.

Transit Priority Network – Not applicable.

All Ages and Abilities Bike Network – Generally, an all-ages-and-abilities bike boulevard would occur on street. Additional features, such as the use of geometric elements (curb extensions, chicanes, and diverters may be needed. Wayfinding and bike boulevard marking will be used to assist with route finding. Parking should only be provided if there is insufficient off-street parking and minimized to the extent possible through the use of one-side parking or intermittent parking bays.

Neighborhood Yield Street in Constrained Environments (e.g., Court Streets).



Canopy Priority Area – For High and Moderate priority areas (see Section 4.4), terrace width will be at least 8 feet (preferably 10 feet) from the sidewalk to the back of the curb. Consult the *Enhanced DGI and Tree Canopy Guidance* document for additional guidance.

Green Infrastructure Priority Area – For areas that warrant infiltration (see Green Infrastructure Priority Area flowchart, Section 4.5), DGI treatments will be considered. Consult the *Enhanced DGI and Tree Canopy Guidance* for appropriateness of various DGI treatments.

NHS & Truck Routes – Not applicable.

5.13. Civic Space

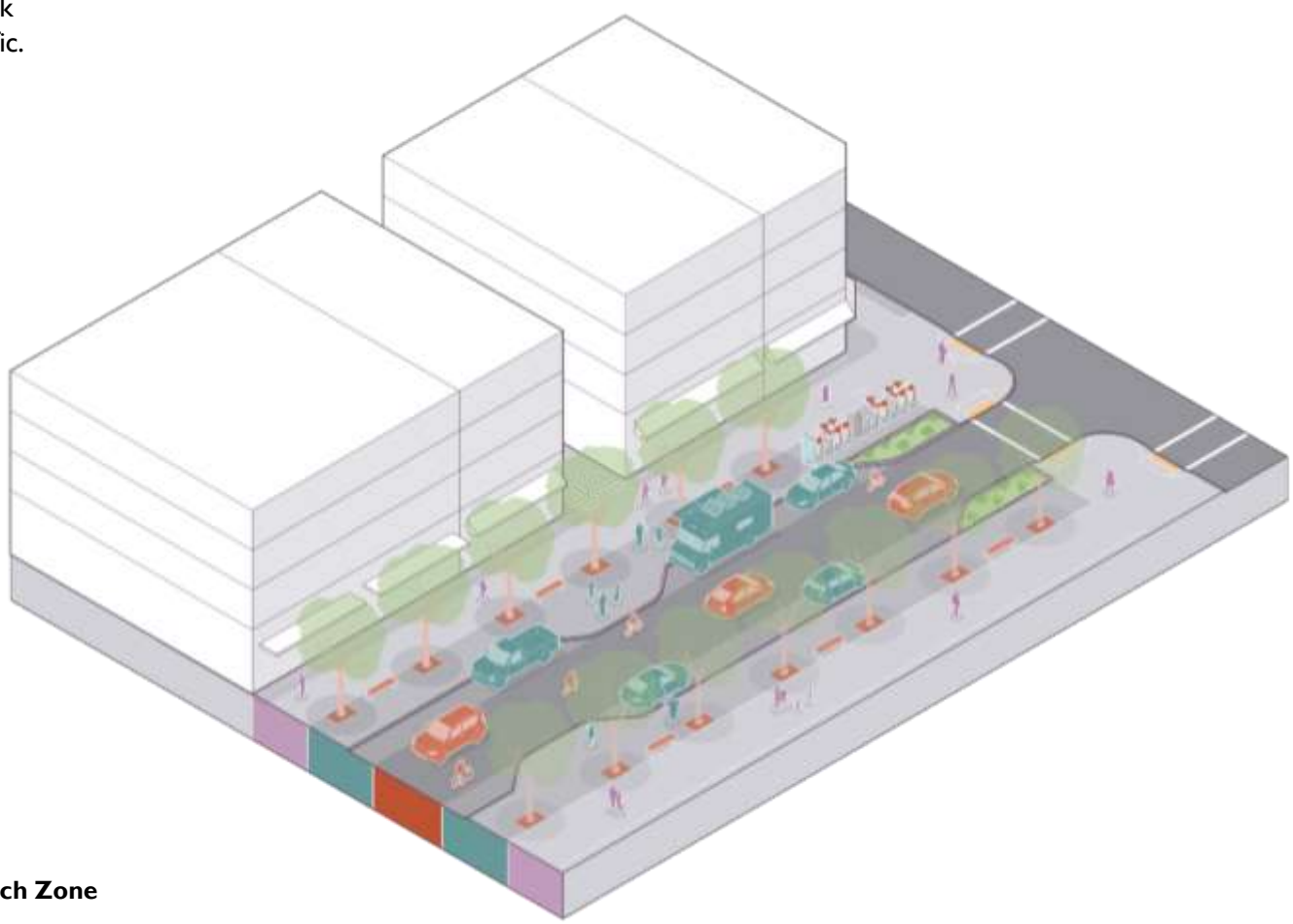
Street with minimal delineation between sidewalk and roadway. Always or often closed to car traffic.

Example Streets: Capitol square; downtown diagonals; MLK Blvd

Context: Downtown and other mixed use

Functional Classifications: Collectors, Locals

Target Speed: 20 mph or less



Zone Priorities and Preferred Elements for Each Zone

Walkway High Priority	**Flex Zone** High Priority	**Travelway** Low Priority	**Additional Considerations**
Designs vary widely. Sidewalks wider than 10 feet are common with buildings close to or touching the sidewalk. May shift closer to or farther from the street to avoid impacting existing canopy trees.	Designs vary widely. Hardscaped terrace with street trees, bike racks, and sidewalk cafés. Parallel or diagonal (back-in) on-street parking. Loading zones, if needed, should be provided around the corner on intersecting minor streets.	Designs vary widely. One or two-way travel, sometimes without lane markings. No dedicated bikeway unless contraflow bike lanes are necessary. May be shared space, a flush street, etc. Regularly closed to motor vehicle traffic during events.	Midblock crossings and placemaking. The overall design should make driving over 15 mph feel uncomfortable and may include elements such as curb extensions to achieve this outcome. If traffic volumes exceed desired levels, traffic diversion features may be included.

Overlay Influence

The approach to designing a Civic Space changes when the street overlaps one or more overlays:

Equity Priority Area – City staff will use the RESJII Public Participation Guide to develop a plan and engage with diverse community members to ensure Civic Space is welcoming to all. Staff will also work with Neighborhood Resource Teams and other departments doing work in with traditionally underrepresented communities. Staff will complete the EPA questions on the *CGS Project Checklist* to ensure that Civic Space is designed to ensure racial equity and social justice is centered in the project.

Transit Priority Network – Signal preemption will be considered if appropriate and lane widths that accommodate transit vehicles will be provided. Enhanced crossings (high-visibility crosswalk markings, curb extensions, rapid-flashing beacons, etc.) will be considered within 100 feet of transit stops. Transit shelters are prioritized over other Flex Zone uses near bus stops.

All Ages and Abilities Bike Network – Well-design Civic Space streets will be comfortable for all ages and abilities by default. Options to allow two-way bike travel on one-way streets will be evaluated and may include counterflow bike lanes or partial traffic diverters.

Canopy Priority Area – For High and Moderate priority areas (see Section 4.4), terrace width will be at least 8 feet (preferably 10 feet) from the sidewalk to the back of the curb and suspended pavement use will typically be incorporated. Consult the *Enhanced DGI and Tree Canopy Guidance* document for additional guidance.

Green Infrastructure Priority Area – For areas that warrant infiltration (see Green Infrastructure Priority Area flowchart, Section 4.5), DGI treatments will be considered. Consult the *Enhanced DGI and Tree Canopy Guidance* for appropriateness of various DGI treatments.

NHS & Truck Routes – Generally not applicable.

5.14. Neighborhood Shared Street

Tight neighborhood street where walking, biking, driving, parking, and playing take place in the same space. Often additional design features than used on regular streets are needed, such as decorative paving and more street furniture. There is no standard for design for neighborhood shared streets because the designs vary considerably and are very nuanced, however there are numerous national studies that provide guidance. Rather than providing a typical design, this street type should satisfy the specific requirements listed below.

Requirements: Street must be designated as a pedestrian mall to allow broader traffic restrictions. Design must consider context & connections for the specific street & whole neighborhood. New streets must meet certain requirements:

- Long-term maintenance agreements for pedestrian-friendly snow/ice removal (e.g., HOA or BID)
- Consolidated trash pick-up and removal location accessed by a cross street or alley conducive to truck maneuvering
- Fire access on cross-streets and/or alleys
- Limited motor vehicle access
- Limited parking

Example Streets: There are not many Neighborhood Shared Streets examples within the public right of way in Madison. Some private developments may have travel ways that incorporated Shared Street features.

Context: Compact, higher density residential streets with very low car traffic.

Functional Classifications: Locals

Target Speed: 10 mph or less

Neighborhood shared streets in St Augustine, FL (left), Reykjavik, Iceland (middle), and Boston, MA.

Zone Priorities and Preferred Elements for Each Zone

Walkway Medium Priority	**Flex Zone** High Priority	**Travelway** NA	**Additional Considerations**
High density with residences near public right of way. An accessible pedestrian space will be maintained year-round but it may not be a traditional sidewalk.	Minimal to no curb. Designed primarily for pedestrian use of the street. Parallel on-street parking. May include narrow landscaped or hardscaped terrace with street trees or container planters. May include "parklets" or other landscaped curb extensions. Entire roadway—including space for moving motor vehicles—is considered Flex Zone.	Not Applicable. Entire roadway is designed for walking, accommodates slow driving, and is considered Flex Zone.	Emergency access, garbage collection, snow clearing. Speed management elements (such as curb extensions or chicanes to reduce speeds) will be provided as needed and diverters to reduce motor vehicle traffic volumes will be considered.

Overlay Influences

The approach to designing a Neighborhood Shared Street changes when the street overlaps one or more overlays:

Equity Priority Area – City staff will use the RESJII Public Participation Guide to develop a plan and engage with community members in the Equity Priority Area. Staff will also work with Neighborhood Resource Teams and other departments doing work in the neighborhood. Staff will complete the EPA questions on the *CGS Project Checklist* to ensure that the quality of outcomes (for safety, accessibility, and quality of life) in the surrounding community are as good or better than recent street design projects on similar streets.

Transit Priority Network – Not applicable.

All Ages and Abilities Bike Network – Well-design Neighborhood Shared Street streets will be comfortable for all ages and abilities by default. Options to allow two-way bike travel on one-way streets will be evaluated.

Canopy Priority Area – These streets typically do not have terraces. Therefore, for High and Moderate priority areas (see Section 4.4), consider raised planters, curb extensions with street trees (when curbs are present), or private property tree planting. Consult the *Enhanced DGI and Tree Canopy Guidance* document for additional guidance.

Green Infrastructure Priority Area – For areas that warrant infiltration (see Green Infrastructure Priority Area flowchart, Section 4.5), DGI treatments will be considered. Consult the *Enhanced DGI and Tree Canopy Guidance* for appropriateness of various DGI treatments.

NHS & Truck Routes – Not applicable.

6. Design Parameters

Each street type described in Section 5 has a unique set of parameters for Walkway, Flex Zone, and Travelway design criteria that make the street type compatible with and supportive of the various overlays and contexts in Madison.

6.1. Street Type Space Requirements

The combination of design criteria (e.g., number of travel lanes, terrace width, and sidewalks width) determine the typical overall width and minimum right-of-way required for each street type. These widths, and the widths of each zone within the street type, are shown below. Note that while minimum widths are identified, applying only the minimums for each zone in order to avoid making tradeoffs is not a good approach because it erases the priority between zones and results in a street design that does not function well for any use.

Street Type	Total Walkway Width (per side)[a]		Total Flex Zone Width (per side)[b]		Total Travelway Width [c]			Total Right-of-Way Width		Typical ADT (motor vehicles)
	Pref.	Min.	Pref.	Min.	Max.	Typ.	Min.	Typ.	Min.	
Urban Avenue	9'	6'	15'	10'	102	96'	76'	150'	108'	>20,000
Boulevard	7' if sidewalk	6'	15'	10'	102'	80'	76'	146'	108'	>14,000
Parkway	14' [d]	6'	20'	12'	62'	60'	22'	128'	58'	>10,000
Mixed-Use Connector	9'	6'	19'	8'	38'	38'	28' [e]	94'	56'	3,000 to 15,000
Community Main Street	9'	6'	18' [f]	9'	56' [f]	36'	36'	90'	66'	10,000 to 20,000
Community Connector	7' [g]	6' [g]	15'	9'	36'	36' [g]	26'	80'	56'	3,000 to 14,000
Mixed-Use Neighborhood Street	9'	6'	19'	9'	22'	20'	20'	78'	50'	<3,000
Neighborhood Street	6'	6'	15'	10'	22'	20'	18'	64'	50'	<3,000
Neighborhood Yield Street	6' [h]	6' [h]	17'	10'	16'	16'	14'	62'	46'	<1,500
Civic Space	13'	10'	19'	13'	Varies	Varies	20'	Varies	66'	<2,000
Neighborhood Shared Street	7' [i]	6' [i]	Varies	Varies	Varies	NA	NA	Varies	Varies	<500

[a] Includes 1' typical buffer between sidewalk and right-of-way line. If a sidepath is provided, the minimum pavement width is 8' and the preferred is 12-14' depending on volumes. At least 2' clear is required on each side of a sidepath.

[b] Includes curb, gutter, terrace and on-street parking, if present. See Section 6.2. There may be constrained right-of-way where the minimum may need to be as small as 3'.

[c] Total width at a midblock location. Includes all transit lanes, on-street bikeways, travel lanes, center turn lanes, and medians, but NOT on-street parking. Assumes a two-way street, with the exception of Mixed-Use Connector. Does not assume any center turn lane or median for streets where these features are noted as "not preferred" or "not

compatible" in Section 6.2. If and when a right or left turn lane is needed at an intersection, that would be in addition to the total Travelway width unless a lane drop (a travel lane becomes a turn-only lane) is provided. When additional space for a turn lane(s) is needed, space will be taken first from on-street parking, then from the median (if present, retaining a minimum pedestrian refuge space when feasible), and then from the terrace (retaining the minimum Flex Zone width for the street type). If this does not provide adequate space for turn lanes, additional right-of-way will be required.

[d] *Preferred Walkway may be a shared-use path on one-side and a typical sidewalk on the other side.*

[e] *The minimum Travelway width of the Mixed-Use Connector is based on a one-way street.*

[f] *Max Travelway width and preferred Flex Zone width are likely not both achievable on the same street for Community Main Streets, which are predominately in existing constrained corridors. Rather, if the Travelway width is greater than the typical value (to accommodate peak hour travel lanes), the minimum Flex Zone width is likely to be used.*

[g] *A 6' portion of the Travelway space could be allocated to the Walkway area to create a shared-use path.*

[h] *Neighborhood Yield Street could have a sidewalk on only one side in constrained conditions (e.g., "Court" streets).*

[i] *An accessible pedestrian space will be maintained year-round but it may not be a traditional sidewalk.*

6.2. Roadway (Travelway and Street Edge) Design & Space Allocation Parameters

Design criteria for roadways are determined using the table below. Deviation from the ranges specified should be carefully considered and occur rarely. When deviations occur, they will be documented appropriately.

	Travelway									
Street Type	**Typical # of Travel Lanes***	**Lane Width**			**Center Turn Lane / Median**	**Target Speed** (miles per hour)**	**Typical ADT** (motor vehicles)	**Total Pavement Width‡** (curb to curb)		
		Max.	Pref.	Min.				Max.	Typ.	Min.
Urban Avenue	4	11'	10'	10'	Median Standard	25	>20,000	106'	100'	80'
Boulevard	4	11'	10'	10'	Median Standard	25-30	>14,000	106'	84'	80'
Parkway	2-4	11.'	10'	10'	Median standard	25-35	>10,000	64'	64'	26'
Mixed-Use Connector	2	11'	10'	10'	Optional	25	3,000 to 15,000	56'	48'	32'
Community Main Street	2-3	10'	10'	10'	Optional (not common)	25 or less	10,000 to 25,000	60'	52'	40'
Community Connector	2-3	10'	10'	10'	Optional	25 or less	3,000 to 14,000	52'	46'	24'
Mixed-Use Neighborhood Street	No centerline†		N/A†		Not preferred	20-25	<3,000	38'	30'	30'
Neighborhood Street	No centerline†		N/A†		Not preferred	20 or less	<3,000	38'	36'	28' ∞
Neighborhood Yield Street	No centerline		N/A		Not compatible	20 or less	<1,500	32'	28'	24' ∞
Civic Space	No centerline		N/A		Not compatible	20 or less	<2,000	Varies	Varies	24'
Neighborhood Shared Street	No centerline		N/A		Not compatible	10 or less	<500	Varies	Varies	Varies

**Total both directions, not including bikeways or any dedicated transit lanes. Upper limits of these ranges may reduce available Flex Zone Street Edge space for on-street parking or loading zones.*

***For new streets, design speeds should match target speeds. For retrofit or reconstruction projects, designs should incorporate speed mitigation tactics to reduce speeding and achieve the target speed, as needed. One aspect of achieving lower speeds is reduced corner radii. Corner radii greater than 15' on local streets and 20' on arterial and collector streets should be reviewed and approved by City Traffic Engineer or City Engineer.*

†Unless ADT is above 4,000, then a centerline and lanes 10' min up to 11.5' max are provided.

‡ Total midblock curb-to-curb cross section with for the roadway, including all on-street parking, bike lanes, dedicated transit lanes, center turn lanes, and medians. Non-continuous right turn lanes and other factors that widen the roadway at intersections are not included in this figure.

∞Minimum curb-to-curb width for parking on both sides of the street is 36' for a Neighborhood Street and 28' for a Neighborhood Yield Street.

6.3. Speed Management Application Guidance

The table below identifies the compatibility of various speed management (also referred to as traffic calming) treatments with the street types. Treatments that are "maybe" compatible require further evaluation.

	Compatibility of Treatments with Street Types (Y=yes; M=maybe; N=no)										
Street Type	Signal Timing	Pedestrian Refuge / Median Islands	Curb Extensions	Road Diets	Raised Intersection	Raised Crosswalk *	Speed Humps **	All-Way Stops	Traffic Diverters	Chicanes	Choker / Pinchpoint
Urban Avenue	Y	Y	Y	Y	M	N	N	N	N	N	N
Boulevard	Y	Y	M	Y	M	N	N	N	N	N	N
Parkway	Y	Y	M	Y	M	M	N	N	N	N	N
Mixed-Use Connector	Y	Y	Y	Y	Y	M	N	M	N	N	N
Community Main Street	Y	Y	Y	Y	Y	M	M	M	N	N	N
Community Connector	M	Y	M	Y	Y	M	M	M	N	N	N
Mixed-Use Neighborhood Street	M	Y	Y	N	Y	Y	M	Y	M	M	M
Neighborhood Street	M	Y	Y	N	M	Y	M	Y	M	M	M
Neighborhood Yield Street	N	M	Y	N	M	Y	Y	Y	Y	Y	Y
Civic Space	Y	M	Y	N	Y	Y	M	Y	M	M	Y
Neighborhood Shared Street	N	N	M	N	Y	Y	Y	Y	Y	Y	Y

**Compatibility regarding crossing the street type listed. These treatments may be suitable parallel to the street type, at intersections with other street types. For example, a raised crosswalk may be compatible across a Mixed-Use Neighborhood Street where it intersects an Urban Avenue. Compatibility with street type does not indicate compatibility with maintenance needs, grades, drainage, and potential for flooding issues.*

***Not compatible on transit routes.*

7. Implementation

City of Madison street-related transportation decisions will follow the Complete Green Streets Guide. This includes all types and phases of projects, including planning, design, construction, operation, and maintenance. Implementation of Complete Green Streets will encompass all elements within the public right of way, including transit stops, bikeways, parking, on-street parking, sidewalks, trees, green stormwater infrastructure, and more. The process by which the Complete Streets Policy is applied will be scaled appropriately for each individual project or initiative, including private developments that influence the public right of way.

However, it is important to recognize that this is a long-term process that applies to street projects as they come up. Complete Green Streets **will not** be implemented by quickly retrofitting every street. Rather, this Guide applies when a street project is identified as part of new development or through the City's Transportation Improvement Program (TIP).

7.1. Roles and Responsibilities

The Complete Green Streets Guide, and corresponding ordinance, is meant to be the starting point for all street designs and sub-area plans. Staff will use the guide to develop street design alternatives that are consistent with the guide. The Transportation Commission will then have the opportunity to review and select design concepts for street construction and reconstruction that are consistent with the community values incorporated in the Complete Green Streets Guide.

The following defines roles and responsibilities needed to implement Complete Green Streets:

1. City staff and consultants will design streets consistent with the Complete Green Streets Guide
2. City staff and consultants will recommend street types based on the Complete Green Streets Guide
3. Street reconstructions that vary from the Complete Green Streets Guide shall only be implemented if granted an exception by the Transportation Commission
4. The Transportation Commission shall have the ability to modify the Complete Green Streets Guide on an annual basis to address unforeseen challenges and remain current with state-of-the-art street design practices; if there is a need for a policy-related change, Transportation Commission will refer that consideration to the Transportation Policy and Planning Board
5. The Transportation Commission shall have the ability to approve updates to the Transit Priority Network and All Ages Ability Bike Network
6. The Board of Public Works shall have the ability to approve updates to the tree canopy and green infrastructure priority area overlays
7. Sub-area plans and plats that recommend street facilities and right of way widths that vary from the Complete Green Streets Guide shall only be included if approved by the Transportation Planning and Policy Board

Additionally, City staff will work to modify Sections 16 and 33 of the Madison General Ordinances to be consistent with this Guide.

7.2. CGS Project Checklist

The *CGS Project Checklist* is used to document project-level decisions and implementation of the policy and should accompany project documentation through the approval process. The checklist will document the project decisions and input that have been considered as part of project development as well as reflect steps taking to ensure equity in street projects. Small spot improvements or maintenance only projects will not be required to complete the checklist. However, the overall planning for such activities will reflect the City's modal hierarchy and street values.

Key elements of the project checklist include:

- Record of project extents, improvement type, schedule, project staff, and context.
- Identification of the Street Type, Overlays, and nearby facilities and destinations that influence street design.
- Inventory of conditions (including crash data, speeds, traffic volumes, infrastructure present, pavement condition, school zones, parking, etc.)
- Identification of engagement efforts and outcomes—What concerns were raised? What are top priorities? How are concerns being addressed?
- Illustration of the initial proposed cross section and the approved cross section.
- Description of how the final design will be communicated to the community and the final design elements included in the project.

If the project is within an EPA (see Sections 3 and 4.2), the checklist also requires City staff to:

- Use the City's RESJII Public Participation Guide to assist in developing an engagement plan appropriate for the project.
- Identify and document opportunities to work together with other departments on engagement.
- Identify how previous plans or engagement efforts in the area help inform priorities or concerns for the project.
- Document feedback on the engagement and design process.
- List issues or concerns identified that were *not* addressed by the street project, along with listing departments or staff notified of the issues.

7.3. Staffing Needs and Training

Complete Green Streets provides guidance on implementing several newer street design concepts that the City has been experimenting with over the last several years. Therefore, implementing some of the design features identified in this Guide—especially pertaining to green infrastructure—will require additional staff time due to the additional maintenance requirements. Adopting this guide also necessitates providing training to staff so that the application of the Guide and its concepts can be consistent and equitable.

Training

City staff involved in development review, planning, and traffic engineering will need time for training to become familiar with this Guide so that it can be applied in a more uniform manner across City departments. Other City departments that may be tangentially involved with street projects should also be informed about the Guide through presentations or other coordination across departments. The EPA process (see Section 3) applies to a very small proportion of streets in Madison but the need to prioritize those areas, engage in additional coordination and engagement, and better understand residents' concerns, may also require special training with the City's RESJII process to create connections and understanding between different City departments and residents.

Additional Staffing Needs

By setting forth a consistent process, the City intends for this Guide to lessen the staffing needs during the design stage of street construction projects. Complete Green Streets aims to reduce both the number of public meetings and the number of alternative designs required. However, the process will also result in additional elements—such as permeable pavement, protected bike lanes, and street trees—that when constructed, will require additional staff to maintain. These elements are things that Madison has been building and implementing in a more case-by-case approach, but with the adoption of modal network and priority area overlays, it is likely that they will be built in a more systematic way.

7.4. Standards and Guidelines

Street design is influenced by multiple standards and guidelines at the state and national levels. Some of these documents have a higher level of authority than others. The MUTCD and the AASHTO Green Book include standards that engineers are required to follow (or otherwise document variations from the standard). On the other hand, numerous guidelines—such as the NACTO suite of design guides—are intended to help designers make decisions and implement innovative designs.

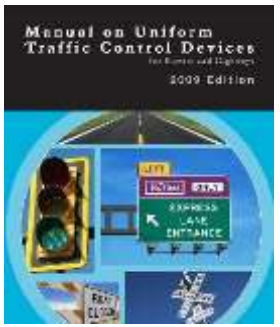
The following standards and guidelines informed and are adopted as part of this Complete Green Streets Guide.

Americans with Disabilities Act (ADA) and the Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Rights-of-Way (PROWAG)

The Americans with Disabilities Act requires that streets, sidewalks, and crossings be designed to be fully accessible to people with disabilities. The Access Board is developing new guidelines under the Americans with Disabilities Act (ADA) and the Architectural Barriers Act (ABA) that will address access to sidewalks and streets, crosswalks, curb ramps, pedestrian signals, on-street parking, and other components of public rights-of-way. These guidelines also review shared use paths, which are designed primarily for use by bicyclists and pedestrians for transportation and recreation purposes. The Access Board issued proposed guidelines for public comment. The Board is in the process of finalizing these guidelines.

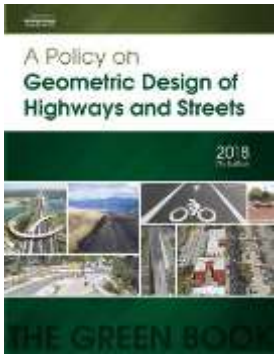
Manual on Uniform Traffic Control Devices (MUTCD)

The MUTCD is issued by the Federal Highway Administration of the U.S. Department of Transportation to specify the standards by which traffic signs, road surface markings, and signals are designed, installed, and used. These specifications include the shapes, colors, fonts, sizes, etc., used in road markings and signs. In the United States, all traffic control devices must generally conform to these standards. The manual is used by state and local agencies and private design and construction firms to ensure that the traffic control devices they use conform to the national standard.



AASHTO Green Book

The American Association of State Highway and Transportation Officials' (AASHTO) Policy on Geometric Design of Highways and Streets, 7th Edition, 2018, commonly referred to as the "Green Book," contains the current design research and best practices f or highway and street geometric design. The document provides guidance to engineers and designers who strive to make unique design solutions that meet the needs of roadway users while maintaining the integrity of the environment. Design guidelines are included for freeways, arterials, collectors, and local roads, in both urban and rural locations, paralleling the functional classification used in highway planning.



Highway Capacity Manual

The Highway Capacity Manual contains concepts, guidelines, and computational procedures for computing the capacity and quality of service of various roadway facilities. The Sixth Edition of the Highway Capacity Manual (2016) includes methodologies that engineers and planners use to assess the traffic and environmental effects of highway projects. Most notably, the manual includes an integrated multi-modal approach to the analysis and evaluation of urban streets from the points of view of automobile drivers, transit passengers, bicyclists, and pedestrians. This multi-modal approach is known as Multi-modal Level of Service or Quality of Service.

AASHTO Guide for the Development of Bicycle Facilities

The AASHTO Guide for the Development of Bicycle Facilities is a resource for the design, development, and maintenance of safe on- and off-street bicycle facilities. The Guide presents a set of best practices for designing roadways that comfortably accommodate a variety of user types. The information in the Guide is not intended serve as design standards, nor is it all encompassing. Rather, it aims at providing guidance that should be used in conjunction with other regulations such as the Manual on Uniform Traffic Control Devices (MUTCD). The guide has undergone substantial revision and expansion, and is in the final rounds of approval as of November 2022.

FHWA Separated Bike Lane Planning and Design Guide

The Separated Bike Lane Planning and Design Guide is issued by the Federal Highway Administration (FHWA) and provides guidelines for one- and two-way separated ("protected") bike lanes, including options for intersections, driveways, transit stops, accessible parking and loading zones. Recognizing this is a developing facility type, the guide provides case studies to aid in implementation. The guide also identifies data to collect before and after separated bike lane projects and potential future research to refine and improve the practice.

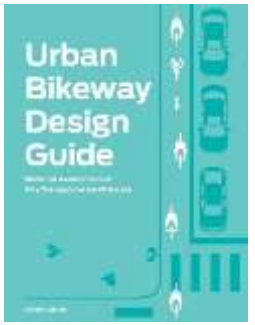
Enhanced Distributed Green Infrastructure & Tree Canopy Guidance (on the City's Complete Green Streets webpage)

This guidance is a supplement to the Complete Green Streets Guide and builds off of previous City green infrastructure and tree canopy-related efforts including existing City planning documents (2019 Urban Forestry Task Force Report, 2021 Green Infrastructure for Purposes of Flood Control Study, and the 2021 DGI Codes Project). While there are many stormwater/green infrastructure and street tree guidance documents readily available, this is a specific guidance that integrates DGI and tree canopy specifically to assist with decision making related to planning for and implementation of Complete Green Streets. This document includes street tree guidance related to suspended pavement and tree canopy enhancement, permeable pavement guidance, and nonpermeable pavement green infrastructure guidance.

NACTO Urban Street Design Guide

The purpose of the NACTO Urban Street Design Guide is to provide cities with state-of-the-practice solutions that can help to design complete streets in urban settings. The NACTO Urban Street Design Guide recognizes the direct relationship between street design and economic development and emphasizes safety for all traffic modes. The NACTO Urban Street Design Guide is not intended to be a comprehensive guide for the geometric design of the street, rather it covers design principles to meet the complex needs of cities. It builds off the street design manuals adopted by several cities since 2009. The NACTO Urban Street Design Guide references the MUTCD.

NACTO Urban Bikeway Design Guide



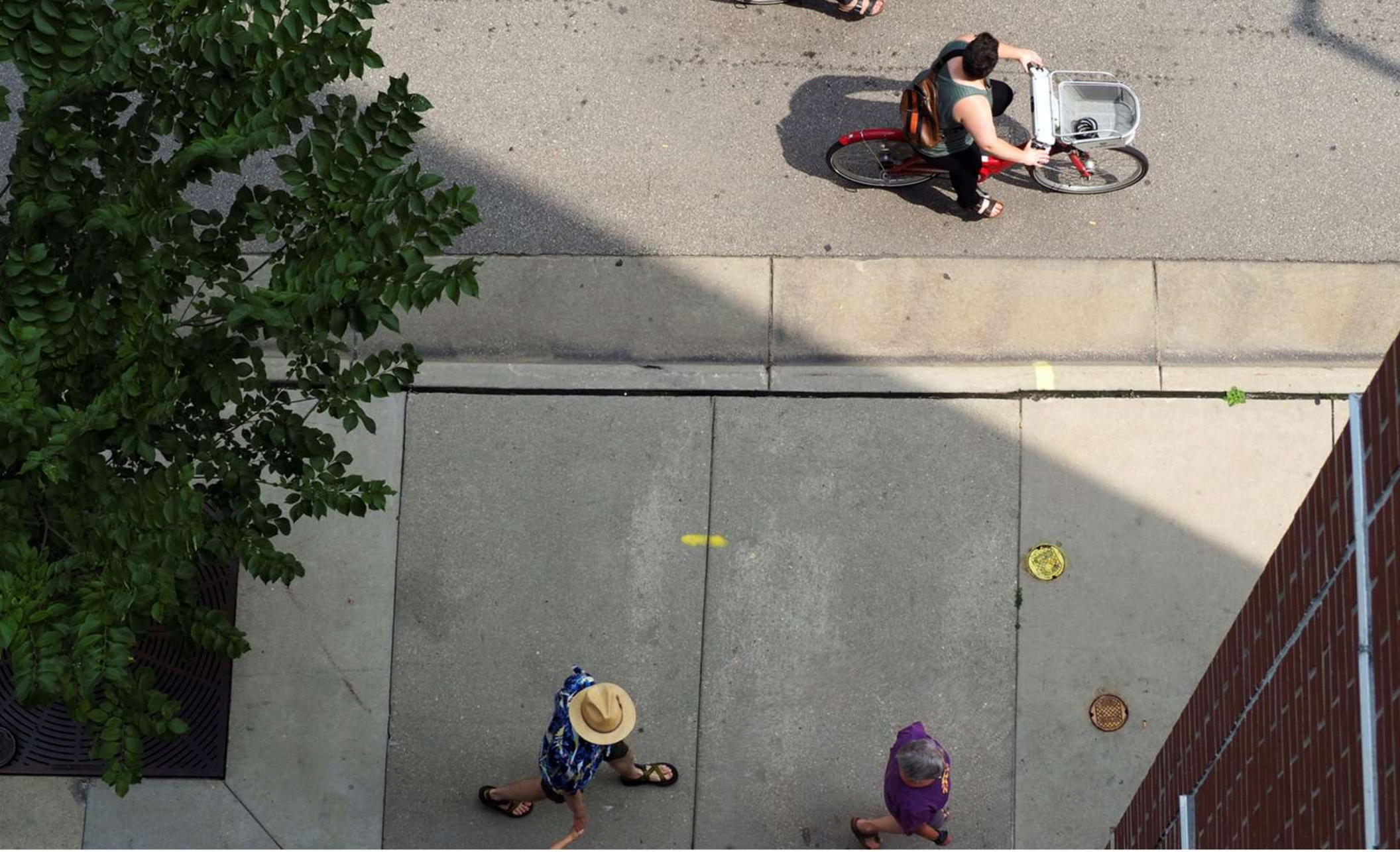
The purpose of the NACTO Urban Bikeway Design Guide is to provide cities with state-of-the-practice solutions that can help create complete streets that are safe and enjoyable for bicyclists. Most treatments included in the NACTO Urban Bikeway Design Guide are not directly referenced in the current (2012) version of the AASHTO Guide for the Development of Bicycle Facilities, although they are virtually all (with two exceptions) permitted under the MUTCD. The NACTO Urban Bikeway Design Guide is not intended to be a comprehensive guide for the geometric design of bikeways, rather it covers certain types of on-road bikeway designs, specifically bike lanes and several new and innovative types of on-street bikeway design treatments, but does not cover shared use paths, signal design, and many other relevant topics. In most cases, the NACTO Urban Bikeway Design Guide should be used in tandem with the AASHTO Bike Guide.

NACTO Transit Street Design Guide

The Transit Street Design Guide provides design guidance for the development of transit facilities, and for the design and engineering of city streets to prioritize transit, improve transit service quality, and support other goals related to transit. Included is guidance on integrating transit with other modes (most notably the integration of transit stops and bike lanes) and the design of specialized transit street elements.

GDCI Designing Streets for Kids Guide

The Global Designing Cities Initiative (GDCI) is a program that was incubated by NACTO and is now an independent initiative with its own design guides, including the Designing Streets for Kids Guide. The purpose of the guide is to focus on the specific design needs of children and their caregivers as pedestrians, cyclists, and transit users around the world. The guide captures best practices, strategies, programs, and policies used by cities from Bogotá to Moscow.



CITY OF MADISON TRANSPORTATION