



City of St. Louis Gateway Bike Plan Update

THE VISION FOR A LOW-STRESS BIKE NETWORK

AUGUST, 2021

Acknowledgments

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01

Plan Overview



Plan Overview

Plan Background

In 2012, Great Rivers Greenway completed and adopted the Gateway Bike Plan (“the Plan”), a cooperative planning effort with East-West Gateway Council of Governments, the City of St. Louis, the Counties of St. Louis and St. Charles, Metro Transit, Trailnet, and the Missouri Department of Transportation. The ambitious plan establishes a framework for continued interagency coordination and the implementation of a 1,000-mile on-street bicycle network to advance the plan’s overarching dual mission of increasing bicycling activity and decreasing crashes involving bicyclists.

Since the Plan’s adoption, Great Rivers Greenway and its partner agencies have worked diligently to bring the vision of a regional on-street bicycle system to life, installing more than 160 miles of on-street bikeways, establishing local and regional policies to support bicycle safety and mobility, and hosting thousands of community bike rides, rodeos, trainings, and other events to foster a culture that embraces and encourages bicycling. These successes have been documented over the years in Great Rivers Greenways’ annual Gateway Bike Plan Report Cards, which highlight major successes and provide letter grades for different implementation categories, like network development, education, encouragement, and supporting policies.

The Need for a Plan Update

In 2018, the Gateway Bike Plan Working Group, a subcommittee of East West Gateway Council of Governments’ Bicycle and Pedestrian Advisory Committee, worked with Great Rivers Greenway staff to update the Plan’s goals, objectives, and performance measures. These updates reflect regional ambitions to increase the Gateway Bike Plan network’s accessibility to people of all ages and abilities and focus on increasing comfort, safety, and separation from motor vehicle traffic through the installation of innovative best practices in bicycle facility design like separated bike lanes and calm streets.

While the 2018 goals, objectives, and performance measures embodied the collective ambition of regional stakeholders represented on the Gateway Bike Plan

Working Group, the Plan network still reflected the outdated planning and design guidance, much of which was based on guiding national documents from the 1990s and early 2000s.

In 2019, St. Louis County initiated a multi-year planning process to develop a countywide bicycle and pedestrian plan. Completed in early 2021, the St. Louis County Action Plan for Walking + Biking served as the county’s update to the Gateway Bike Plan network. In 2020, with the Action Plan under development, Great Rivers Greenway seized the opportunity to coordinate with agency staff and stakeholders in St. Charles County and St. Louis City to initiate updates to the Gateway Bike Plan network in these communities.

These three plan documents – the St. Louis City Gateway Bike Plan Update, the St. Louis County Action Plan for Walking and Biking and the St. Charles County Gateway Bike Plan Update – represent a significant transition in bicycle network planning in the region. While still retaining much of the Gateway Bike Plan components and network framework, these county and city plans focus on local agency empowerment through more tailored recommendations and implementation strategies that better address local contexts and embody local needs, ambitions, and capacities.

While state, county, and municipal agencies own and operate the roadway system on which the Gateway Bike Plan network is unfolding, Great Rivers Greenway has, in a sense, always “owned and operated” the Gateway Bike Plan, insofar as it led the planning process and has been at the forefront of the Plan’s implementation and regional coordination for nearly a decade. Upon its completion, the City of St. Louis Gateway Bike Plan Update will serve as the guiding resource for the city staff and their partner agencies working to advance bicycling in the city. As the local bicycle network evolves and the needs and values of St. Louis City residents change, updates and revisions to the Plan (or the development of a complete replacement) will continue a tradition of proactive planning and incremental change to grow as a bicycle friendly community.

Vision, Mission, and Goals

The Vision, Mission, Goals, and Objectives of the City of St. Louis Gateway Bike Plan Update are carried forward from the original Gateway Bike Plan as updated in 2018 by the Gateway Bike Plan Working Group. These updates reflect the current state of bicycle facility planning and design, incorporate the shared desire to focus on low-stress facility development, and address new challenges and opportunities to enhance the growing regional network of on-street bicycle facilities.

Vision

The Gateway Bike Plan will create the bicycle component to the regional transportation network that accommodates all users and promotes consistent design and development of bicycle facilities.

Mission

Increase the number of people using bicycles for transportation while reducing the number of crashes involving bicycles.

TABLE 1 GATEWAY BIKE PLAN GOALS AND OBJECTIVES

Goal	Objective
Goal 1: Provide a prioritized system of routes that are contiguous and connected to other on- and off-road facilities.	1.1 Improve accessibility and added safety for bicycling along on-street routes.
	1.2 Increase safety, comfort, and accessibility of the Gateway Bike Plan Network by designing low-stress bicycle facilities that support people of all ages and abilities.
	1.3 Improve accessibility and safety for bicycling around barriers like intersections and rivers.
	1.4 Improve the safety of existing facilities.
	1.5 Minimize the impact of construction activity on existing bicycle facilities.
	1.6 Reduce the rate of bicycle crashes by 50 percent by 2031.
	1.7 Promote more bicycling through route signing and end-of-trip facilities.
Goal 2: Improve safety for all modes of transportation through careful design and implementation of bicycle facilities.	2.1 Improve safety by designing all bicycle facilities to the latest AASHTO bicycle guidelines and 2009 MUTCD Standards.
Goal 3: Improve safety for all modes of transportation through the implementation of educational and enforcement programs.	3.1 Improve safety and reduce the number of crashes involving bicyclists by expanding, developing, and implementing education and enforcement programs through partnerships with community organizations.
	3.2 Educate staff in planning, design, maintenance, construction, and enforcement.
Goal 4: Expand the public’s view that bicycles are a viable/acceptable mode of transportation through encouragement programs.	4.1 Establish ongoing regional encouragement programs.
Goal 5: Increase the commitment of public officials to support or initiate public policy for bicycling in all levels of government – state, local, and regional.	5.1 Increase intergovernmental cooperation on bicycle policy and projects.
	5.2 Establish funding sources for implementation and on-going maintenance.

Plan Contents

The City of St. Louis Gateway Bike Plan Update consists of four chapters as outlined below.

Existing Conditions Review

This chapter of the Plan describes the current state of the Gateway Bike Plan network in St. Louis City. The chapter includes a narrative history of bikeway network development, an inventory of existing bicycle facilities, and recently completed plans and current projects that are reshaping the way St. Louisans travel by bike.

The Network

This chapter of the Plan presents the building blocks of the envisioned low-stress, all ages and abilities network, including bikeway types and design considerations, the bikeway selection process used to identify appropriate bikeway types for each corridor, and the future Gateway Bike Plan network itself.

Supporting Policies and Programs

This chapter of the Plan presents a menu of policies, programs, and implementation strategies for the City of St. Louis and its community partners to explore as options to support network development and build a stronger foundation for the future of bicycling in St. Louis.

Evaluating Plan Progress

This final chapter of the Plan presents key performance measures to document and track plan implementation over time. The performance measures from the original Gateway Bike Plan have been streamlined and updated to make the evaluation process more manageable and to better communicate to Gateway Bike Plan successes and accomplishments to residents and community leaders.



02

Existing Conditions



Keep parks and greenways open by **KEEPING YOUR DISTANCE**

Social distancing is NOT just an indoor activity!
Parks and greenways provide the outdoor space that's helping reduce people-to-people contact and helping to slow the spread of COVID-19. Help at home and outdoors by:
- Maintaining 6 feet of distance between all people.
- Avoiding crowds.
- Staying home if you are sick.
- Not touching anything.
Clean Greenways

Existing Conditions Review

Evolution of the Bicycle Network in St. Louis City

The bicycle network in the City of St. Louis has taken shape over the last three decades, growing from a handful of disconnected trails and bike lanes into a functional, city-wide system supporting recreation and transportation needs of St. Louis residents and visitors. The 150 miles of on-street bikeways and 40 miles of off-street trails that currently comprise the network represent years of effort, coordination, and investments from the City of St. Louis, Great Rivers Greenway, MoDOT, and countless residents and bicycle advocates. Yet there is still more work to be done to realize the vision advanced through recent plans and developments. Projects such as the Brickline Greenway, the Cortex-Tower Grove Connector, the 20th Street Revitalization Corridor, the Downtown Bike Plan, and Connecting St. Louis are just a few examples that are charting a new path for the future of bicycling in St. Louis, increasing the focus on separated, low-stress, and attractive bikeways and shared-use facilities that can support active transportation, strengthen community connections, and support revitalization and development efforts throughout the City.

This section of the plan describes the evolution of the on-street bicycle system in the City of St. Louis, covering major network expansion efforts, recent planning efforts, and current projects shaping the bicycling environment in the City.

Bike St. Louis Phase 1

In 2005, the Great Rivers Greenway and the City of St. Louis completed the first phase of the Bike St. Louis network, which consisted of approximately 21 miles of bike lanes and signed and marked bike routes. The network provided a system of routes connecting Downtown, Midtown, Central West End, Forest Park, Tower Grove Park, Lafayette Square, and Soulard. Bike St. Louis' branded wayfinding signs and pavement markings created a unique identity for the bicycle system. A Bike St. Louis printed map was developed and distributed throughout the St. Louis area. The map proved to be quite popular for residents and visitors and was updated over the years as more on-street routes were added to the system.

Bike St. Louis Phase 2

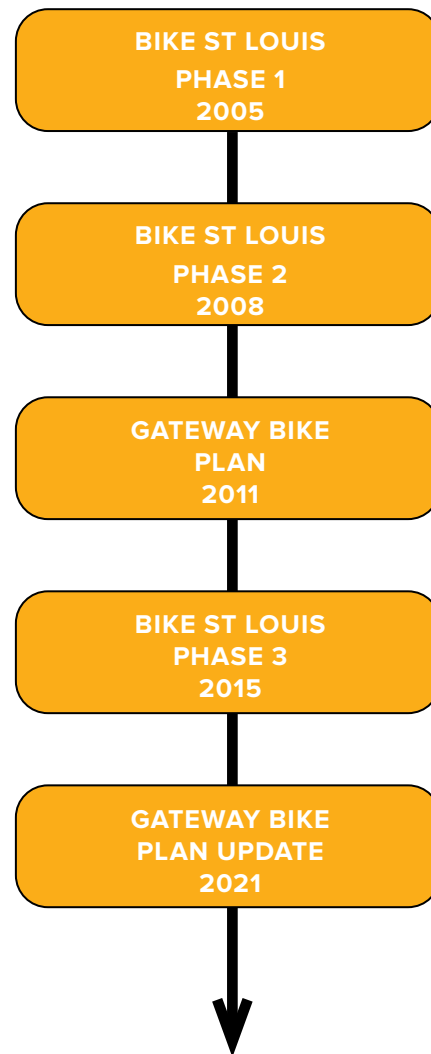
In 2008, Great Rivers Greenway and the City expanded the Bike St. Louis Network with roughly 55 miles of new bike lanes and designated routes, again consisting primarily of dedicated bike lanes and signed and marked shared lanes. In addition, a number of Bike St. Louis bicycle racks were included and installed throughout the City as public locations along the Bike St. Louis routes. Bike St. Louis Phase 2 represented the first effort to create a city-wide bicycle system in St. Louis. The growing system provided new connections to major parks, recreation facilities, business districts, transit stations, and other amenities and attractions. Phase 2 also included some of the first connections between St. Louis and adjacent municipalities in St. Louis County, including Maplewood and Clayton.

Gateway Bike Plan

While the Bike St. Louis Network was largely successful, there were still large gaps within the system and many high-stress routes that limited bicycle activity. At the same time, regional leaders began exploring how the surface transportation system might better support bicycling as a safe and viable transportation option. Great Rivers Greenway, the regional greenway district for the City of St. Louis, St. Louis County, and St. Charles County, brought together a multitude of agency, non-profit and community partners to develop a regional plan for on-street bicycle transportation, focusing on the development of a regional network of on-street bicycle facilities in addition to the growing network of regional greenways. The result of this collaborative effort was the 2011 Gateway Bike Plan, which set forth the blueprint for a 1,000-mile network of on-street bikeways in the City of St. Louis, St. Louis County, and St. Charles County. In addition to new bicycle facility projects, the plan also included policy and programming recommendations to support to further support active transportation. From 2012 through 2018, Great Rivers Greenway produced a report card to document implementation efforts across the region, highlighting new bikeway projects and success stories from local agencies and other community partners.

Bike St. Louis Phase 3

With the Gateway Bike Plan as a guide, the City of St. Louis and Great Rivers Greenway set about to improve Bike St. Louis with a third phase of development that included nearly 60 miles of new network connections and improvements to roughly 40 miles of existing bicycle infrastructure. Included in this phase was a complete inventory and upgrade of the Bike St. Louis wayfinding signage. Several “bicycle corrals” were designed and included in this phase and installed in neighborhoods along the routes where high bicycle parking demands existed. Completed in 2015, Bike St. Louis Phase 3 represented a significant advancement for bicycle network development, incorporating multiple road diets, buffered bike lanes, and other facilities that focused not just on connectivity, but on comfort and accessibility for a wider range of bicyclist types.



The Existing Bikeway Network

This section of the plan documents the components of the existing bicycle network in the City of St. Louis, focusing on the quantity and quality of the facilities that comprise it. This inventory provides a foundation on which recommendations can be developed for new bicycle facilities to strengthen the Bike St. Louis network in the years to come.

Existing Network

The 190 miles of existing trails and on-street bikeways in the City of St. Louis span the entire spectrum of bicycle facility types, from signed and marked routes to separated bike lanes and shared use paths. **TABLE 2** lists inventories system mileage by facility type. The bicycle network is also shown in **FIGURE 1**.

Major shared use paths in the City of St. Louis include the Mississippi Greenway (Riverfront Trail), the St. Vincent Greenway, the River des Peres Greenway, and the Forest Park perimeter trail, which although a loop trail, serves many transportation trips along the Central Corridor. Forest Park also serves as a major designation for Great Rivers Greenway's network, with existing connections with the St. Vincent and Centennial Greenways and future connections with the River des Peres and Brickline Greenways.

Many of the bike lanes, buffered bike lanes, and separated bike lanes, which comprise 28 percent of the total network, have been developed in recent years, with Bike St. Louis contributing significantly to the growth of these visually- and physically-separated bikeways. These include substantial undertakings like the Chestnut Street separated bike lane, Union Boulevard buffered bike lanes, Broadway buffered bike lanes, and Leonor K. Sullivan bidirectional separated bike lane, which is part of the Mississippi Greenway.

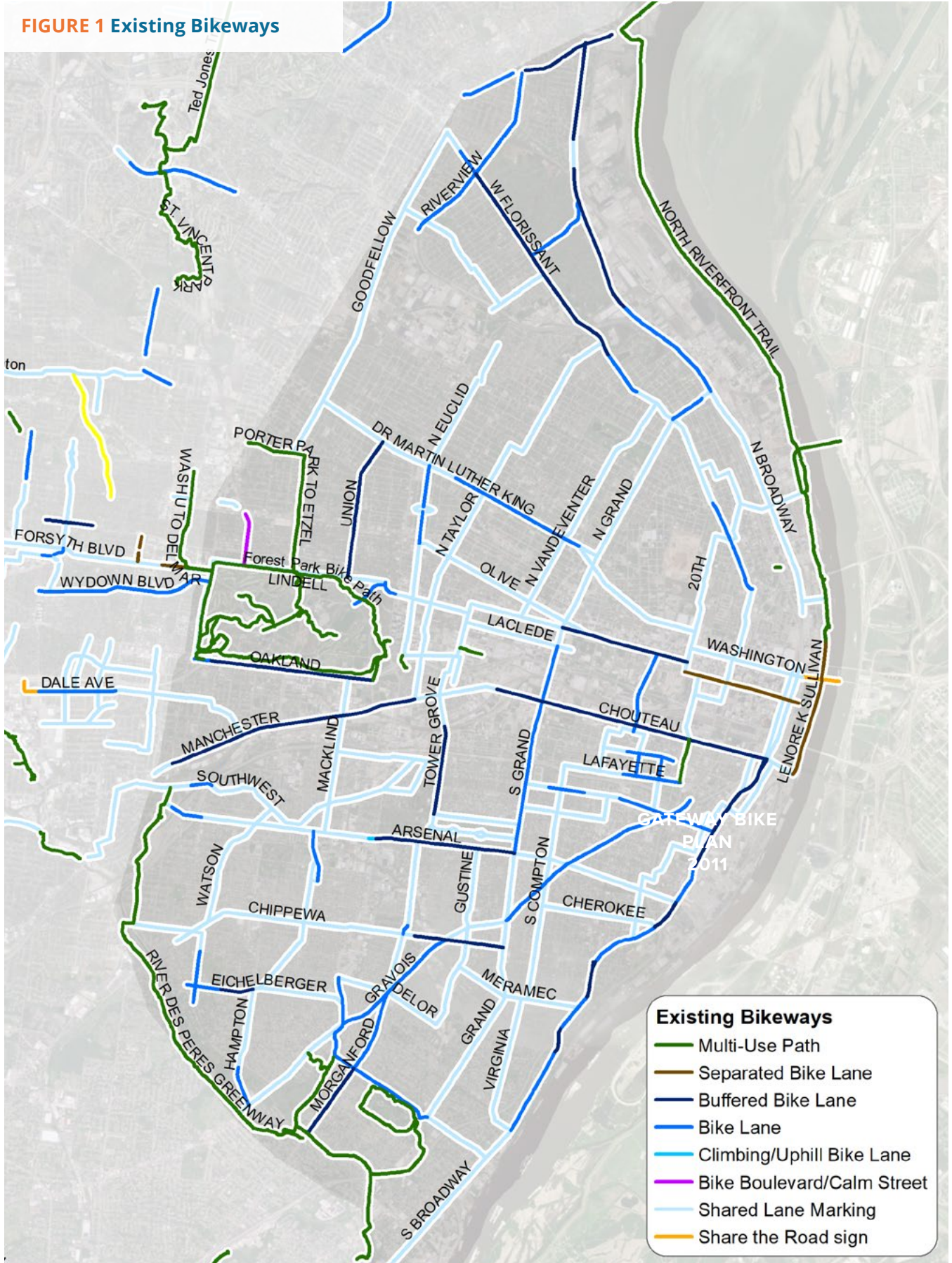
Roughly half the system consists of shared lane markings and wayfinding signage. While this is appropriate for certain contexts, such as neighborhood routes and short connections from more substantial bicycle facility types to nearby destinations, there are a number of streets in the City with shared lane markings and wayfinding signage that do not support less confident and/or less experienced riders who may find sharing a travel lane with motor vehicles on a multilane roadway intimidating or dangerous.

TABLE 2 EXISTING BICYCLE NETWORK (MILES)

Bicycle Facility Type	Miles of Existing Facilities
Shared-Use Path	40.2
Separated Bike Lane	2.7
Buffered Bike Lane	23.3
Conventional Bike Lane	28.0
Uphill Bicycle Lane	0.1
Calm Street (Bicycle Boulevard)	0.5
Marked and Signed Roadway (Shared Lane Marking and Wayfinding Signs)	94.6
Share the Road Signs	0.4
Total Bicycle Network	189.7



FIGURE 1 Existing Bikeways

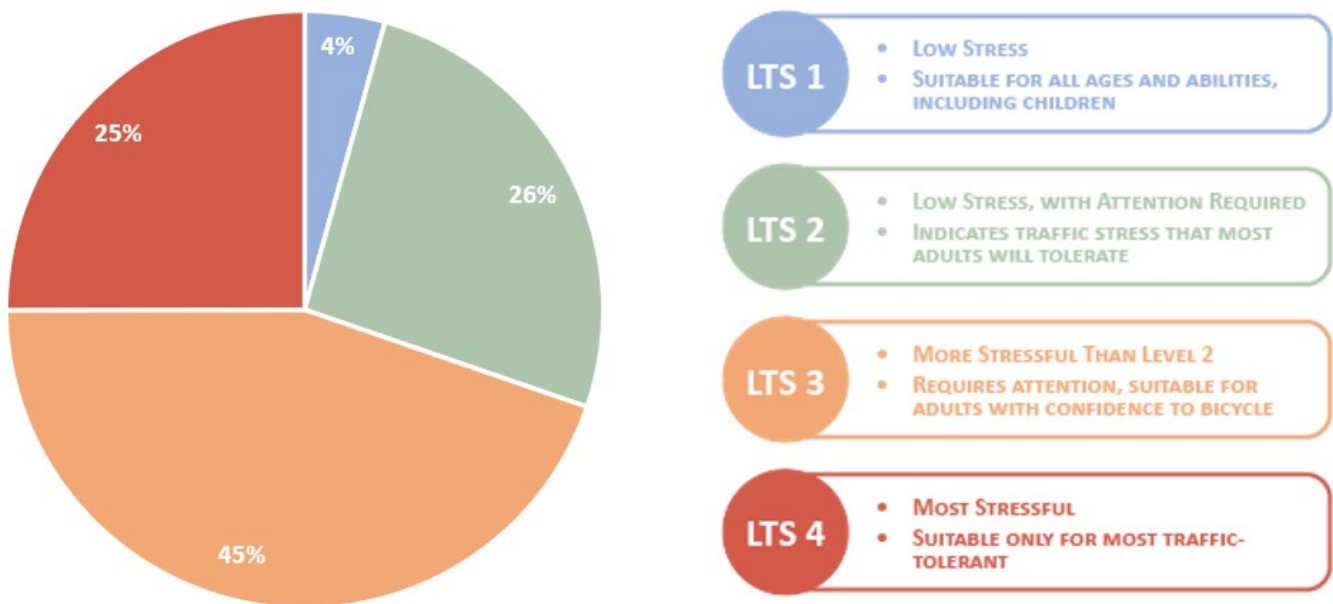


Level of Traffic Stress

In 2019, Great Rivers Greenway conducted a bicycle level of traffic stress (LTS) analysis for existing and planned facilities on the entire Gateway Bike Plan network to evaluate the current system’s ability to provide low-stress routes for bicyclists and to identify opportunities to enhance the network to better support people of all ages and abilities. Level of traffic stress is a method of classifying street segments based on the level of discomfort people feel while bicycling close to traffic. The method uses roadway characteristics like travel speed, number of travel lanes, dedicated bicycle facilities, and traffic volumes to assign a score to a given roadway segment. The LTS analysis revealed generally high levels of traffic stress (LTS 3 and LTS 4), which accounted for 70 percent of the built network, as shown in **FIGURE 2** below.



FIGURE 2 Level of Traffic Stress on Existing Gateway Bike Plan Facilities



Level of Traffic Stress (Continued)

A noticeable difference in level of traffic stress is evident when the full Gateway Bike Plan Service area is divided into its three distinct sub-areas: St. Charles County, St. Louis County, and St. Louis City. As shown in **FIGURE 3**, more than 40 percent of the existing and planned facilities in the City of St. Louis have low levels of traffic stress (LTS 1 and LTS 2), compared to just six percent in adjacent St. Louis County and five percent in St. Charles County. This indicates a greater overall level of comfort for people bicycling within the City, who benefit from a more well-developed network and a greater presence of dedicated facilities and lower-volume, lower-speed roadways on the Gateway Bike Plan network within St. Louis City. **FIGURE 4** on the following page illustrates the level of traffic stress results for existing and planned facilities on the Gateway Bike Plan Network.



FIGURE 3 Level of Traffic Stress in St. Charles County, St. Louis County, and St. Louis City

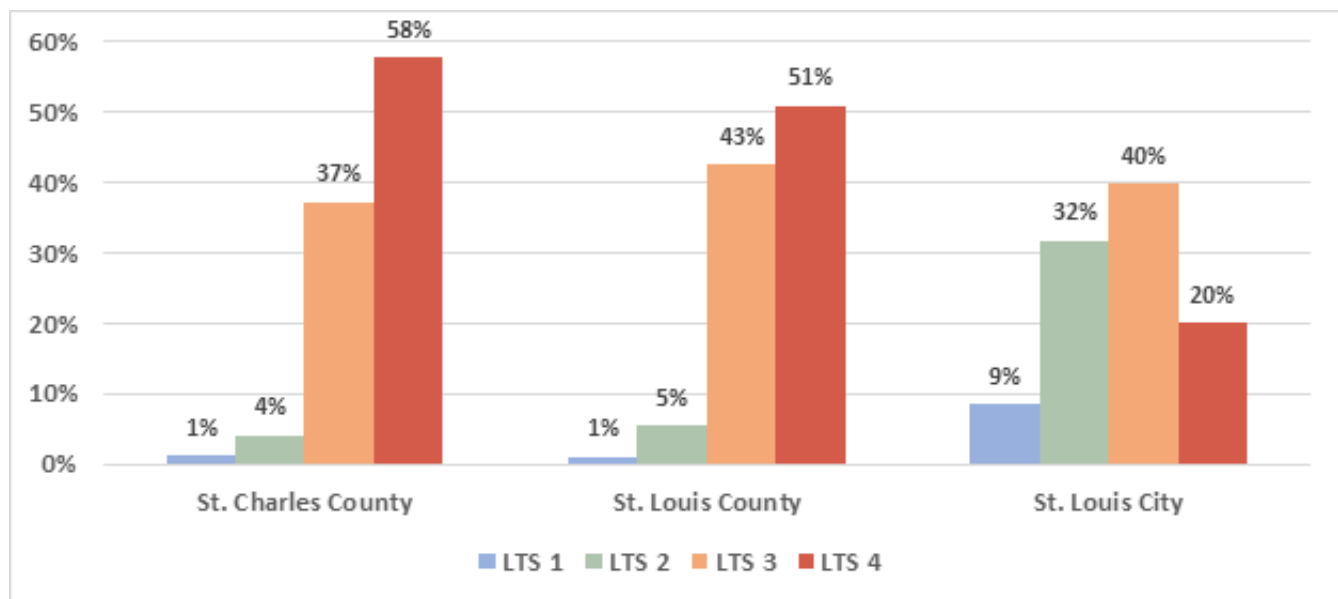
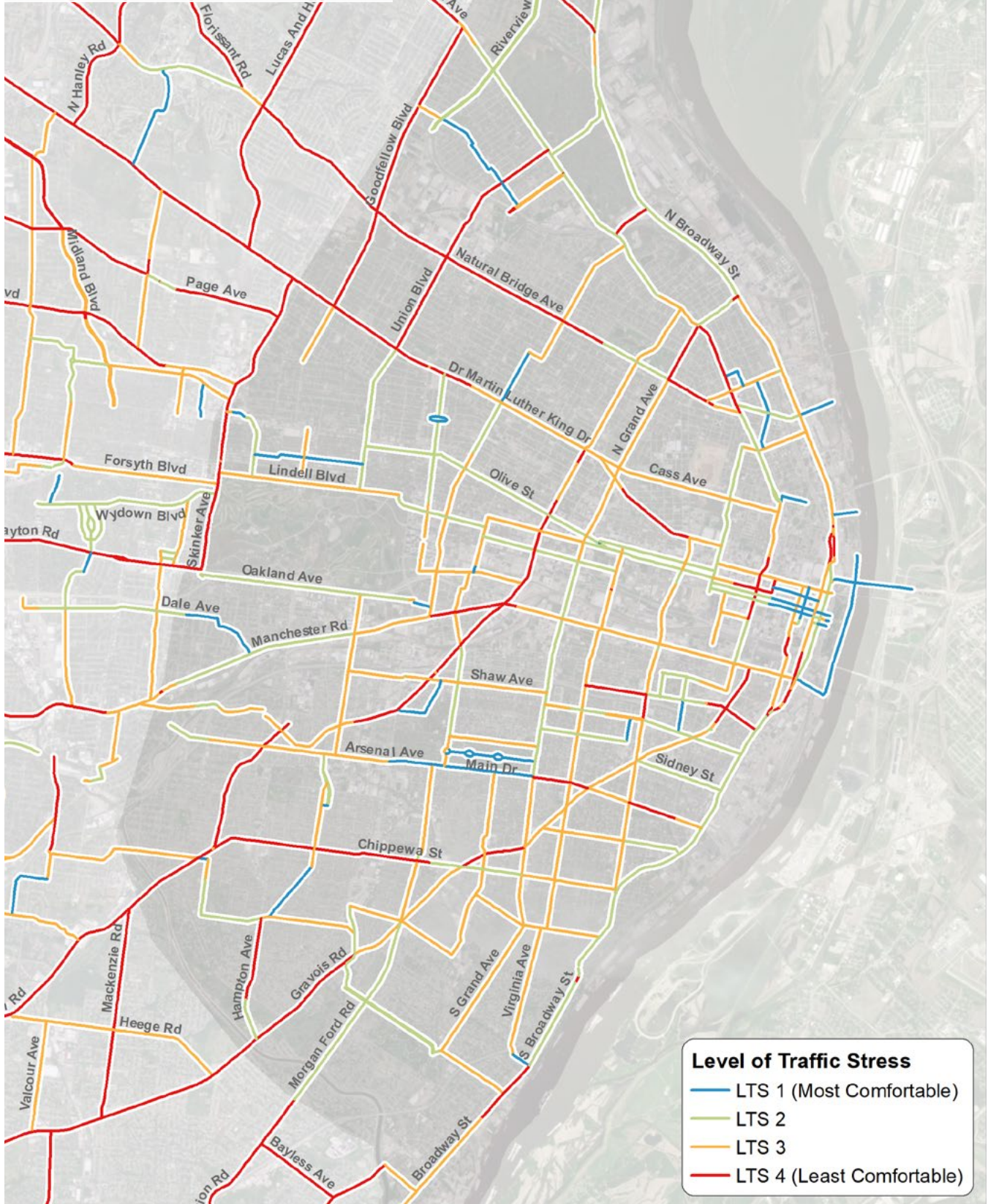


FIGURE 4 Level of Traffic Stress for Existing and Planned Gateway Bike Plan Network Facilities, 2019



Facility Quality/Need for Maintenance

Great Rivers Greenway also conducted a network audit in 2019, examining bicycle facility pavement, striping, marking, and signage conditions. The audit analyzed a 25 percent sample of the existing facilities across the network and included 37 miles of on-street bikeways in the City of St. Louis. While this represents just one quarter of the existing system in the City, the audit sample represents the variety of facility types and is distributed throughout the City.

The results of the audit highlighted the wide variability of facility quality not just throughout the region, but also within the City of St. Louis itself. Poorer pavement, markings, and striping conditions were more prevalent in the City of St. Louis than in other Gateway Bike Plan sub-areas. Bicycle facilities on more recently resurfaced roadways provide a smoother, more comfortable riding surface, as seen on corridors like Oakland Avenue. Conversely, aging pavement on corridors like North Grand Boulevard and South Broadway are more likely to present cracks, potholes, and other hazards for bicyclists. In addition, many of the striping and lane markings on these corridors are also in poor states of repair, and in some cases faded beyond recognition.

The audit emphasized the need for maintenance policies and protocols for local agencies to support the long-term viability of on-street bikeways, as well as the need to hold utility providers accountable for returning bicycle facilities to their original state following any repair or installation activities within the roadway.



Debris covering bike lane and marking on South Broadway, with faded shared lane marking visible in the outside travel lane.



Poor pavement condition and patching over shared lane markings on North Grand Avenue.

Planned/Proposed Projects

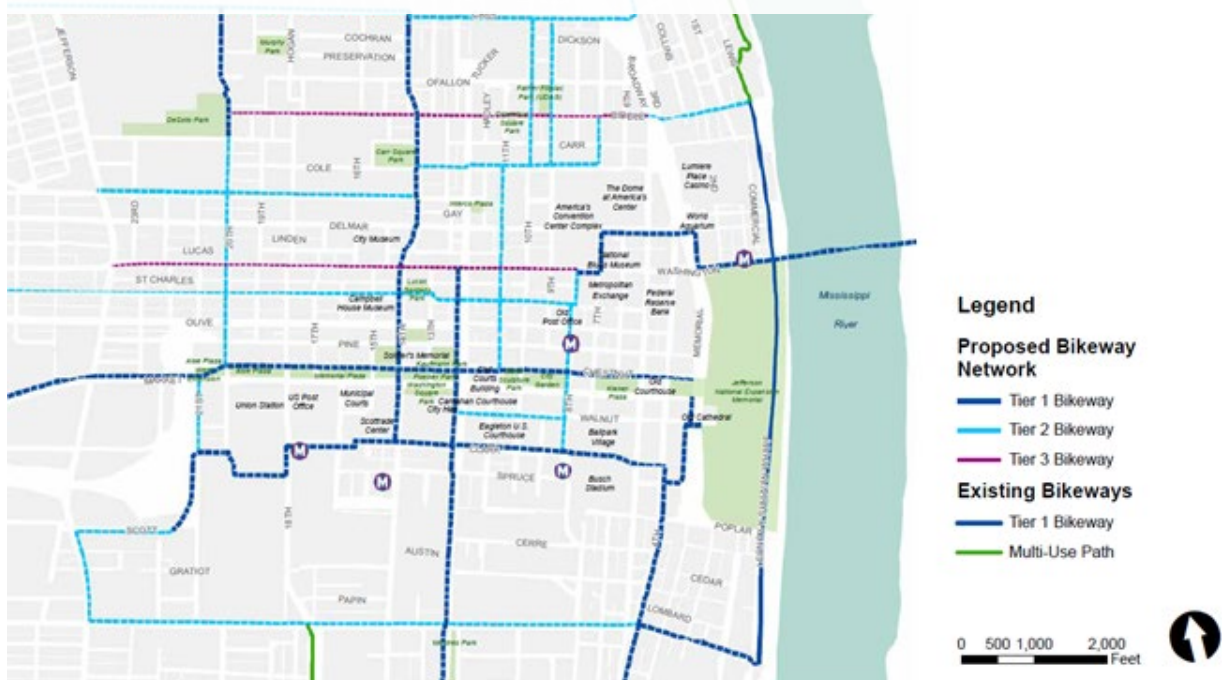
In addition to the Gateway Bike Plan Network, there are a number of planned and proposed bicycle networks or bicycle projects in various stages of implementation and development. A common theme among all these planned bikeway improvements is a focus on low-stress connectivity through separated bikeways, shared use paths, and calm streets. These plans and projects are presented below.

Downtown Multimodal Plan

In 2018, the City of St. Louis completed the Downtown Multimodal Plan, a major undertaking to align existing and planned transportation infrastructure and to increase transportation choices for Downtown residents, employees, and visitors. A major component of the study was the Downtown Bike Plan, which advanced the vision of a connected network of low-stress, separated bikeways within Downtown and to surrounding neighborhoods and districts. The resulting network recommendations, which are displayed in **FIGURE 5** below, have since been incorporated into the Gateway Bike Plan through the Gateway Bike Plan Working Group’s process for network amendments. **FIGURE 6** on the following page depicts the updated Gateway Bike Plan Network (existing and planned) with the Downtown Bike Plan recommendations included, as well as key trails and greenways in the City of St. Louis.



FIGURE 5 Downtown Bike Plan Recommended Network



Trailnet’s Connecting St. Louis Master Plan

Also completed in 2018, Trailnet’s Connecting St. Louis Master Plan presented a bold and transformational vision to connect neighborhoods, cultural districts, and employment hubs through a network of protected bikeways and sidewalk improvements. The document was the result of a multi-year planning and engagement effort, and Trailnet, the City of St. Louis, and a number of community partners have since worked to advance key projects proposed in this plan.

Cortex-Tower Grove Connector

One of the first projects to emerge from this plan is the Cortex-Tower Grove Connector, a low-stress, separated two-way cycle track along Tower Grove Avenue, Vandeventer Avenue, and Sarah Avenue. The project represents a major low-stress connection along one of the busiest bicycle corridors in the City, providing a direct link between Tower Grove Park and surrounding South City neighborhoods to Cortex, Central West End, Saint Louis University, Barnes-Jewish Hospital, and other major institutions and destinations in the Central Corridor. A segment of the corridor from the intersection of Magnolia and Tower Grove avenues to the intersection of Sarah and Vandeventer avenues received CMAQ funding in 2020 and is scheduled for construction in 2023.

FIGURE 7 Connecting St. Louis Master Plan



Tucker Boulevard Separated Bikeway

Another planned bikeway emerging from the Connecting St. Louis Plan is the Tucker Boulevard separated bikeway. In 2020, the City of St. Louis applied for \$1.1M in TAP funding to add a bidirectional separated bike lane to Tucker Boulevard from Washington Avenue to Chouteau Avenue. The project would provide a valuable low-stress connection across the Mill Creek rail yard, linking LaSalle Park, Peabody Darst Webbe, Lafayette Square, Soulard, and other South City neighborhoods to Downtown St. Louis. The lack of low-stress north-south connections into Downtown St. Louis has been an impediment to bicycling in the City's core for decades, and while a number of connections have been made through recent iterations of Bike St. Louis, none have provided the level of service and direct access to major destinations in Downtown as planned with this project.



Rendering of the proposed Tucker Boulevard bikeway, looking south from the intersection of Tucker Boulevard and Chestnut Street. (Source: Trailnet.org)

Brickline Greenway

Currently in the early stages of development, the Brickline Greenway (formerly called the Chouteau Greenway) is a planned network of interconnected greenways linking Forest Park, Gateway Arch National Park, Fairground Park, Tower Grove Park, as well as many neighborhoods, business and cultural districts, major employers, and other destinations in St. Louis. Great Rivers Greenway, the driving force behind the Brickline Greenway, is actively working to develop a number of key sections, including a connection between the Central West End and Midtown, and a connection between Fairground Park and Grand Center Arts District. The first segment of Brickline Greenway, a quarter mile trail, opened in 2018 and was built in cooperation with Bi-State/Metro and Cortex at the new Cortex light rail station



Rendering of the future Brickline Greenway section along Market Street in Downtown St. Louis.

FIGURE 8 : Brickline Greenway with Existing and Future Greenway Projects



20th Street Revitalization Corridor

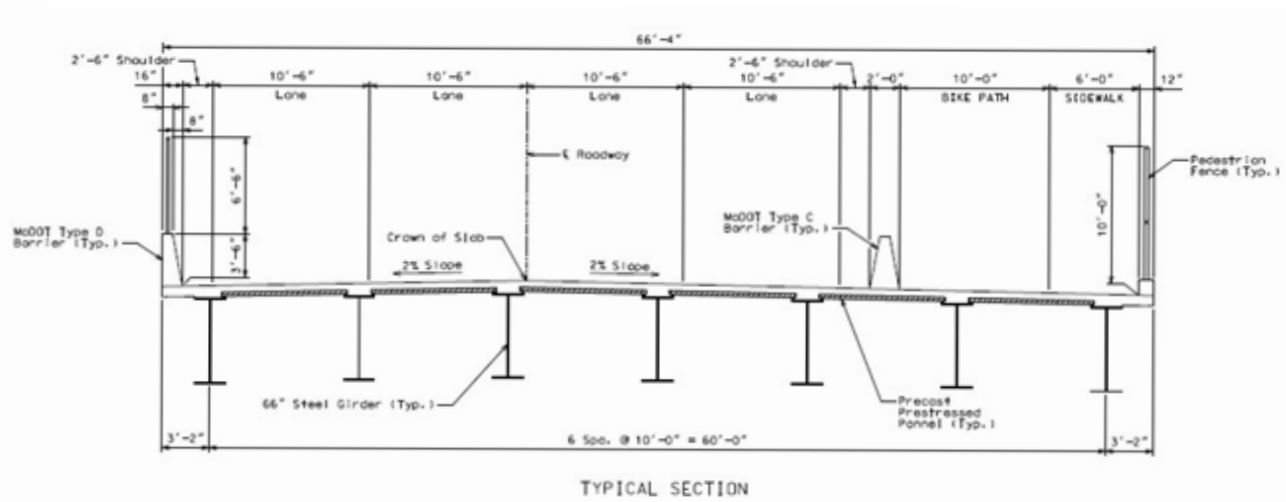
While 20th Street is already an existing component of the Bike St. Louis Network, the corridor represents a critical connection between Downtown St. Louis and the NGA West development site. A bidirectional separated bike lane has been planned from Market Street to Carr Street, transitioning to marked shared lanes north to North Market Street, then transitioning again to a shared use path north to St. Louis Avenue. Funding for the 20th Street project has been secured, and design is set to begin in the Fall of 2021.



Rendering of the 20th Street separated bikeway as included in the City's BUILD Grant application.

Compton Avenue Bridge Reconstruction

The City of St. Louis is in the process of designing the new Compton Avenue Bridge, which spans from Spruce Street south to Chouteau Avenue. The proposed bridge includes a two-way separated bike lane, providing a valuable low-stress link across the Mill Creek Railyard and Interstate 64. The project will link the Gate District, Compton Heights, Saint Louis University South Campus, and nearby neighborhoods with Midtown, Grand Center, Harris-Stowe State University and Saint Louis University North Campus. Great Rivers Greenway is providing financial support to the project to ensure the bridge span will be long enough to accommodate the future Brickline Greenway alignment below the bridge along the north side of the MetroLink and railroad corridor.



Compton Bridge typical section, including 10-foot bidirectional separated bike lane.

03

The Network



The Network

Planning a System for All

The mission of the Gateway Bike Plan is to increase the number of people using bicycles for transportation while reducing the number of crashes involving bicycles. In order to do increase ridership, the City of St. Louis must examine who the bicycle system currently serves and what changes can be made to make bicycling more accessible to more people. Understanding the attitudes, perceptions, and design needs of potential bicycle system users can help local agencies plan and design for people of all ages and abilities.

Types of Users

Bicyclist skill level greatly influences expected speeds and behavior, both in separated bikeways and on shared roadways. Bicycle infrastructure should accommodate as many user types as possible, with decisions for separate or parallel facilities based on providing a comfortable experience for the greatest number of people.

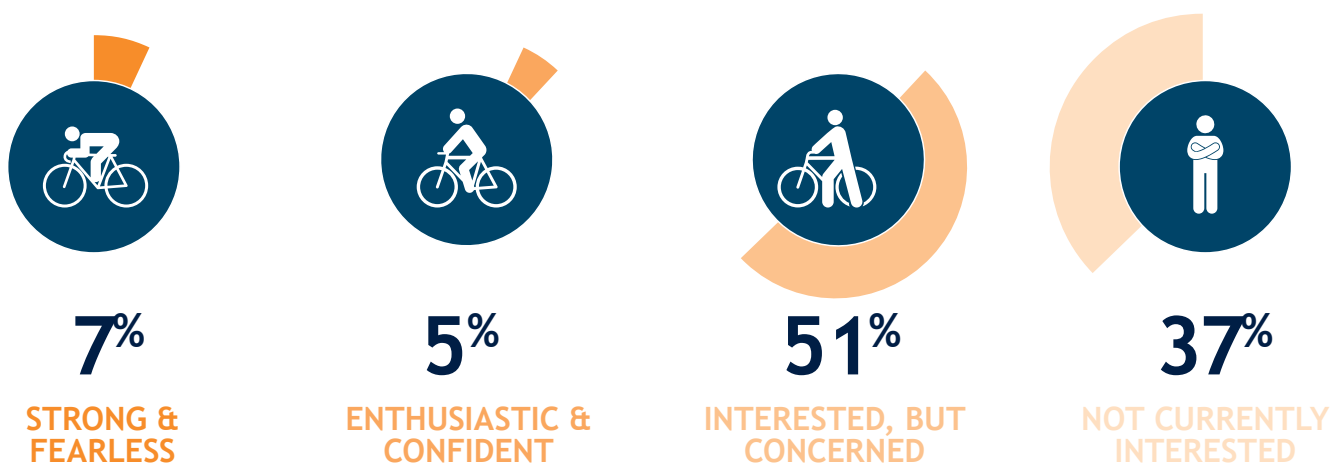
The bicycle planning and engineering professions currently use several systems to classify current and potential bicyclists, which can assist in understanding the characteristics and infrastructure preferences of different system users. In the original Gateway Bike Plan, bicycle user types were classified using guidance from the 1999 AASHTO Guide for the Development of Bicycle Facilities, which referred to a 1994 FHWA report grouping riders into advanced, basic, and children riders. While the Gateway Bike Plan network was intended to serve all these users, many of the recommendations on busier arterial roads did not provide the level of comfort to support basic and children riders.

In order to increase bicycling activity, the City of St. Louis must increase access to bicycling, and this requires a sustained commitment to interconnected, low-stress facilities that link residents to parks, schools, business districts, employment opportunities, transit, and other everyday destinations.

The current 2012 AASHTO Guide to the Development of Bicycle Facilities encourages designers to identify their rider type based on the trip purpose (Recreational vs Transportation) and on the level of comfort and skill of the rider (Casual vs Experienced). A more detailed framework for understanding the United States population's relationship to transportation-focused bicycling is illustrated in the **FIGURE 9** on page 23. Initially developed in Portland, Oregon, subsequently tested and applied across the United States in various academic publications, this classification provides four alternative categories to address varying attitudes towards bicycling in the United States: Strong and Fearless, Enthusiastic and Confident, Interested but Concerned, and Not Currently Interested.

In order to increase bicycling activity, the City of St. Louis must increase access to bicycling, and this requires a sustained commitment to interconnected, low-stress facilities that link residents to parks, schools, business districts, employment opportunities, transit, and other everyday destinations. When designing new facilities, the City of St. Louis, MoDOT, and its implementation partners should consider a wider range of intended design users and address the needs of people interested in bicycling but concerned about traffic safety.

FIGURE 9 : Types of Bicyclists¹



Strong and Fearless

This group will typically ride anywhere regardless of roadway conditions or weather. These bicyclists can ride faster than other user types, prefer direct routes and will typically choose roadway connections (even if shared with vehicles) over separate bicycle facilities such as shared-use paths.

Enthusied and Confident

This user group encompasses bicyclists who are fairly comfortable riding on all types of bikeways but usually choose low traffic streets or shared-use paths when available. These bicyclists may deviate from a more direct route in favor of a preferred facility type. This group includes all kinds of bicyclists such as commuters, recreationalists, racers and utilitarian bicyclists.

Interested but Concerned

This user type comprises the bulk of the cycling population and represents bicyclists who typically only ride a bicycle on low traffic streets or shared-use paths under favorable weather conditions. These bicyclists perceive significant barriers to their increased use of cycling, specifically traffic and other safety issues. These people may become “Enthusied and Confident” with encouragement, education and experience.

Not Currently Interested

Persons in this category are not bicyclists, and perceive severe safety issues with riding in traffic. Some people in this group may eventually become more regular cyclists with time and education. A significant portion of these people will not ride a bicycle under any circumstances.

¹ Jennifer Dill and Nathan McNeil, “Revisiting the Four Types of Cyclists: Findings from a National Survey,” *Transportation Research Record: Journal of the Transportation Research Board*, 2587: 90-99, 2016. The percentages presented in this graphic represent findings from a national survey of the 50 largest US metropolitan areas. Local percentages may vary.

Bikeway Types

This section serves as an inventory of bicycle and trail design treatments recommended in the Plan and provides guidelines for their application and development. These treatments and design guidelines are important because they represent the tools for creating a safe, accessible, low-stress bicycle system in the City of St. Louis. The guidelines are not, however, a substitute for a more thorough evaluation by a landscape architect or engineer upon implementation of facility improvements.



Shared Roadway

- Signed bike route, sharing the roadway with motor vehicles
- Can include pavement markings
- Used when space for bike lane may not be feasible



Calm Street

- Calm streets where bicyclists have priority, but share roadway space with automobiles
- Includes marked pavement markings, speed humps or traffic diverters



Bicycle Lane

- Dedicated lane for bicycle travel adjacent to traffic



Buffered Bicycle Lane

- Dedicated lane for bicycle travel separated from traffic by a painted buffer
- Adding a buffer provides additional comfort and space from motor vehicles and/or parking



Separated Bike Lane

- On-Street bike lane separated from motor vehicle traffic by curb, median, planters, parking, or other physical barrier



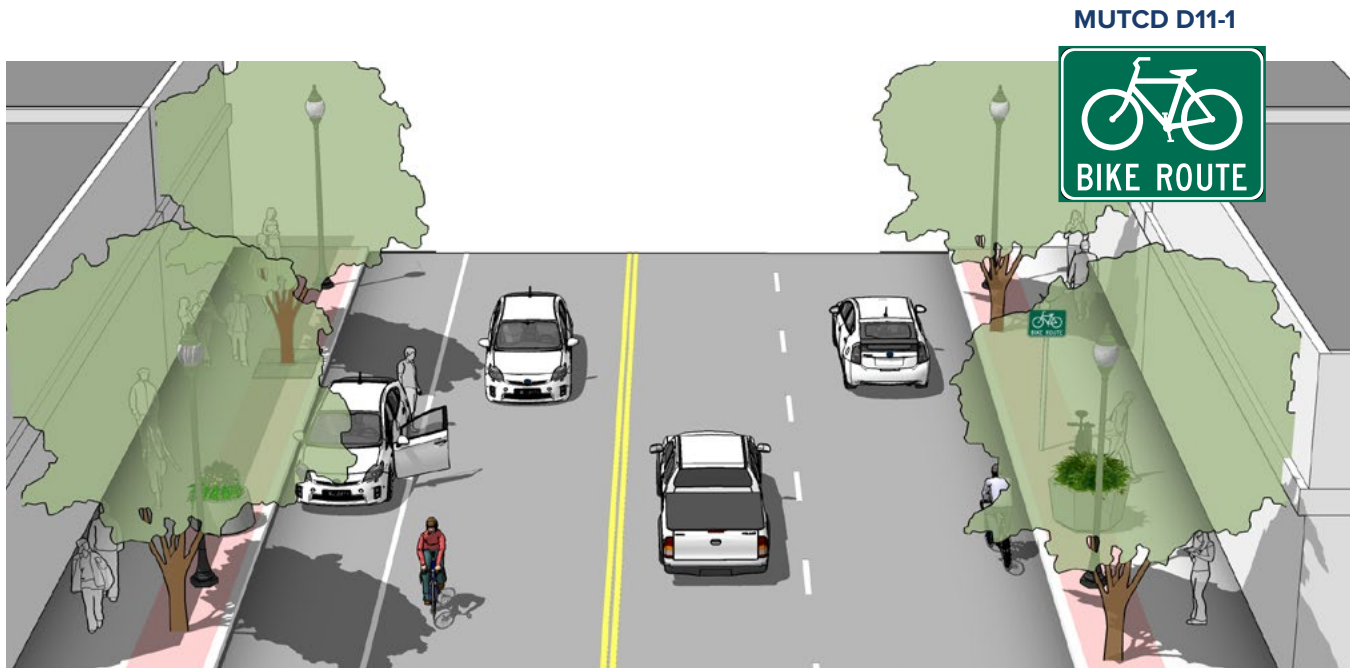
Shared- Use Path/Sidepath

- Paths shared by people walking, biking, rolling, and using wheelchairs or other mobility assistance devices, completely separated from motor vehicle traffic
- Comfortable for people of all ages and abilities

Signed Shared Roadways

Signed shared roadways are facilities shared with motor vehicles. They are typically used on roads with low speeds and traffic volumes, however can be used on higher volume roads with wide outside lanes or shoulders. A motor vehicle driver will usually have to cross over into the adjacent travel lane to pass a bicyclist, unless a wide outside lane or shoulder is provided.

While signed shared roadways can increase awareness of bicycle use along a corridor, they are not a bicycle facility and should not be used as a substitute for bicycle lanes or separated bikeways where warranted or space permits.



Typical Application

- Signed Shared Roadways serve either to provide continuity with other bicycle facilities (usually bike lanes) or to designate preferred routes through high-demand corridors.
- This configuration differs from a bike boulevard due to a lack of traffic calming, wayfinding, pavement markings and other enhancements designed to provide a higher level of comfort for a broad spectrum of users.

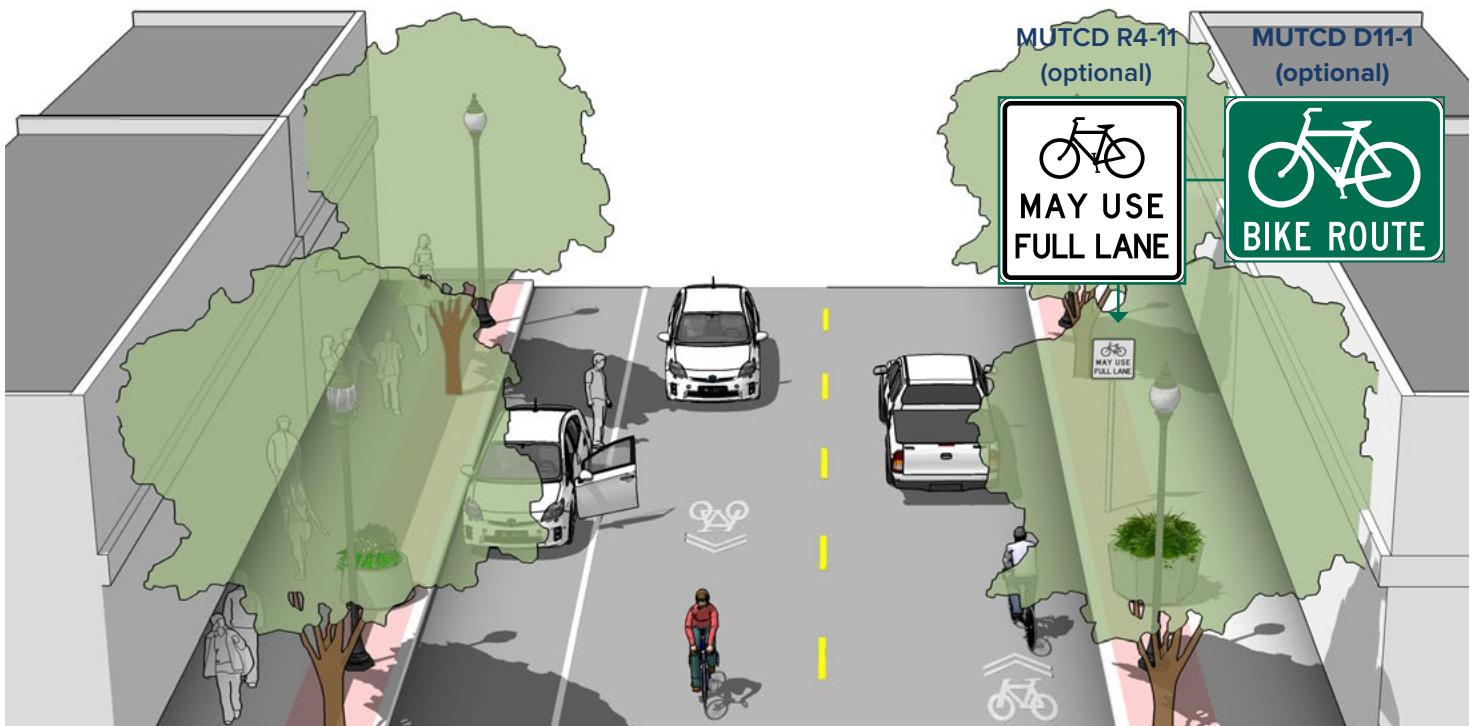
Design Features

- Lane width varies depending on roadway configuration.
- Bike route signage (D11-1) should be applied at intervals frequent enough to keep bicyclists informed of changes in route direction and to remind motorists of the presence of bicyclists. Commonly, this includes placement at:
 - Beginning or end of a bicycle route.
 - At major changes in direction or at intersections with other bicycle routes.
 - At intervals along bicycle routes not to exceed ½ mile.

Marked Shared Roadways

A marked shared roadway is a general purpose travel lane marked with shared lane markings (SLM) used to encourage bicycle travel and proper positioning within the lane.

Similar to signed bike routes or shared roadways, the use of shared lane markings can support proper lane positioning and increase awareness of bicycle use along a corridor; however, they are not a bicycle facility and should not be used as a substitute for bicycle lanes or separated bikeways where warranted or space permits.



Typical Application

- In constrained conditions, the SLMs are placed in the middle of the lane. On a wide outside lane, the SLMs can be used to promote bicycle travel to the right of motor vehicles.
- In all conditions, SLMs should be placed outside of the door zone of parked cars.

Design Features

- May be used on streets with a speed limit of 35 mph or under. Lower than 30 mph speed limit preferred.
- In constrained conditions, preferred placement is in the center of the travel lane to minimize wear and promote single file travel.
- Minimum placement of SLM marking centerline is 11 feet from edge of curb where on-street parking is present, 4 feet from edge of curb with no parking. If parking lane is wider than 7.5 feet, the SLM should be moved further out accordingly.

Calm Streets

Calm streets, often referred to as bicycle boulevards, are low-volume, low-speed streets modified to enhance bicyclist comfort by using treatments such as signage, pavement markings, traffic calming and/or traffic reduction, and intersection modifications. These treatments allow through movements of bicyclists while discouraging similar through-trips by non-local motorized traffic.



Typical Application

- Parallel with and in close proximity to major thoroughfares (1/4 mile or less).
- Follow a desire line for bicycle travel that is ideally long and relatively continuous (2-5 miles).
- Avoid alignments with excessive zigzag or circuitous routing. The bikeway should have less than 10 percent out of direction travel compared to shortest path of primary corridor.
- Streets with travel speeds at 25 mph or less and with traffic volumes of fewer than 3,000 vehicles per day.

Design Features

- Signs and pavement markings are the minimum treatments necessary to designate a street as a bicycle boulevard.
- Implement volume control treatments based on the context of the bicycle boulevard, using engineering judgment. Target motor vehicle volumes range from 1,000 to 3,000 vehicles per day.
- Intersection crossings should be designed to enhance safety and minimize delay for bicyclists.



Calm streets are established on streets that improve connectivity to key destinations and provide a direct, low-stress route for bicyclists, with low motorized traffic volumes and speeds, designated and designed to give bicycle travel priority over other modes.



Streets along classified neighborhood bikeways may require additional traffic calming measures to discourage through trips by motor vehicles.

Further Considerations

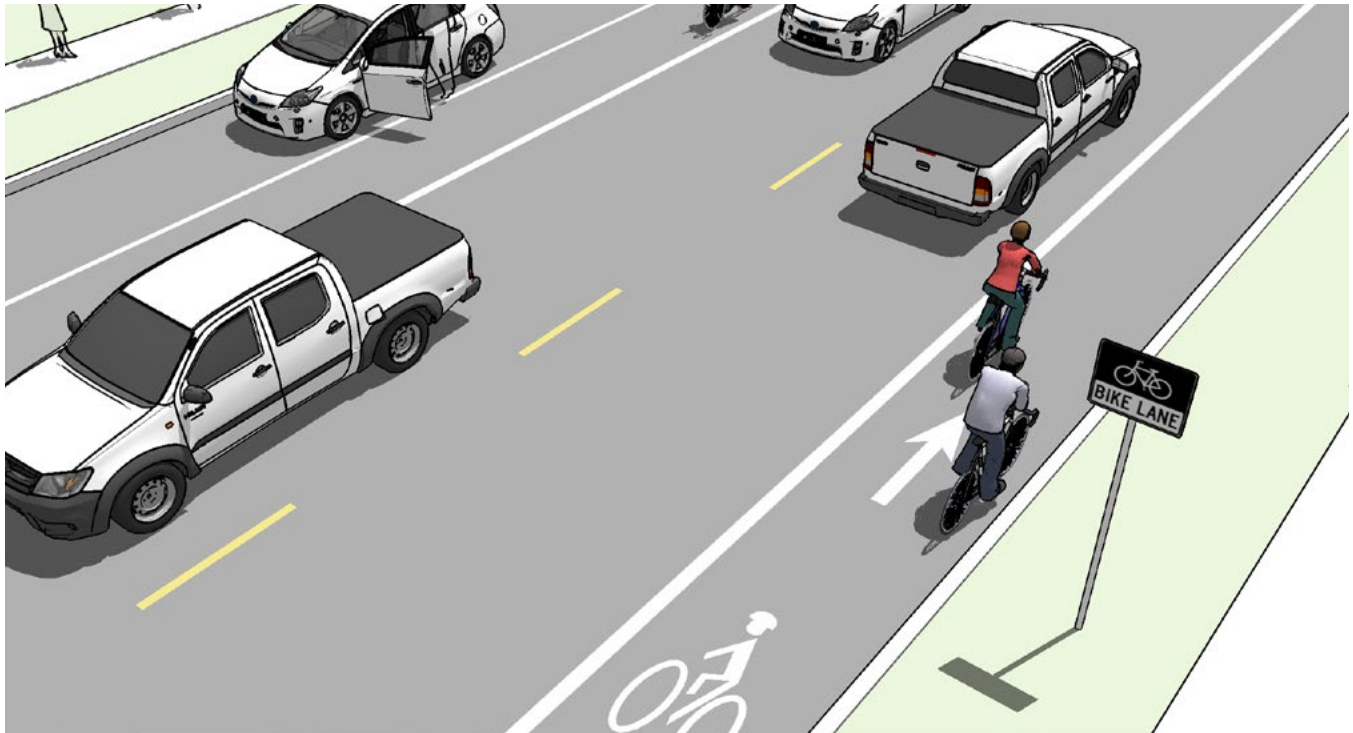
- Calm street retrofits to local streets are typically located on streets without existing signalized accommodation at crossings of collector and arterial roadways. Without treatments for bicyclists, these intersections can become major barriers along the bicycle boulevard and compromise safety.
- Traffic calming can deter motorists from driving on a street. Anticipate and monitor vehicle volumes on adjacent streets to determine whether traffic calming results in inappropriate volumes. Traffic calming can be implemented on a trial basis.

Crash Reduction

- In a comparison of vehicle/cyclist collision rates on traffic-calmed side streets signed and improved for cyclist use, compared to parallel and adjacent arterials with higher speeds and volumes, the bicycle boulevard (calm street) is found to have a crash reduction factor of 63 percent, with rates two to eight times lower when controlling for volume (CMF ID: 3092).

On-Street Bicycle Lanes

On-street bike lanes designate an exclusive space for bicyclists through the use of pavement markings and signs. The bike lane is located directly adjacent to motor vehicle travel lanes and is used in the same direction as motor vehicle traffic. Bike lanes are typically on the right side of the street, between the adjacent travel lane and curb, road edge or parking lane.

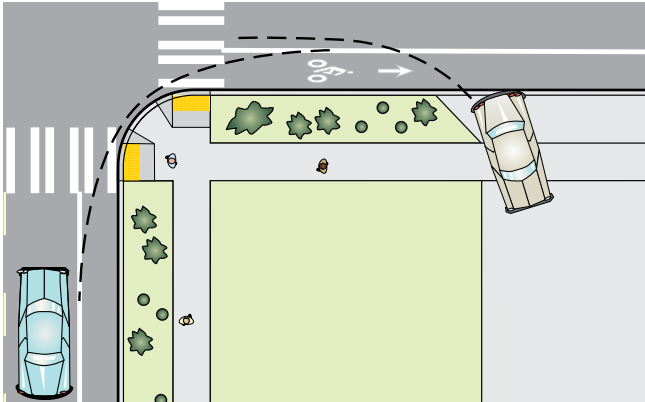


Typical Application

- Bike lanes may be used on any street with adequate space, but are most effective on streets with moderate traffic volumes greater than or equal to 6,000 ADT (with a greater than 3,000 ADT min.).
- Bike lanes are most appropriate on streets with moderate speeds (at or exceeding 25 mph).
- Appropriate for skilled adult riders on most streets.
- May be appropriate for children when configured as 6+ feet wide lanes on lower-speed, lower-volume streets with one lane in each direction.

Design Features

- Mark inside line with 6" stripe. Mark 4" parking lane line or "Ts".
- Include a bicycle lane marking (**MUTCD FIGURE 9C-3**) at the beginning of blocks and at regular intervals along the route (**MUTCD 9C.04**).
- 6 feet width preferred adjacent to on-street parking (5 feet min.).
- 5–6 feet preferred adjacent to curb and gutter (4 feet min.) or 4 feet more than the gutter pan width.



Bike lane word, symbol, and/or arrow markings (MUTCD Figure 9C-3) shall be placed outside of the motor vehicle tread path in order to minimize wear from the motor vehicle path (NACTO 2012).



Bicycle lanes provide an exclusive space, but may be subject to unwanted encroachment by motor vehicles.

Further Considerations

- On high speed streets (greater than or equal to 40 mph) the minimum bike lane should be 6 feet.
- On streets where bicyclists passing each other is to be expected, where high volumes of bicyclists are present, or where added comfort is desired, consider providing extra wide bike lanes up to 7 feet wide, or configure as a buffered bicycle lane.
- It may be desirable to reduce the width of general purpose travel lanes in order to add or widen bicycle lanes.
- On multi-lane and/or high speed streets, the most appropriate bicycle facility to provide for user comfort may be buffered bicycle lanes or physically separated bicycle lanes.
- Manhole surfaces should be manufactured with a shallow surface texture in the form of a tight, nonlinear pattern.
- If manholes or other utility access boxes are to be located in bike lanes within 50 feet of intersections or within 20 ft of driveways or other bicycle access points, special manufactured permanent nonstick surfaces will be required to ensure a controlled travel surface for cyclists breaking or turning.
- Manholes, drainage grates, or other obstacles should be set flush with the paved roadway. Roadway surface inconsistencies pose a threat to safe riding conditions for bicyclists. Construction of manholes, access panels or other drainage elements will be constructed with no variation in the surface. The maximum allowable tolerance in vertical roadway surface will be 1/4 of an inch.

Crash Reduction

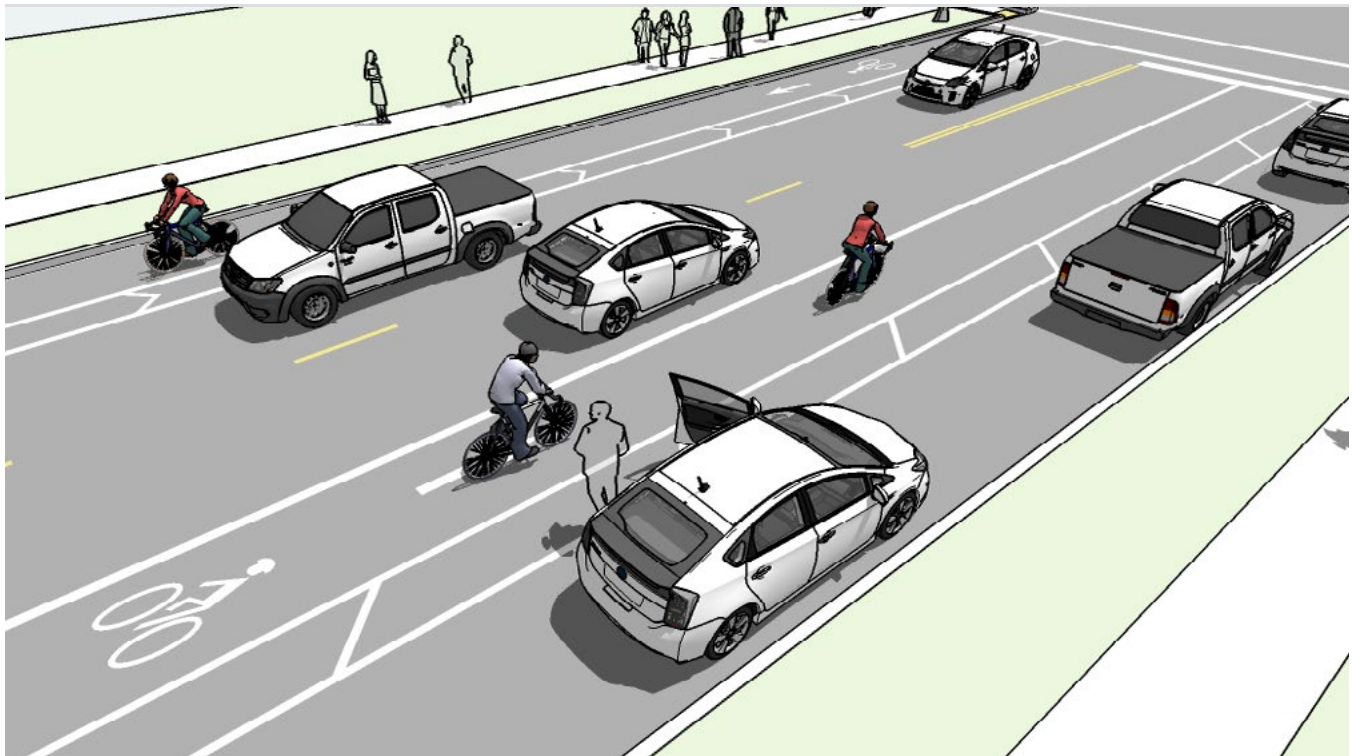
- Before and after studies of bicycle lane installations show a wide range of crash reduction factors. Some studies show a crash reduction of 35 percent (CMF ID: 1719) for vehicle/bicycle collisions after bike lane installation.

Additional References and Guidelines

- FHWA. *Bicycle Countermeasure Selection System*. 2006.
- FHWA. *Manual on Uniform Traffic Control Devices*. 2009.

Buffered Bicycle Lanes

Buffered bike lanes are conventional bicycle lanes paired with a designated buffer space, separating the bicycle lane from the adjacent motor vehicle travel lane and/or parking lane.



Typical Application

- Anywhere a conventional bike lane is being considered.
- On streets with high speeds and high volumes or high truck volumes.
- On streets with extra lanes or lane width.
- Appropriate for skilled adult riders on most streets.

Design Features

- The minimum bicycle travel area (not including buffer) is 5 feet wide.
- Buffers should be at least 2 feet wide. If buffer area is 4 feet or wider, white chevron or diagonal markings should be used.
- For clarity at driveways or minor street crossings, consider a dotted line.
- There is no standard for whether the buffer is configured on the parking side, the travel side, or a combination of both.



The use of pavement markings delineates space for cyclists to ride in a comfortable facility.



The use of pavement markings delineates space for cyclists to ride in a comfortable facility.

Further Considerations

- Color may be used within the lane to discourage motorists from entering the buffered lane.
- A study of buffered bicycle lanes found that, in order to make the facilities successful, there needs to also be driver education, improved signage and proper pavement markings.
- On multi-lane streets with high vehicles speeds, the most appropriate bicycle facility to provide for user comfort may be physically separated bike lanes.
- NCHRP Report #766 recommends, when space is limited, installing a buffer space between the parking lane and bicycle lane where on-street parking is permitted rather than between the bicycle lane and vehicle travel lane.

Crash Reduction

- A before and after study of buffered bicycle lane installation in Portland, OR found an overwhelmingly positive response from bicyclists, with 89 percent of bicyclists feeling safer riding after installation and 91 percent expressing that the facility made bicycling easier.

Additional References and Guidelines

- Monsere, C.; McNeil, N.; and Dill, J., “*Evaluation of Innovative Bicycle Facilities: SW Broadway Cycle Track and SW Stark/Oak Street Buffered Bike Lanes. Final Report*” (2011). Urban Studies and Planning Faculty Publications and Presentations.
- National Cooperative Highway Research Program. *Report #766: Recommended Bicycle Lane Widths for Various Roadway Characteristics.*

One-Way Separated Bicycle Lanes

When retrofitting separated bike lanes onto existing streets, a one-way street-level design may be most appropriate. This design provides protection through physical barriers and can include flexible delineators, curbs, on-street parking or other barriers. A street level separated bike lane shares the same elevation as adjacent travel lanes.



Typical Application

- Street retrofit projects with limited funds for relocating curbs and drainage.
- Streets with high motor vehicle volumes and/or speeds and high bicycle volumes.
- Streets for which conflicts at intersections can be effectively mitigated using parking lane setbacks, bicycle markings through the intersection, and other signalized intersection treatments.
- Appropriate for most riders on most streets.

Design Features

- Pavement markings, symbols and/or arrow markings must be placed at the beginning of the separated bike lane and at intervals along the facility (MUTCD 9C.04).
- 7 foot width preferred (5 foot minimum).
- 3 foot minimum buffer width adjacent to parking. 18 inch minimum adjacent to travel lanes. Channelizing devices should be placed in the buffer area (NACTO, 2012).
- If buffer area is 4 feet or wider, white chevron or diagonal markings should be used.



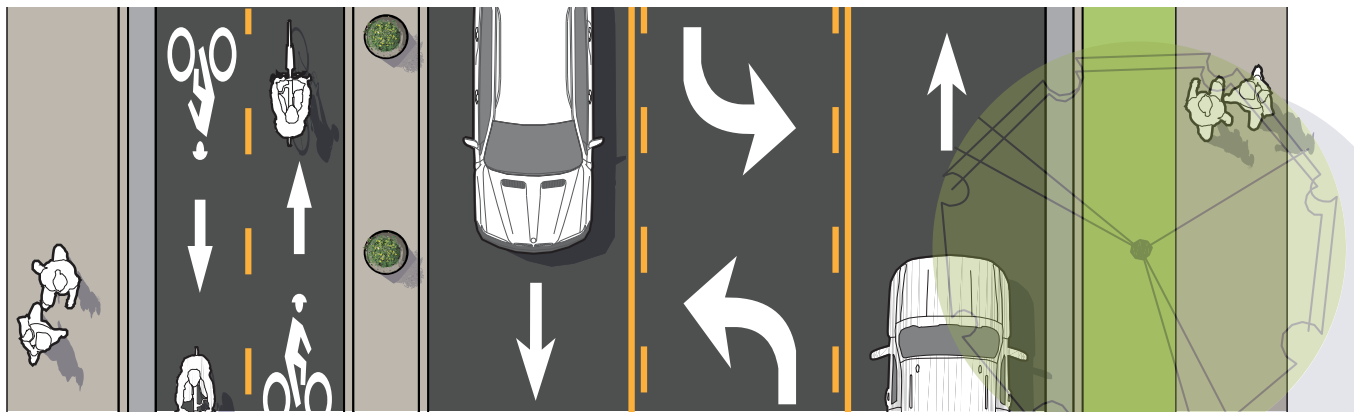
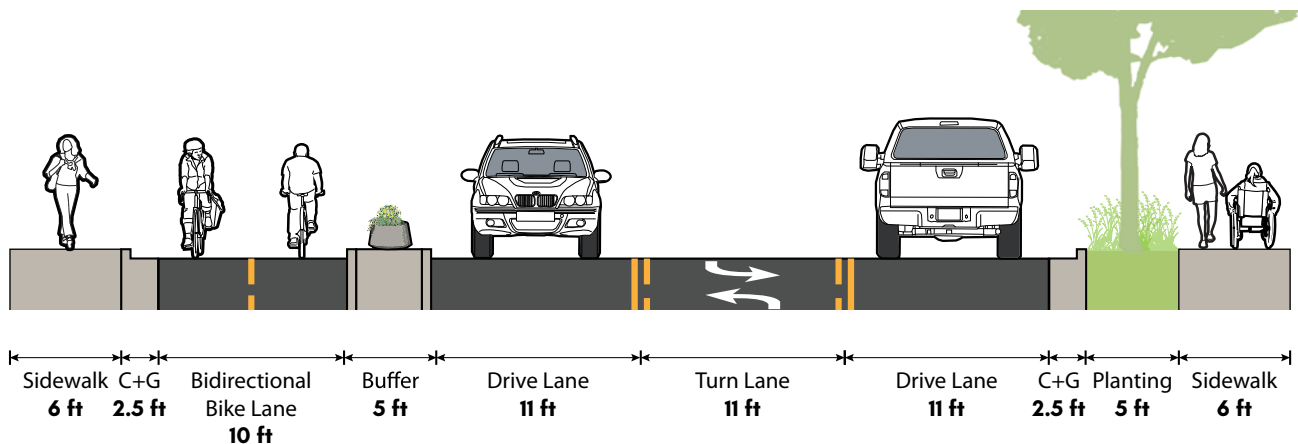
Street-level bicycle lanes can be separated from the street with raised curbs, parking, planters, bollards, or other design elements.

Further Considerations

- Separated bike lane buffers and barriers are covered in the MUTCD as preferential lane markings (section 3D.01) and channelizing devices (section 3H.01). Curbs may be used as a channeling device, see the section on islands (section 3I.01).
- A retrofit separated bike lane has a relatively low implementation cost compared to road reconstruction by making use of existing pavement and drainage and by using parking lane as a barrier.
- Gutters, drainage outlets and utility covers should be designed and configured as not to impact bicycle travel.
- Special consideration should be given at transit stops to manage bicycle and pedestrian interactions.

Two-Way Separated Bicycle Lanes

Two-Way Separated Bicycle Lanes are bicycle facilities that allow bicycle movement in both directions on one side of the road. Two-way separated bicycle lanes share some of the same design characteristics as one-way separated bicycle lanes, but may require additional considerations at driveway and side-street crossings.



Typical Application

- Works best on the left side of one-way streets.
- Streets with high motor vehicle volumes and/or speeds.
- Streets with high bicycle volumes.
- Streets with a high incidence of wrong-way bicycle riding.
- Streets with few conflicts such as driveways or cross-streets on one side of the street.
- Streets that connect to shared use paths.

Design Features

- 12-foot operating width preferred (10-foot minimum) width for two-way facility.
- In constrained situations, an 8-foot minimum operating width may be considered. (HDM 1003.1(1))
- Adjacent to on-street parking, a 3-foot minimum width channelized buffer or island shall be provided to accommodate opening doors. (NACTO, 2012)
- Separation may be narrower than 5-foot separation may be permitted if physical barrier separation is present. (AASHTO, 2013)
- Additional signalization and signs may be necessary to manage conflicts.



Street-level bicycle lanes can be separated from the street with parking, planters, bollards, or other design elements.

Further Considerations

- On-street bike lane buffers and barriers are covered in the CAMUTCD as preferential lane markings (section 3D.01) and channelizing devices, including flexible delineators (section 3H.01). Curbs may be used as a channeling device.
- A two-way separated bike lane on one way street should be located on the left side.
- A two-way protected bike lane may be configured at street level or as a raised separated bicycle lane with vertical separation from the adjacent travel lane.
- Two-way separated bike lanes should ideally be placed along streets with long blocks and few driveways or mid-block access points for motor vehicles.

Crash Reduction

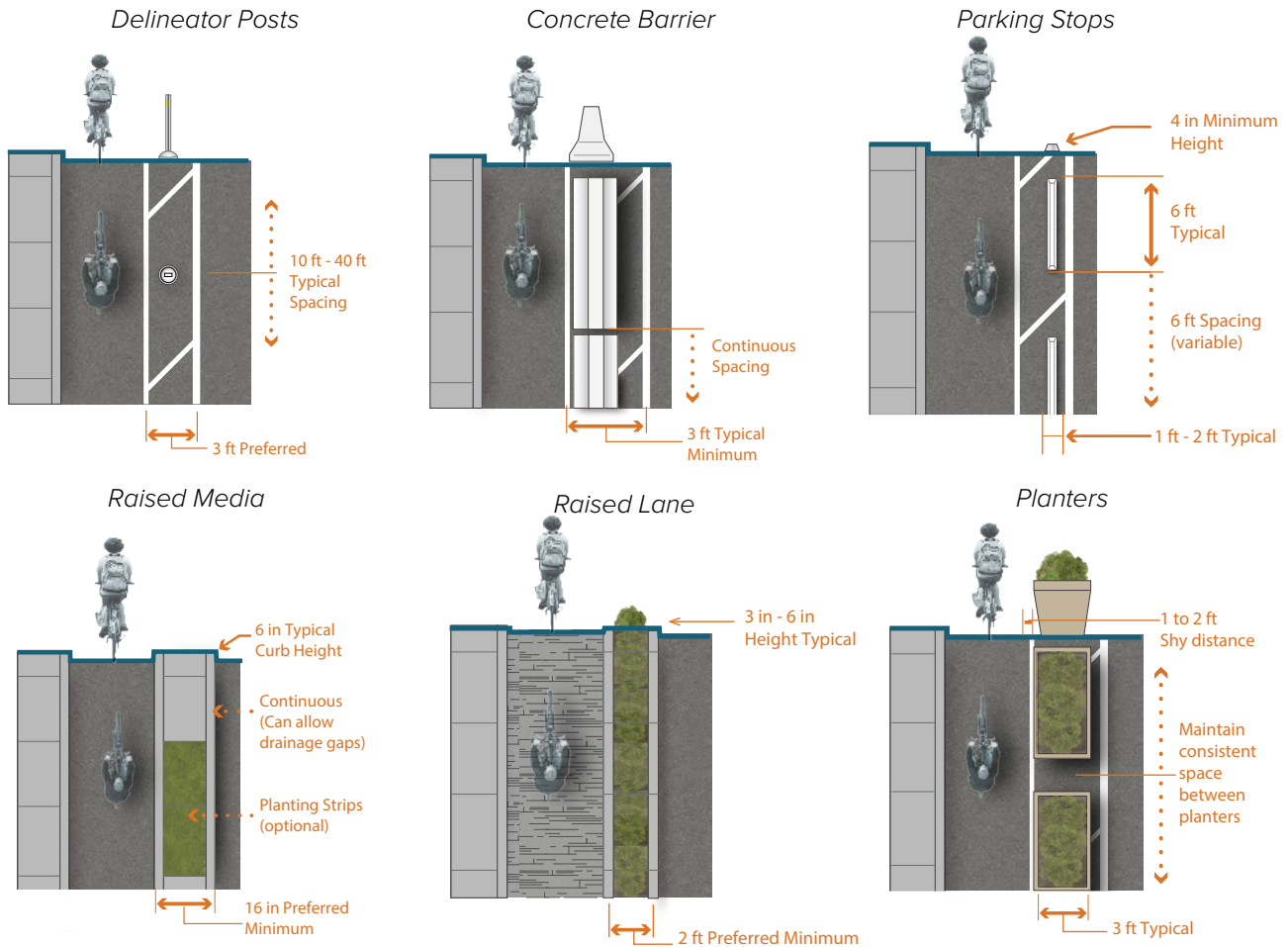
- A study of bicyclists in two-way separated facilities found that accident probability decreased by 45% at intersections where the separated facility approach was detected between 5-10 feet from the side of the main road and when bicyclists had crossing priority at intersections. (CMF ID: 3034) Installation of a two-way separated bike lane 0-6 feet from the side of the main road resulted in an increase in collisions at intersections by 3% (CMF ID: 4033).

Additional References and Guidelines

- FHWA. *Manual on Uniform Traffic Control Devices*. 2009.
- FHWA. *Separated Bike Lane Planning and Design Guide*. 2015.
- NACTO. *Urban Bikeway Design Guide*. 2012.

Separation Methods

Separated bikeways may use a variety of vertical elements to physically separate the bikeway from adjacent travel lanes. Barriers may be robust constructed elements such as curbs, or may be more interim in nature, such as flexible delineator posts.



Typical Application

Appropriate barriers for retrofit projects:

- Parked Cars
- Flexible delineators
- Bollards
- Planters
- Parking stops

Appropriate barriers for reconstruction projects:

- Curb separation
- Medians
- Landscaped Medians
- Raised separated bike lane with vertical or mountable curb
- Pedestrian Safety Islands



Raised separated bikeways are bicycle facilities that are vertically separated from motor vehicle traffic.

Design Features

- Maximize effective operating space by placing curbs or delineator posts as far from the through bikeway space as practicable.
- Allow for adequate shy distance of 1 to 2 feet from vertical elements to maximize useful space.
- When next to parking allow for 3 feet of space in the buffer space to allow for opening doors and passenger unloading.
- The presences of landscaping in medians, planters and safety islands increases comfort for users and enhances the streetscape environment.

Further Considerations

- Separated bikeway buffers and barriers are covered in the MUTCD as preferential lane markings (section 3D.01) and channelizing devices (section 3H.01). Curbs may be used as a channeling device, see the section on islands (section 3I.01).
- With new roadway construction a raised separated bikeway can be less expensive to construct than a wide or buffered bicycle lane because of shallower trenching and sub base requirements.
- Parking should be prohibited within 30 feet of the intersection to improve visibility.
- Total clear width between the curb face and vertical element should be at least the fleet maintenance (sweeping or snowplow) vehicle width. Widths (inclusive of the gutter pan and to the vertical buffer element) narrower than 7 ft will often require specialized equipment. Consultation with the Streets department is recommended during the planning process.

Crash Reduction

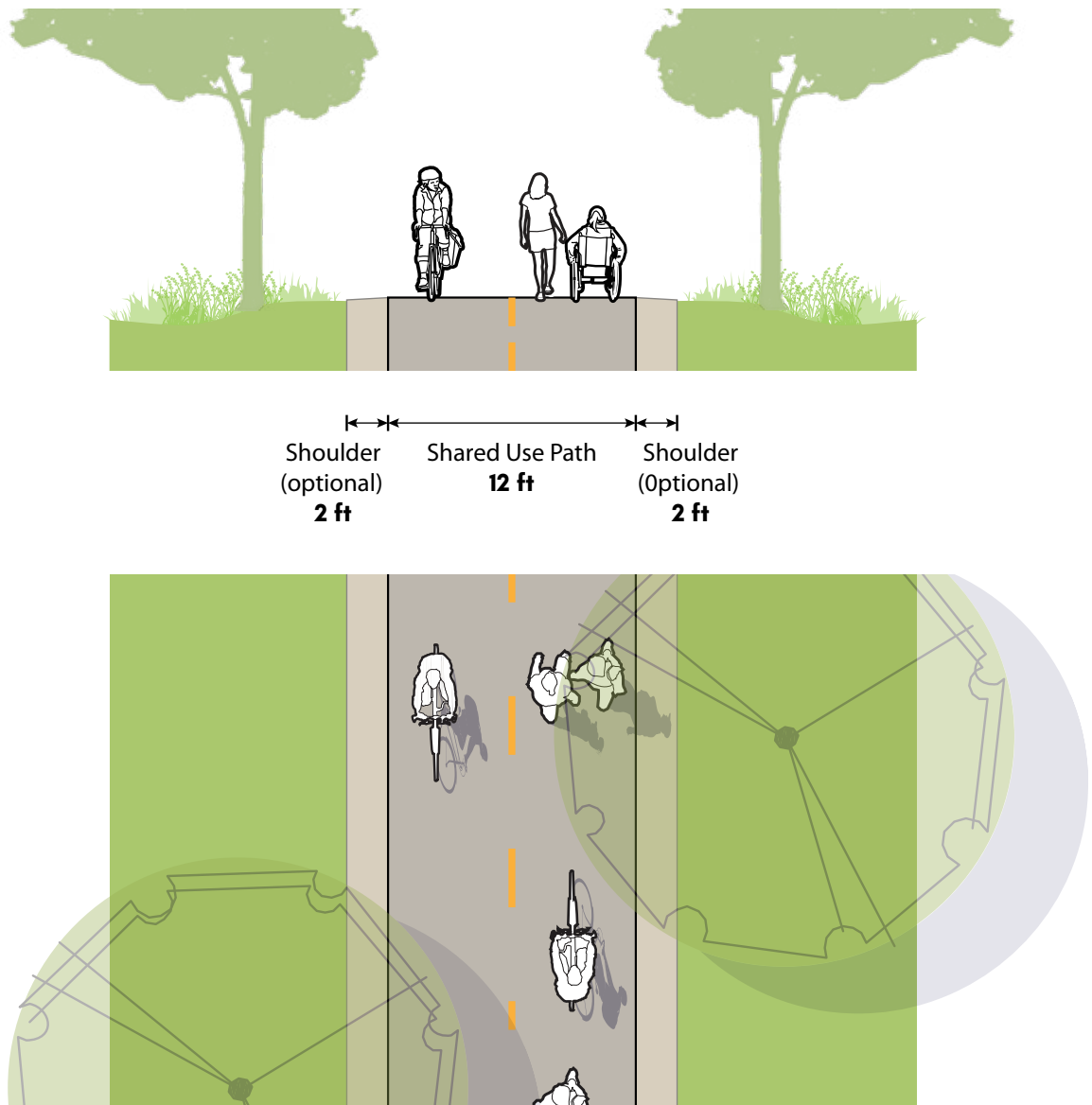
- A before and after study in Montreal of separated bikeways shows that this type of facility can result in a crash reduction of 74 percent for collisions between bicyclists and vehicles. (CMF ID: 4097) In this study, there was a parking buffer between the bike facility and vehicle travel lanes. Other studies have found a range in crash reductions due to SBL, from 8 percent (CMF ID: 4094) to 94 percent (CMF ID: 4101).

Additional References and Guidelines

- FHWA. *Manual on Uniform Traffic Control Devices*. 2009.
- FHWA. *Separated Bike Lane Planning and Design Guide*. 2015.

Shared Use Paths

Shared use paths can provide a desirable facility, particularly for recreation, and users of all skill levels preferring separation from traffic. Bicycle paths should generally provide directional travel opportunities not provided by existing roadways.



Typical Application

- In abandoned rail corridors (commonly referred to as Rails-to-Trails or Rail-Trails).
- In active rail corridors, trails can be built adjacent to active railroads (referred to as Rails-with-Trails).
- In utility corridors, such as powerline and sewer corridors.
- In waterway corridors, such as along rivers, creeks, levees, and drainage ditches.
- Along roadways.



Design Features

Width

- 8 feet is the minimum allowed for a two-way bicycle path and is only recommended for low traffic situations.
- 10 feet is recommended in most situations and will be adequate for moderate to heavy use.
- 12 feet is recommended for heavy use situations with high concentrations of multiple users. A separate track (5 foot minimum) can be provided for pedestrian use.

Lateral Clearance

- A 2 foot or greater shoulder on both sides of the path should be provided. An additional foot of lateral clearance (total of 3 feet) is required by the MUTCD for the installation of signage or other furnishings.
- If bollards are used at intersections and access points, they should be colored brightly and/or supplemented with reflective materials to be visible at night.

Overhead Clearance

- Clearance to overhead obstructions should be 8 feet at minimum, with 10 feet recommended.

Striping

- When striping is required, use a 4 inch dashed yellow centerline stripe with 4 inch solid white edge lines.
- Solid centerlines can be provided on tight or blind corners, and on the approaches to roadway crossings.

Further Considerations

- The provision of a shared use path adjacent to a road is not a substitute for the provision of on-road accommodation such as paved shoulders or bike lanes, but may be considered in some locations in addition to on-road bicycle facilities.
- To reduce potential conflicts in some situations, it may be better to place one-way sidepaths on both sides of the street.

Crash Reduction

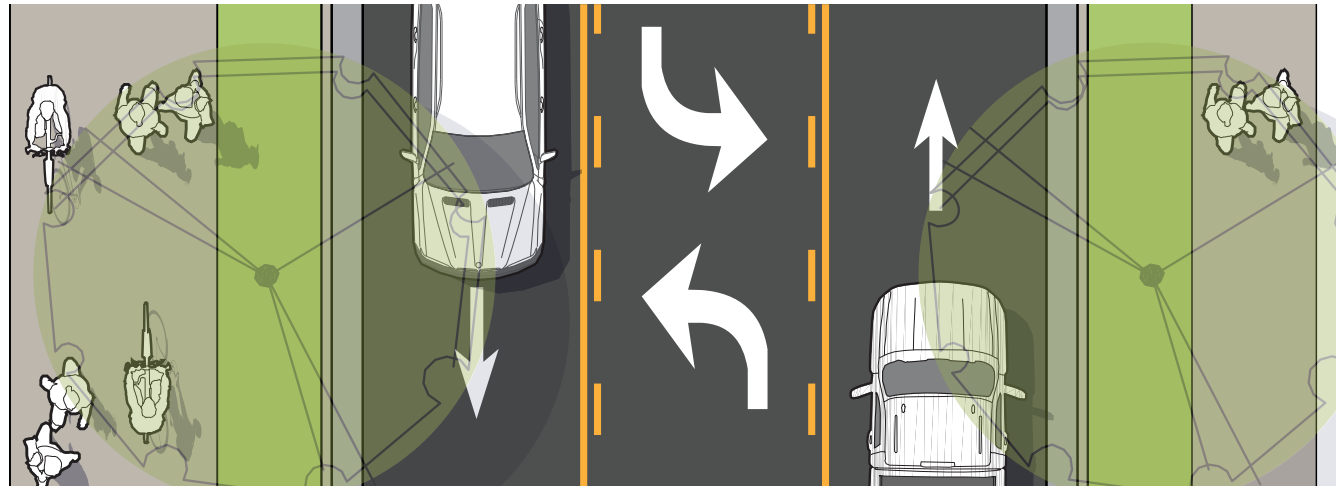
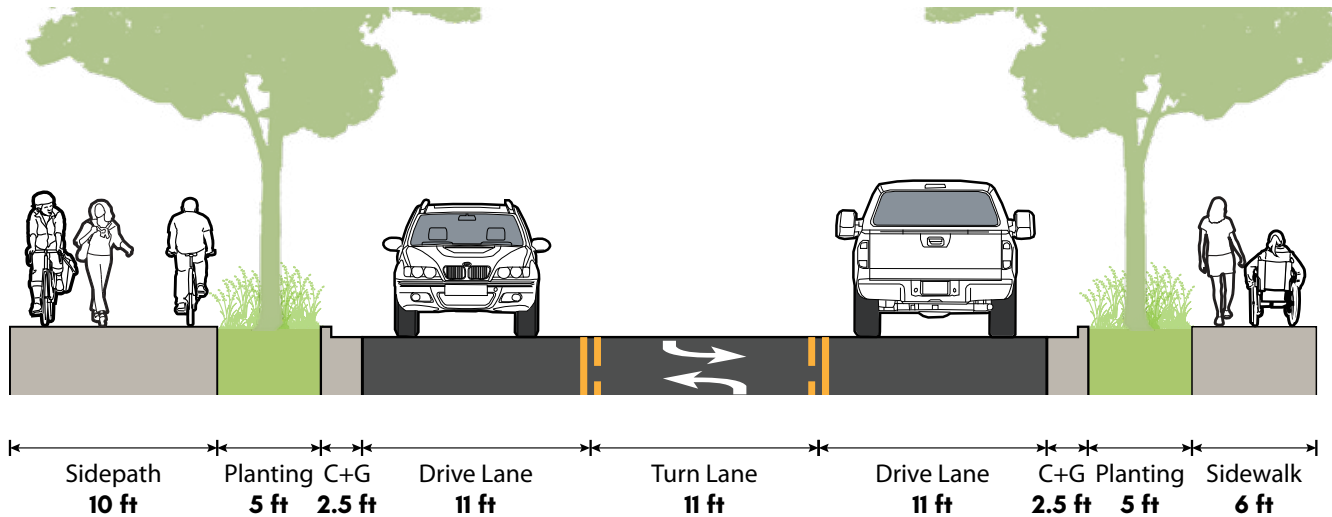
- Shared use paths reduce injury rates for cyclists, pedestrians, and other nonmotorized modes by 60 percent compared with on street facilities.

Additional References and Guidelines

- Teschke, Kay. *Route Infrastructure and the Risk of Injuries to Bicyclists*. American Public Health Association. December 2012.

Sidepaths

A sidepath is a bidirectional shared use path located immediately adjacent and parallel to a roadway. Sidepaths can offer a high-quality experience for users of all ages and abilities as compared to on-roadway facilities in heavy traffic environments, allow for reduced roadway crossing distances and maintain community character.



Typical Application

- At controlled and uncontrolled sidepath crossings of driveways or minor streets.
- Used to provide for visibility and awareness of the crossing by motorist in advance of the crossing.
- Increases the predictability of sidepath and road user behavior through clear, unambiguous right of way priority.



The River des Peres Greenway along Ellendale Avenue

Design Features

- Preferred minimum pathway width is 10 ft. In low volume situations, 8 ft minimum may be adequate.
- Preferred minimum roadways separation width is 6.5 ft, with an absolute minimum separation width of 5 ft. Minimum dimension separation is only appropriate on low speed roadways. (AASHTO 2012)
- Separation narrower than 5 feet is not recommended, but may be accommodated with the use of a physical barrier between the sidepath and the roadway. (AASHTO Bike Guide, 2012, pp. 5-11)

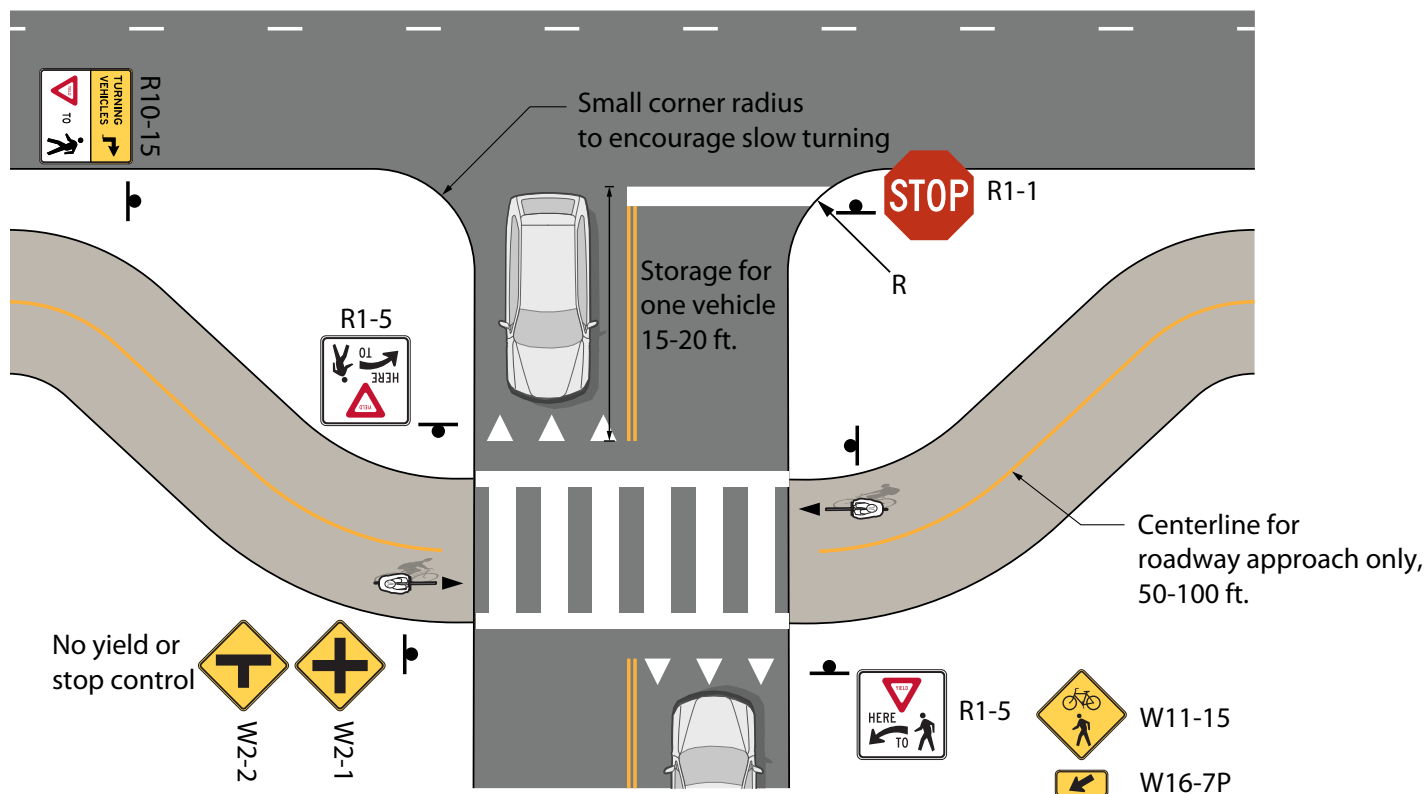
Further Considerations

- In extremely constrained conditions, and for short distances, rumble strips and painted buffer striping may be used to separate the pathway from the roadway.
- Depending on community character and surrounding environmental context, use of stonedust (sometimes called crushed limestone) for the sidepath may be preferred.

Sidepath Crossings

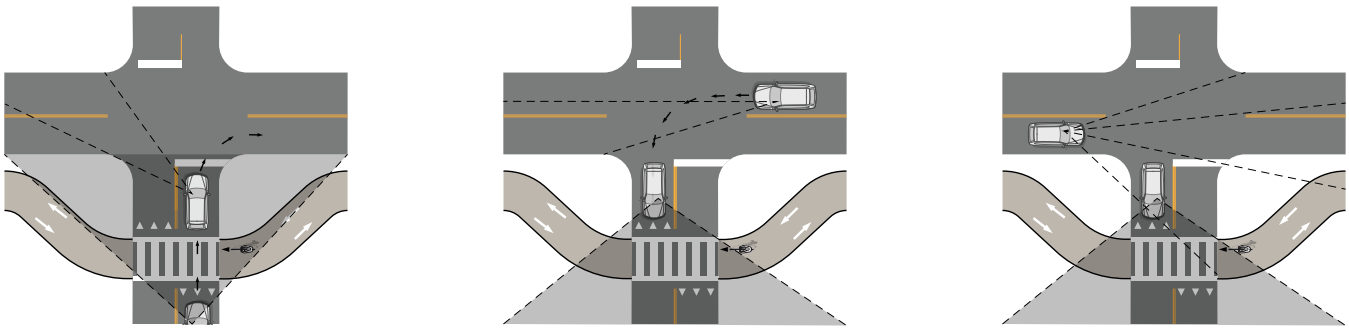
Sidepaths provide a high degree of comfort on long uninterrupted roadway segments, but have operational and safety concerns at driveways and intersections with secondary streets. Crossings should be designed to promote awareness, lower speeds, and facilitate proper yielding of motorists to bicyclists and pedestrians.

“Bend Out” Shared Use Path Crossing Design Details



Typical Application

- At controlled and uncontrolled sidepath crossings of driveways or minor streets.
- Used to provide for visibility and awareness of the crossing by motorist in advance of the crossing.
- Increases the predictability of sidepath and road user behavior through clear, unambiguous right of way priority.

“Bend Out” Shared Use Path Operational

Guidance

- Guidance for sidepaths should follow that for general design practices of shared use paths.
- Crossing design should emphasize visibility of users and clarity of expected yielding behavior. Crossings may be STOP or YIELD controlled depending on sight lines and bicycle motor vehicle volumes and speeds.
- At minor intersections and across higher use driveways “bend out” geometry is an available design treatment that can mitigate several of the noted issues with shared use paths adjacent to roadways. Specifically, bend out geometry allows vehicles merging on and off the uncontrolled leg of the intersection to do so in two separate decision making processes that focus on the merge with other vehicles and path users separately. Signage and markings should be used to clarify the responsibilities of path and road users. See EXHIBIT 5-29 for design details and EXHIBIT 5-30 for explanation of shared use path operational improvements.

Further Considerations

- The provision of a shared use path adjacent to a road is not a substitute for the provision of on-road accommodation such as paved shoulders or bike lanes, but may be considered in some locations in addition to on-road bicycle facilities.
- To reduce potential conflicts in some situations, it may be better to place one-way sidepaths on both sides of the street.
- A high number of driveway crossings and intersections create potential conflicts with turning traffic. Consider alternatives to sidepaths on streets with a high frequency of intersections or heavily used driveways.
- Where a sidepath terminates special consideration should be given to transitions so as not to encourage unsafe wrong-way riding by bicyclists.

Facility Selection Process

Bicycle facility (“bikeway”) selection is an important step in the network planning and development process. The Plan uses the FHWA’s bikeway selection process, shown in **FIGURE 10**, as a framework for network planning and the selection of a desired bikeway for each corridor in the network. The Plan’s intention to create a low-stress, all ages and abilities network narrows the facility selection parameters to those bikeways that can safely and comfortably accommodate the “interested but concerned” user group.

With the preferred design user established, the Plan’s facility selection process utilizes best practices for facility selection established in two key resources: the FHWA Bikeway Selection Guide and the NACTO Urban Bikeway Design Guide. Both documents use traffic speed and volumes to establish contextual guidance for the selection of low-stress, all ages and abilities (AAA) bikeways. In addition to lower speed and volume thresholds for separated bikeways compared to those in the FHWA guide, the Urban Bikeway Design Guide’s contextual guidance also includes number of motor vehicle lanes and operational considerations to help evaluate bicycle facility applicability for a given corridor. At a minimum, the updated facility recommendations reflect desired bicycle facility types according to FHWA guidance.

FIGURE 10 FHWA Bikeway Selection Process

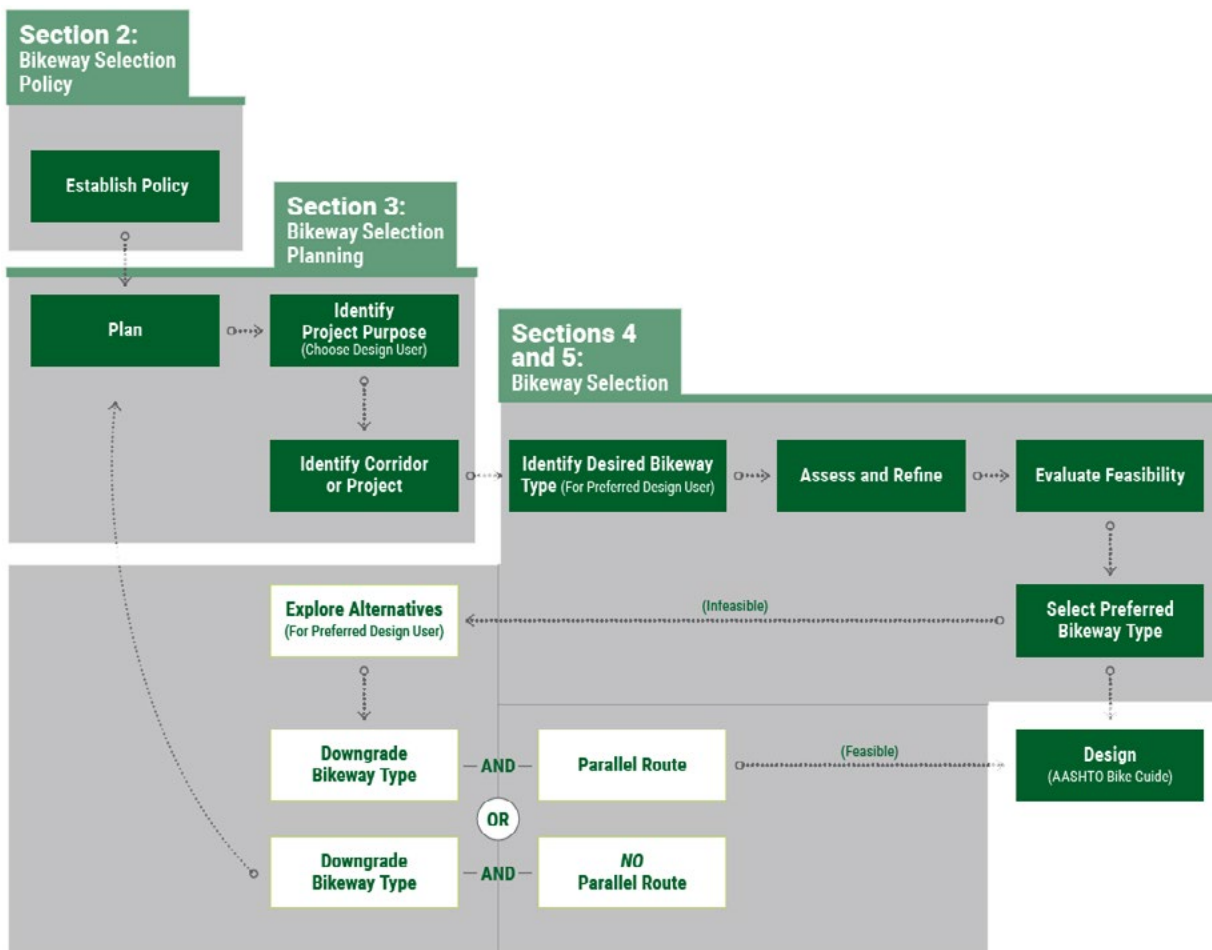
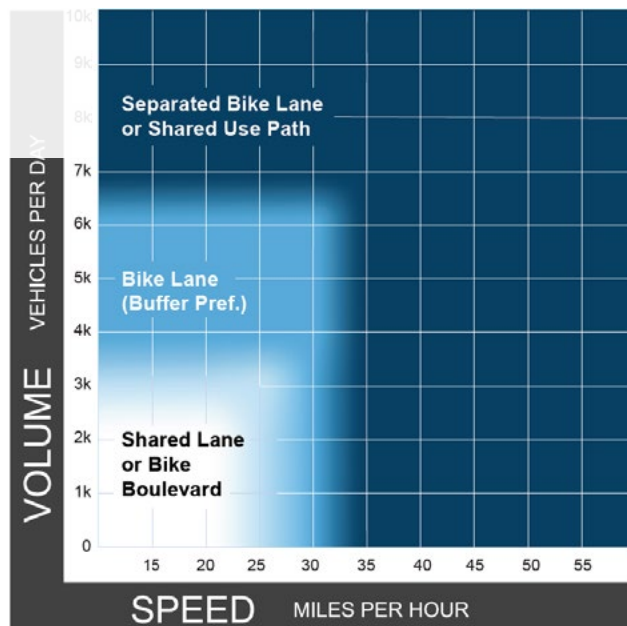


FIGURE 11 FHWA’s preferred bikeway type for urban core, suburban, and rural town contexts.

Roadway Context				All Ages & Abilities Bicycle Facility
Target Motor Vehicle Speed*	Target Motor Vehicle Volume (ADT)	Motor Vehicle Lanes	Key Operational Considerations	
Any		Any	Any of the following: high curbside activity, frequent buses, motor vehicle congestion, or turning conflicts†	Protected Bicycle Lane
< 10 mph	Less relevant	No centerline, or single lane one-way	Pedestrians share the roadway	Shared Street
≤ 20 mph	≤ 1,000 – 2,000		< 50 motor vehicles per hour in the peak direction at peak hour	Bicycle Boulevard
≤ 25 mph	≤ 500 – 1,500	Single lane each direction, or single lane one-way	Low curbside activity, or low congestion pressure	Conventional or Buffered Bicycle Lane, or Protected Bicycle Lane
	≤ 1,500 – 3,000			Buffered or Protected Bicycle Lane
	≤ 3,000 – 6,000	Multiple lanes per direction		Protected Bicycle Lane
	Greater than 6,000			
Greater than 26 mph†	≤ 6,000	Single lane each direction	Low curbside activity, or low congestion pressure	Protected Bicycle Lane, or Reduce Speed
		Multiple lanes per direction		Protected Bicycle Lane, or Reduce to Single Lane & Reduce Speed
	Greater than 6,000	Any	Any	Protected Bicycle Lane
High-speed limited access roadways, natural corridors, or geographic edge conditions with limited conflicts		Any	High pedestrian volume	Bike Path with Separate Walkway or Protected Bicycle Lane
			Low pedestrian volume	Shared-Use Path or Protected Bicycle Lane

FIGURE 12 NACTO’s Contextual Guidance for Selecting All Ages & Abilities Bikeways



Based on the guidance in these resources, the Plan presents an ideal network of preferred bikeways to establish a complete, interconnected, low-stress network to serve the daily transportation needs of St. Louisiana. ***The Plan's network recommendations adhere closely to the facility selection process presented in these design and facility selection guides, and further assessment, feasibility evaluation, and exploration of alternatives may be necessary to arrive at a practical, implementable facility.***

These steps in the facility development process, laid out in **FIGURE 10**, will take into account many other factors beyond speed and volume, including number of travel lanes, roadway width, traffic mix of automobiles and heavy vehicles, the presence of on-street parking, intersection density, transit facilities, surrounding land use and access controls, and roadway sight distance.

A low-stress bikeway type that supports the intended design user may not be feasible on a given roadway. In such instances, the city must explore and evaluate

The Plan presents an ideal network of preferred bikeways to establish a complete, interconnected, low-stress network to serve the daily transportation needs of St. Louisians.

alternatives, which include selecting a parallel corridor or downgrading the bikeway type. While not ideal, bicycle network development is an incremental process. The city should remain steadfast in its commitment to the Plan's vision and be confident that any step in the right direction, no matter how small, is still one step closer to realizing a connected, low-stress bicycle network that supports people of all ages and abilities.



The Recommended Network

The bicycling environment in St. Louis City is evolving rapidly, and the transformative projects being designed and built today serve as guideposts along the path to a safer, more inclusive bicycle network. The recommended City of St. Louis Gateway Bike Plan Network takes its cues from these recent projects and from the Gateway Bike Plan Working Groups addition of goals and objectives to shift the focus of network development to low-stress, all ages and abilities bikeways.

The network recommendations embody the vision for a low-stress network connecting neighborhoods and destinations across St. Louis. These recommendations are conceptual in nature and represent the preferred bicycle facility type based on the facility selection process and criteria outlined in the previous section of this chapter. The facility types that comprise the recommended network are in **TABLE 3** and illustrated in **FIGURE 13**.

The proposed City of St. Louis Gateway Bike Plan Network will provide St. Louisans and visitors to the community an interconnected system of low-stress bikeways linking parks, greenways, schools, neighborhoods, commercial districts, major institutions and employment centers, cultural amenities, and other popular destinations.

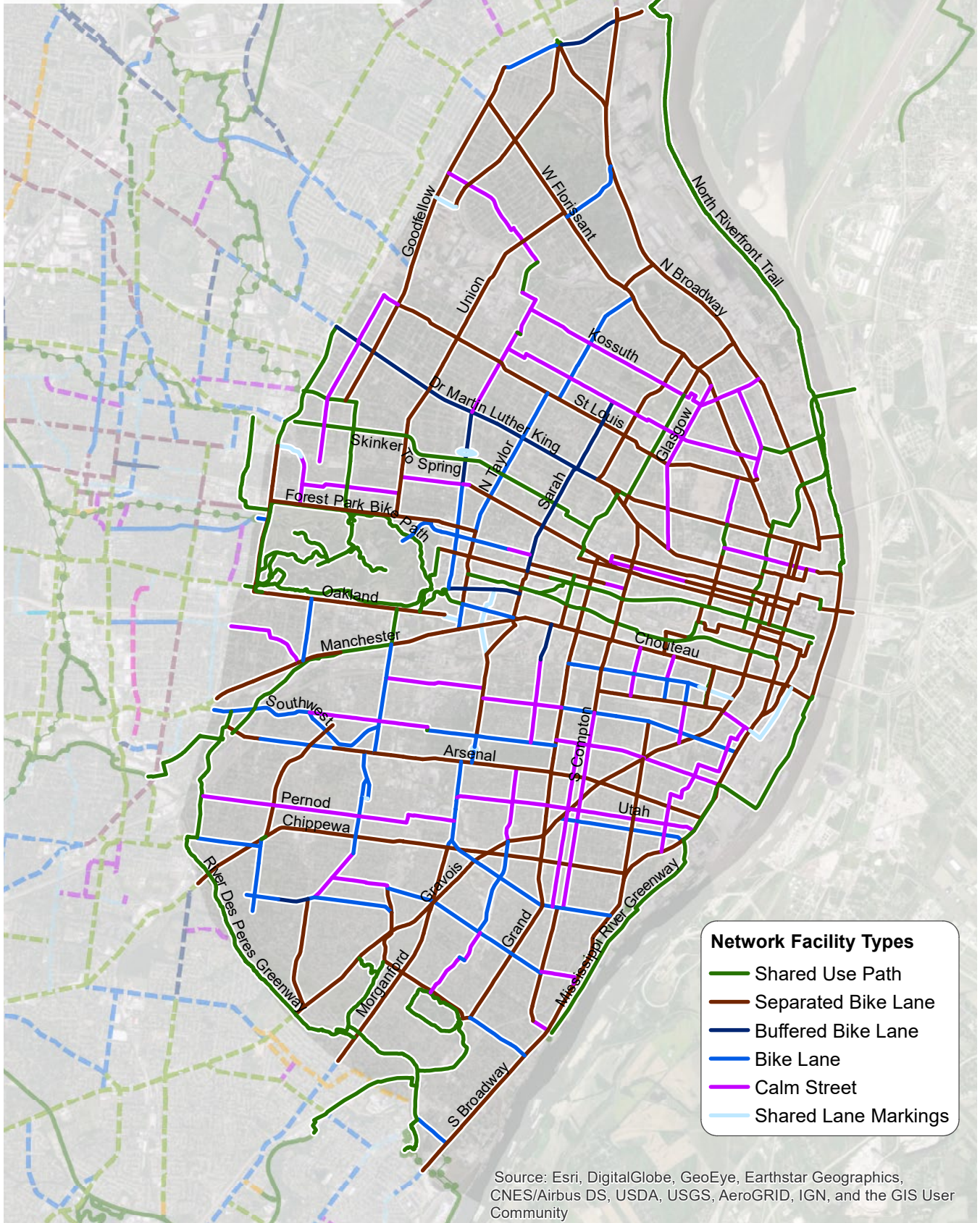
Bringing this ambitious bikeway network to life will take time, perseverance, and a sustained commitment of resources from the city and its community partners. As the network grows and evolves over time, the City of St. Louis must pursue complementary strategies to create a bicycle friendly community. The following chapters present policies, programs, and implementation strategies to advance bicycling as a safe, comfortable, and convenient transportation choice for St. Louisans.

TABLE 3 BICYCLE NETWORK MILEAGE BY FACILITY TYPE

Bicycle Facility Type	Miles of Existing Facilities
Shared-Use Path	64
Separated Bike Lane	126
Buffered Bike Lane	8.5
Conventional Bike Lane	32
Calm Street (Bicycle Boulevard)	43.5
Marked and Signed Roadway (Shared Lane Marking and Wayfinding Signs)	3.5
Total Bicycle Network	277.5



FIGURE 13 Recommended City of St. Louis Gateway Bike Plan Network



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04

Supporting Policies and Programs



Supporting Policies and Programs

In the ten years since the Gateway Bike Plan was completed, the City of St. Louis and its community partners have made significant strides to advance bicycle safety and mobility. From trail and on-street bicycle facility development to bike rodeos and community events, the City of St. Louis, Great Rivers Greenway, Trailnet, MoDOT and countless others have worked hard to establish a physical environment and social culture that welcome and embrace bicycling as a viable means of transportation and recreation.

Moving into the second decade of implementing the Gateway Bike Plan, there are a number of different policy and programmatic avenues through which the city and its partners can strengthen their commitment to bicycling. This section of the Plan presents a menu of policy and program opportunities for the City of St. Louis, partner agencies, and other community groups and organizations to explore and pursue as time and resources allow.

Inspired by the Safe Routes to School National Partnership Six E's framework¹, policy and program recommendations are organized into six sections:

- Engagement & Interagency Coordination
- Equity
- Engineering & Facility Design
- Encouragement
- Education
- Evaluation & Planning

While these six categories provide a framework for organizing and thinking about policies and programs, they are not mutually exclusive. Many of the recommendations presented below address more than one category.



Engagement



Equity



Engineering



Encouragement



Education



Evaluation

¹ Safe Routes to School is a community driven initiative that works to make it safe, convenient, and fun for children to walk and bicycle to and from schools. "Safe Routes to School." Accessible online June 9, 2021. <<https://www.saferoutespartnership.org/safe-routes-school>>

Engagement & Interagency Coordination

City of St. Louis leaders must engage with and listen to interested citizens and technical experts in order to create a transportation system that supports bicycling for all users. The policies and programs in this section focus on changes to government processes to support community and stakeholder engagement and building staff capacity and interagency coordination to support expanded outreach and engagement efforts.

Community Engagement

Project-Level Outreach and Engagement

As projects move from long-range planning into project development and construction, it is important that the City of St. Louis continue to include community residents and stakeholders in decision-making processes. The city should develop communications and outreach protocols to create opportunities for meaningful dialogue with and input from community residents during network planning and project scoping, design, and construction phases of major projects and high-impact neighborhood projects.



Citizen Committees

Support intergovernmental cooperation through community committees.

Designate, or create if needed, a community committee which also includes representatives from each government agency to support intergovernmental cooperation while implementing the Plan and review plans for major projects as needed. The city's Community Mobility Committee currently serves in this capacity and works with city staff on planning, policy, design, funding, education, and enforcement efforts for non-motorized transportation facilities.

Capacity Building

Bicycle / Pedestrian Coordinator Position

Dedicate staff specifically to bicycle and pedestrian planning and implementation.

Designate (or hire) a bicycle/pedestrian program coordinator, or, at a minimum, dedicate responsibility for bicycle/pedestrian facility planning, implementation, and programming to an existing position. This dedicated person could be the driver of interagency coordination, developing a program appropriate to the local setting. Bicycle program delivery is currently supported by staff in the Board of Public Services, Streets Department, and Planning and Urban Design Agency.

Formal Partnerships

Formalize interagency and public/private partnerships to jointly secure funding and advance regionally-significant projects.

These formal partnerships can review local, county, state or federal dedicated funding sources and explore project partnerships to implement the Plan. For example, a certain percentage of capital improvements could be set aside for bicycle facilities, or regional agencies could offer new grant programs for improved bicycle facilities. The City of St. Louis has entered into partnerships with state and regional agencies, institutions, and community organizations to plan, design, and implement successful bikeway projects.

Equity

While all communities offer a variety of ways to get around, not everyone has equal access to a wide range of convenient, safe, and affordable means of transportation. Unbalanced investments in active transportation infrastructure can provide health, safety, mobility, and economic benefits for some subsegments of a population, while ignoring or even increasing hardships for others. As the City of St. Louis continues to invest in bicycle facility development, viewing transportation through the lens of equity can help to understand the different transportation needs and challenges St. Louisans face on a daily basis, and better allocate resources to create a more equitable transportation system.

Understanding the Problem

Equity Assessment Program

Examine recent active transportation investments for their ability to address transportation needs of traditionally underserved communities.

Creating an Equity Assessment Program to analyze recent active transportation projects can help the city understand how bicycle network development has addressed equity considerations and identify areas for future engagement and investment.

Serve the Traditionally Underserved

Volunteer Grant Writing

Organize a volunteer work group to win more grant funding.

Develop a specific work group or sub-committee of the Community Mobility Committee to provide guidance and technical support for community partners with project identification and development, funding identification, grant writing, and organizational capacity-building to better support active transportation.

Earn-A-Bike Program

Develop an Earn-a-Bike program.

Work with non-profit and/or for-profit bike shops to develop an earn-a-bike program focused on teaching children and/or adults the basics of bicycle maintenance and repair. Participants would then have the opportunity to work hours towards owning a new bicycle. This program should be primarily geared to benefit traditionally unserved communities. St. Louis Bicycle Works has a successful track record with its Earn-A-Bike program. Expanding this service or developing new programs based on this model could increase program reach to other areas of St. Louis.



Engineering & Facility Design

Engineering policies and programs provide the framework for the design and delivery of bikeway projects that enhance safety, connectivity, consistency, and quality of travel experience for all road users.

The following policies and programs address the built environment, both within the public right of way and on adjacent land uses, and offer strategies for overarching policy, code revisions, facility design, and system maintenance.

Guiding Principles

Vision Zero

Adopt a Vision Zero Policy which acknowledges that human life and safety takes priority over transportation mobility, and that governments, roadway designers and road users all share responsibility for traffic safety.

Vision Zero is the concept that no loss of life is acceptable on any part of our transportation system. Many municipalities and agencies across the country are developing Vision Zero policies and action plans as a way to frame the development of local safety programs and prioritize safety investments to reduce and eventually eliminate fatal and severe injury crashes, focusing on the most vulnerable users – people walking and bicycling.

Complete Streets

Establish a Complete Streets program to further institutionalize and implement the city's Complete Streets ordinance.

The City of St. Louis' Complete Streets ordinance, first adopted in 2010 and later amended in 2014, provides a framework for planning, designing, and building roadways to support all system users, including people walking, biking, using a wheelchair, driving, or using public transit. By developing a public-facing Complete Streets Program, the City of St. Louis can better engage local residents in transportation planning and project development and create a platform for the dissemination of city transportation goals, objectives, policies, projects, and successes.

Codes and Ordinances

Building design and land use planning and development impact the efficiency and viability of active transportation. More compact communities that prioritize walkability include land use codes that allow for short block lengths, mixed-use developments with street-fronting retail, and a connected network of streets.

Plan Adoption

Formally adopt the Gateway Bike Plan Update as a guiding resource for transportation investments.

Formal adoption by resolution or incorporation into a future comprehensive plan can help institutionalize the Plan as a resource for consideration in capital improvement planning, project development, and other transportation decision making.

Mixture of Land Uses

Update zoning regulations to encourage mixed-use in areas where bicycling is desired.

Mixed-uses are both efficient and interesting at the human scale. They are often more compact, with retail on the ground floor and residential units above, enabling active travel between and around them. The street life is often more vibrant throughout the day with a mixture of uses rather than one single land use, encouraging investment.

Subdivision Regulations

Explore opportunities to integrate bicycle- and pedestrian-oriented requirements into subdivision regulations.

Subdivision regulations dictate the character and quality of subdivision developments and provide parameters for the design of public infrastructure, including streets and sidewalks. The following regulations can encourage a bicycle- and pedestrian-friendly environment and provide residents with transportation options.

- Encourage subdivision interconnectivity by limit cul-de-sacs and requiring bicycle, pedestrian, and/or motor vehicle connections to adjacent developments.
- Limit block lengths to increase intersection density.
- Require a public pedestrian passage and sidewalk near the center of longer blocks.

Bicycle Facility Requirements

Require installation of bicycle facilities in new developments or redevelopments.

As growth and redevelopment continue in the City of St. Louis, it is important that the city require the incorporation of active transportation facilities into new developments where appropriate. Using adopted plans and ordinances, the city can require developers to provide on-street bikeways and/or off-street trails as part of their development projects.

Shared Mobility Policy

Develop a shared mobility policy.

Transportation choices and shared mobility options such as bike share, scooter share, car share are expanding; communities can encourage investments by creating policies to actively manage their use and impact. Planning for shared mobility options can enhance community character and create positive impacts on people's transportation safety and options. The City of St. Louis has a history of planning and policy development for shared mobility, most notably with bike share permitting and its Social Equity and Inclusion Neighborhoods policy requiring bike share operators to maintain 20 percent of their fleets in certain disadvantaged and underserved neighborhoods. The city should continue to be proactive in addressing the emergence of new transportation choices to create rules and regulations that reflect the values and interests of the community.

Bicycle Parking Policy

Adopt an ordinance requiring bike racks and bike parking in new commercial and multi-family residential buildings.

End of trip facilities like bike racks, bike lockers, and secure bicycle parking areas are a critical component of the bicycle transportation system. The lack of secure, visible bicycle parking at local destinations can be a deterrent to bicycle travel. The City of St. Louis should evaluate current zoning ordinance requirements for bicycle parking and consider strengthening existing requirements to provide high-quality bicycle parking facilities at commercial and multi-family residential developments. Model bicycle parking ordinance and design considerations from ChangeLab Solutions and the Association of Pedestrian and Bicycle Professionals (APBP) can serve as valuable references.

Parking Policy

Update off-street parking and site plan requirements to encourage more pedestrian- and bicycle-friendly site design and circulation.

In addition to bicycle parking requirements, off-street motor vehicle parking requirements can impact bicycle and pedestrian mobility and circulation within a development. The city should analyze the impacts of current off-street parking requirements in its code of ordinances on bicycle and pedestrian mobility. Consider lowering requirements for parking, establish maximum parking requirements, or other design opportunities for new commercial and housing developments, dependent on the specific context:

- Encourage conversion of surface parking lots or portions of these lots to active uses
- Establish parking maximums
- Create parking benefit districts
- If building new parking, reserve spaces for bicycles and shared cars
- Consider increasing or add parking fees and time limits on parking in certain areas to encourage walking, biking, and transit use

Facility Design

Facility Selection Policy

Select bicycle facilities appropriate to the local context.

Adopt an internal bicycle facility selection policy utilizing guidance from FHWA Bikeway Selection Guide, NACTO Urban Bikeway Design Guide, or other leading sources.

Complete Streets Program

Implement the Complete Streets policy in all projects.

A Complete Streets program can serve as an agency's vehicle for implementing its Complete Streets policy. Through a Complete Streets program, local agencies can advance projects and activities selected through guidelines established in the policy; establish a dialogue with community residents to build awareness and engagement during the planning, design, and construction processes; and document agency successes and implementation performance.

Bicycle and Pedestrian Design Standards

Adopt by resolution the NACTO Urban Bikeway Design Guide, the FHWA Separated Bike Lane Planning and Design Guide, or other leading design guidance as supplemental resources to implement new bikeway projects.

Recent facility design publications can serve as valuable resources as local agencies make important decisions about facility application and design. By incorporating these documents into its suite of design resources, the city can better design bikeways that meet national standards and address unique project contexts and geometric challenges.



Manage Vehicle Speeds

Explore opportunities for speed reduction on varying scales.

People walking and bicycling are much more vulnerable to increases in speed than other road users. Higher vehicle speeds (and traffic volumes) are not just a deterrent to walking and bicycling. Studies show that the risk of severe or fatal injury increases exponentially with motor vehicle speed. Slower speeds can promote physical activity by making the roads safer and more comfortable for active transportation modes. Whether through ordinance revisions to reduce posted speed limits or a traffic calming program that uses physical design elements to reduce motor vehicle speeds, local agencies can change the way people travel in their communities to create a safer, more comfortable environment for all road users.

Opportunities for speed reduction could be available on corridors with designated bicycle facilities as well as local roadways. The City of St. Louis is actively exploring speed reduction opportunities throughout the city. Whether through reducing and enforcing lower posted speed limits or employing traffic calming measures to influence driver behavior, slowing motor vehicle traffic saves lives.

Construction & Maintenance

Work Zone Policy

Maintain bicycle mobility when facilities are blocked off by construction work zones.

Establish policy and practices to support bicycle mobility and bicycle facility continuity through construction work zones.

Disturbance Restoration Policy

Require agencies to restore any damaged bicycle facility after a construction project is complete.

Establish policy requiring the public works or streets department, contractors, and utility agencies to restore bicycle facilities impacted by utility work to prior condition, including surface, striping, markings, colored paint, signage, and other facility elements.

Encouragement

Activating the network and increasing bicycle activity in St. Louis requires resources, amenities, events, and other programs designed to encourage residents and visitors to choose bicycling as their mode of choice for transportation and recreation trips. The following programs and policies offer an array of opportunities for the City of St. Louis and its community partners to encourage residents and visitors to choose bicycling as a way to travel in the city.

Community Resources

Bike St. Louis Network Map

Regularly update the Bike St. Louis Network Map.

The City of St. Louis, in partnership with Great Rivers Greenway, has printed multiple iterations of the Bike St. Louis Network Map as the system has grown over the



years. The City should continue to update and distribute this valuable resource in print and digital formats.

Bicycle Route Maps

Create neighborhood-specific bike route maps that utilize existing bicycle facilities and low-stress neighborhood routes to connect residents to local destinations.

Many residents are interested in riding their bikes more often, but lack knowledge about the best and most comfortable routes to access local destinations. These route maps can include linear routes to support utilitarian trips to schools, parks, and commercial destinations, and loop routes to encourage recreational trips throughout the community.

Bicycle Fix-It/Hydration Stations

Add bicycle fix-it and hydration stations to popular community locations.

Bicycle fix-it stations often include tools that are anchored to the site with metal tethers, allowing for minor repairs at the station. Hydration stations include water fountains or bottle refill stations which can make a long bicycle ride much more enjoyable. These stations can be located at libraries, schools, parks, trails or government buildings.

Bike Tool Lending Program

Add bike tool lending program to all library branches.

Libraries already have the capacity to lend out books and other materials. The public is familiar with the check-out process, and may already have a library card. Adding these specialized tools to the library collection will allow citizens who may only use them occasionally to avoid the cost of buying the tools and storing them.

Temporary Bike Parking

Provide bicycle parking at community events.

Encourage bicycling to community events by providing safe, well-lit and possibly staffed bicycle parking. Coordinate with local advocacy groups for staffing.

Events and Programs

Community Bike Rides

Coordinate with local advocacy organizations, bike shops, and other community partners to explore opportunities to diversify and strengthen organized bicycle ride offerings as essential tools to encourage active transportation and recreation.

Organized bicycle rides offer people a comfortable and fun way to explore their community's streets and trails in a group setting. Organized bike rides serve the valuable purpose of building many participants' confidence and knowledge of the bicycling network, giving them the tools necessary to feel confident bicycling for short daily trips.

Target audiences for these organized walks and rides should reflect the diversity of the community and include children, seniors, low-income residents, minority residents, immigrants, and young adults. Smaller group rides with capped attendance can highlight cultural assets and amenities like historic monuments and buildings, Town parks, business districts, shops and restaurants, and other unique locations.



Open Streets Events

Host an Open Streets event to encourage residents to explore their community on bike and foot.

Open Streets events, also called Ciclovías or Sunday Parkways, transform local roads into recreational corridors by temporarily prohibiting motor vehicle traffic and opening the street to people walking, bicycling, jogging, skateboarding, and inline skating. These events have evolved over time to include dancing, yoga, food vendors, exercise classes, and other fun activities for children and adults of all ages. Typical Open Streets events have either linear or loop routes depending on the neighborhood destinations and other local characteristics.

Open Streets events are often paired with other community events or festivals to capture a larger, more diverse audience. The City of St. Louis has hosted Open Streets events in neighborhoods throughout the city, including Old North St. Louis, Holly Hills, South Hampton, Southwest Gardens, and the central corridor between Forest Park and Downtown St. Louis. The city should continue to host Open Streets events and explore potential partnerships, logistics, routing, and other factors.

Safe Routes to School

Expand Safe Routes to School programs.

Expand safe routes to school programs with additional funding and staff, including curriculum and safety education programs, to encourage children to walk and bicycle to school at the elementary, middle, and high school levels.

Education

Educational programs are essential to the fostering mutual respect and shared responsibility for roadway safety in St. Louis. The following education programs aim to empower people bicycling with the tools necessary to travel safely and confidently on city streets, promote safe and responsible behavior among all road users, and build local agency capacity to plan for and design the bikeway network.

Bicyclist Education

Bike Safety Education

Expand and support existing and new bicycling education programs for bicyclists of varying confidence levels.

Classes and workshops provide education and skills training to bicyclists of varying confidence levels. Training classes and workshops offer many benefits: they enhance understanding, confidence, and independence related to bicycling for transportation and provide a supportive learning environment where participants can ask questions or express concerns. Furthermore, classes can be tailored to a variety of topics and demographics, such as:

General Classes:

- Basic bike maintenance
- How to change a tire
- Safe riding and traffic skills training
- Shopping by bike
- Commuting 101
- Group riding
- Bicycle legal clinic
- No car needed: how to get around without driving

Demographic Specific:

- Women's maintenance 101
- Youth safety and skills training
- Families on bike
- Foreign language classes

The City of St. Louis should partner with local advocacy groups, bike shops, and local League of American Bicyclists League Certified Instructors (LCIs) to host workshops and classes.

Bike Rodeos

Expand youth bike rodeo events to teach bike safety, communication, and decision-making skills through mock infrastructure courses and simulated scenarios.

This type of program is often included in Safe Routes to School programming, bike rodeos create a fun and immersive experience for young children to learn about the basics of bike and roadway safety.

Community-Based Bike Shops

Develop or support community-based bike shops to provide spaces and tools for do-it-yourself repairs with staff available to assist and teach basic mechanics.

Consider stipend program for unhoused people or those from lower-income households to receive job training as mechanics at these bike shops. Ensure these shops are established in traditionally underserved neighborhoods.

Motorist Education

Missouri Driver Guide Updates

Educate drivers more specifically about their responsibilities when interacting with bicycles.

Add stronger language to the Missouri Driver Guide related to on-street bikeways and motorist-cyclist interactions, and incorporate bicycle-friendly training into driver education programs.

Public Awareness Campaigns

Proactively educate the public through awareness campaigns about why roads are changing, and how to use them safely and successfully.

A high-profile media campaign can help to promote investments in improved transportation infrastructure. These campaign(s) should speak to bicyclists, drivers, and pedestrians with specific messages about what actions or behaviors are expected. Interagency coordination and the pooling of resources can increase campaign reach and offer consistent messaging across jurisdictions. More information about public awareness campaigns can be found in the 2018 Downtown Bike Plan.

Demonstration/Pop-Up Program

Develop a short-term program to showcase new projects before making more permanent changes.

Develop a short-term pop-up demonstration program including guidelines and possibly also grant funding so the city and its community partners can introduce new bikeways and road configurations to the community in a low-cost and effective way. More information about demonstration and pop-up projects can be found in the 2018 Downtown Bike Plan.



Building Staff Capacity

Professional Development

Develop and fund a specialized training program for key city staff.

Professional development trainings are critical to building local capacity to implementing a bicycle program and bicycle facility projects. The City of St. Louis should explore opportunities to develop a program to provide educational sessions on the principles of Vision Zero, Complete Streets, bicycle facility design, and other active transportation topics. Expanding educational opportunities to engineering, planning, public works, parks and recreation, law enforcement, and other departments can increase interdepartmental consensus and collaboration to address important transportation issues. These trainings could be held in concert with policy development initiatives or after policies are established to expand leadership knowledge and support policy implementation.

The program could also include creative, low-cost ways to deliver professional development offerings for agency staff. Webinars, online courses, and other trainings offered through APBP, PBIC, APA, FHWA, EWGCOG are one option. Programs should provide continuing education credits to encourage participation.

Interagency Communications and Resource Sharing

Establish a communication system to promote education opportunities to municipalities, agency staff, crews, and law enforcement.

The City of St. Louis and its regional partners can benefit from regular communications and sharing of best practices and local experiences in bicycle program, policy, and project implementation. The City of St. Louis should explore possible communication channels like a quarterly bicycle program email or regular meetings with local and regional agency partners to share recent successes, explore opportunities for collaboration, and encourage partnerships to share limited resources and advance bicycle projects. Representatives from the city participate on the regional Bicycle and Pedestrian Advisory Committee (BPAC), whose members meet quarterly to discuss bikeway and pedestrian projects, planning efforts, and other initiatives at the local and regional levels to support active transportation.

Evaluation & Planning

Regular evaluation of plan performance and available bicycle-related data is necessary to communicate the progress made toward realizing the Plan's mission and vision and to revise the Plan's recommendations to reflect community needs, staff capacity, and other factors driving plan implementation. The following programs and policies offer various pathways for the city and its community partners to critically evaluate implementation efforts and communicate to the public the growth, value, and impact of the bicycle system over time.

Annual Plan Performance Evaluation

Understand and communicate Plan implementation and the benefits of a bicycle friendly community.

The City of St. Louis should regularly evaluate its progress in advancing the Gateway Bike Plan Update and other programs, policies, and initiatives to support active transportation. Section X provides specific performance measures to assist the city in tracking implementation progress. In years past, Great Rivers Greenway produced an annual Gateway Bike Plan report cards to measure success. These report cards provided a wealth of information important to residents, local agency staff, and elected officials throughout the region. Annual Gateway Bike Plan report cards are available at <http://www.stlbikeplan.org/>.

Bicycle Crash Evaluation

Understand and address bicycle safety in the City of St. Louis.

Utilize police reports, crash data, and surveys to assess both documented crashes involving bicyclists and also near-miss incidents experienced by the public. Use the information gathered to identify high-crash corridors and intersections and develop appropriate countermeasures to address safety needs.

Bicycle Count Program

Create and resource a citywide bicycle count program.

Bicycle count programs are valuable mechanisms for tracking bicycle facility usage over time and evaluating the success of infrastructure projects for their ability to increase ridership. While Trailnet has led an annual bicycle count event every September in recent years, the City of St. Louis should establish a more thorough count program to support network and project evaluation based on local goals and objectives.

Economic Impact Study

Understand and communicate the impact of bicycling infrastructure and activity on the St. Louis economy.

Conduct an economic impact study to quantify the value of bicycling on the local economy and to serve as a catalyst for continued investments in bicycle facilities, programs, and events.

Bicycle Friendly Community

Pursue gold-level Bicycle Friendly Community designation from the League of American Bicyclists (LAB).

The City of St. Louis has steadily risen in the rankings to become a silver-level Bicycle Friendly Community. Through continued investments in low-stress bikeways, active transportation policies, and supporting programs, the City can earn this prestigious recognition.

Plan Updates

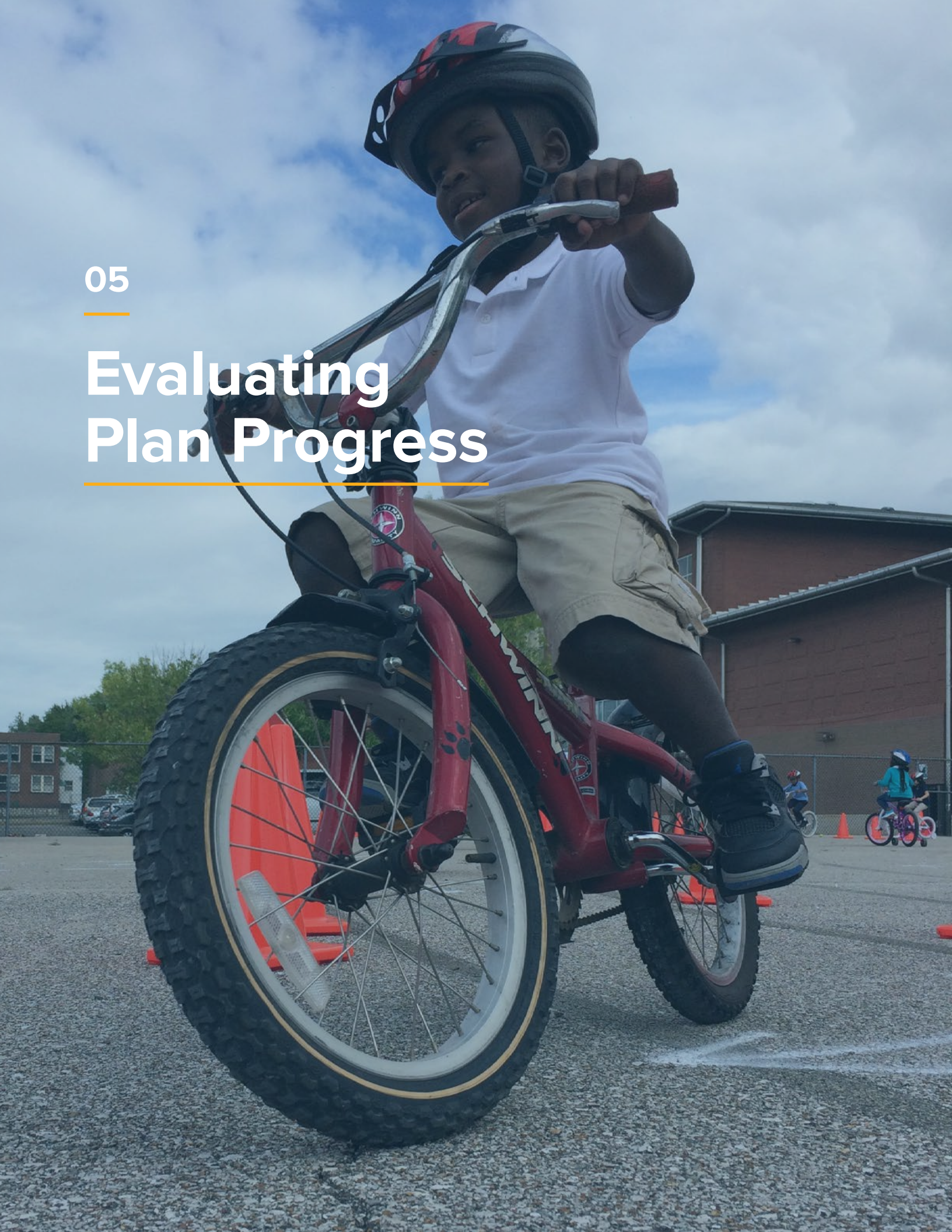
Regularly revisit and revise the City of St. Louis Gateway Bike Plan Update.

The City of St. Louis Gateway Bike Plan Update represents a focused and coordinated effort to recalibrate bicycle network recommendations based on best practices and community transportation values in 2021. Five years from now, both of these may be different. It is therefore necessary that the City of St. Louis regularly revisit and update the Plan to refocus energy and attention on bicycle transportation, foster a dialogue with community residents and stakeholders around bicycle transportation needs and ambitions, and create strategies to meet those shared ambitions through continued investments in bicycle programs, policies, and projects.



05

Evaluating Plan Progress



Evaluating Plan Progress

The recommendations outlined in the Plan update will bring the city closer to increasing bicycle access, comfort, and safety for people of all ages and abilities while simultaneously supporting a reduction in bicycle collisions. Establishing a clear evaluation framework will help the City of St. Louis communicate to residents and decision-makers what progress has been made toward realizing this vision and associated goals and objectives. The previous Plan lacked a clear evaluation framework, making it difficult for the city to track progress, reassess or refine recommendations, or demonstrate success.

Performance Measures

The table below summarizes the Plans goals and objectives, identifies performance measures for each Plan objective, and names responsible parties who can help track each performance measure. These performance measures will help the city understand how well the Plan recommendations are being realized, are manageable enough to track at the local level, and can communicate the Plan's success to public stakeholders.

TABLE 4 PLAN OBJECTIVES AND PERFORMANCE MEASURES

<i>Goal 1: Goal 1: Provide a prioritized system of routes that are contiguous and connected to other on- and off-road facilities.</i>		
Objective	Performance Measure	Responsible Parties
1.1: Improve accessibility and added safety for bicycling along on-street routes.	•Increase in the number of completed miles of recommended facilities.	City of St. Louis
1.2: Increase safety, comfort, and accessibility of the Gateway Bike Plan Network by designing low-stress bicycle facilities that support people of all ages and abilities.	•Achieve League of American Bicyclists Bicycle-Friendly Community status.	City of St. Louis
1.3: Improve accessibility and safety for bicycling around barriers like intersections and rivers.	•Reduction of LTS at all LTS 4 intersections and major river crossings.	City of St. Louis
1.4: Improve the safety of existing facilities	•Decrease in the number of bicycle collisions.	City of St. Louis
1.5: Minimize the impact of construction activity on existing bicycle facilities.	•Establishment and distribution of guidelines for bicycle facility accommodations through construction zones.	City of St. Louis
1.6: Reduce the rate of bicycle crashes by 50 percent by 2031.	•Decrease in the number of bicycle collisions.	City of St. Louis
1.7: Promote more bicycling through route signing and end-of-trip facilities.	•Installation of wayfinding signs on all LTS 1 and LTS 2 bicycle routes. •Creation and dissemination of bike route maps that include key destinations, including those with end-of-trip facilities.	City of St. Louis City of St. Louis, GRG
<i>Goal 2: Improve safety for all modes of transportation through careful design and implementation of bicycle facilities.</i>		
Objective	Performance Measure	Responsible Parties
2.1: Improve safety by designing all bicycle facilities to the latest AASHTO bicycle guidelines and 2009 MUTCD Standards.	•Adoption and implementation of the latest AASHTO bicycle guidelines and 2009 MUTCD (rev 2021).	City of St. Louis, MoDOT

Goal 3: Improve safety for all modes of transportation through the implementation of educational and enforcement programs.

Objective	Performance Measure	Responsible Parties
3.1: Improve safety and reduce the number of crashes involving bicyclists by expanding, developing, and implementing education and enforcement programs through partnerships with community organizations.	<ul style="list-style-type: none"> •Establishment of a Bicycle/ Pedestrian Program Coordinator position. •Creation of an active transportation webpage that serves as a “clearinghouse” for bicycle trainings, programs, events, and traffic safety information. 	<p>City of St. Louis</p> <p>City of St. Louis</p>
3.2: Educate staff in planning, design, maintenance, construction, and enforcement.	<ul style="list-style-type: none"> •Establishment of a Bicycle/ Pedestrian Program Coordinator position. 	City of St. Louis

Goal 4: Expand the public’s view that bicycles are a viable/acceptable mode of transportation through encouragement programs.

Objective	Performance Measure	Responsible Parties
4.1: Establish ongoing regional encouragement programs.	<ul style="list-style-type: none"> •Establishment of a Bicycle/ Pedestrian Program Coordinator position. •Creation of an active transportation webpage that serves as a “clearinghouse” for bicycle trainings, programs, events, and traffic safety information. 	<p>City of St. Louis</p> <p>City of St. Louis</p>

Goal 5: Increase the commitment of public officials to support or initiate public policy for bicycling in all levels of government – state, local, and regional.

Objective	Performance Measure	Responsible Parties
Objective 5.1: Increase interagency cooperation on bicycle policy and projects.	<ul style="list-style-type: none"> •Establishment of a Bicycle/ Pedestrian Program Coordinator position. 	City of St. Louis, GRG, Metro, EWG
Objective 5.2: Establish funding sources for implementation and on-going maintenance.	<ul style="list-style-type: none"> •Increase in local budget dedicated for active transportation projects. •Increase in the number of grant opportunities pursued each year. 	<p>City of St. Louis</p> <p>City of St. Louis</p>

The Plan performance measures listed in the table above represent high-level metrics for implementation tracking and should be evaluated by city staff to determine applicability, baselines and targets (where applicable), data collection and evaluation frequency, level of effort for data collection and evaluation, and resources available to conduct regular performance evaluations.

