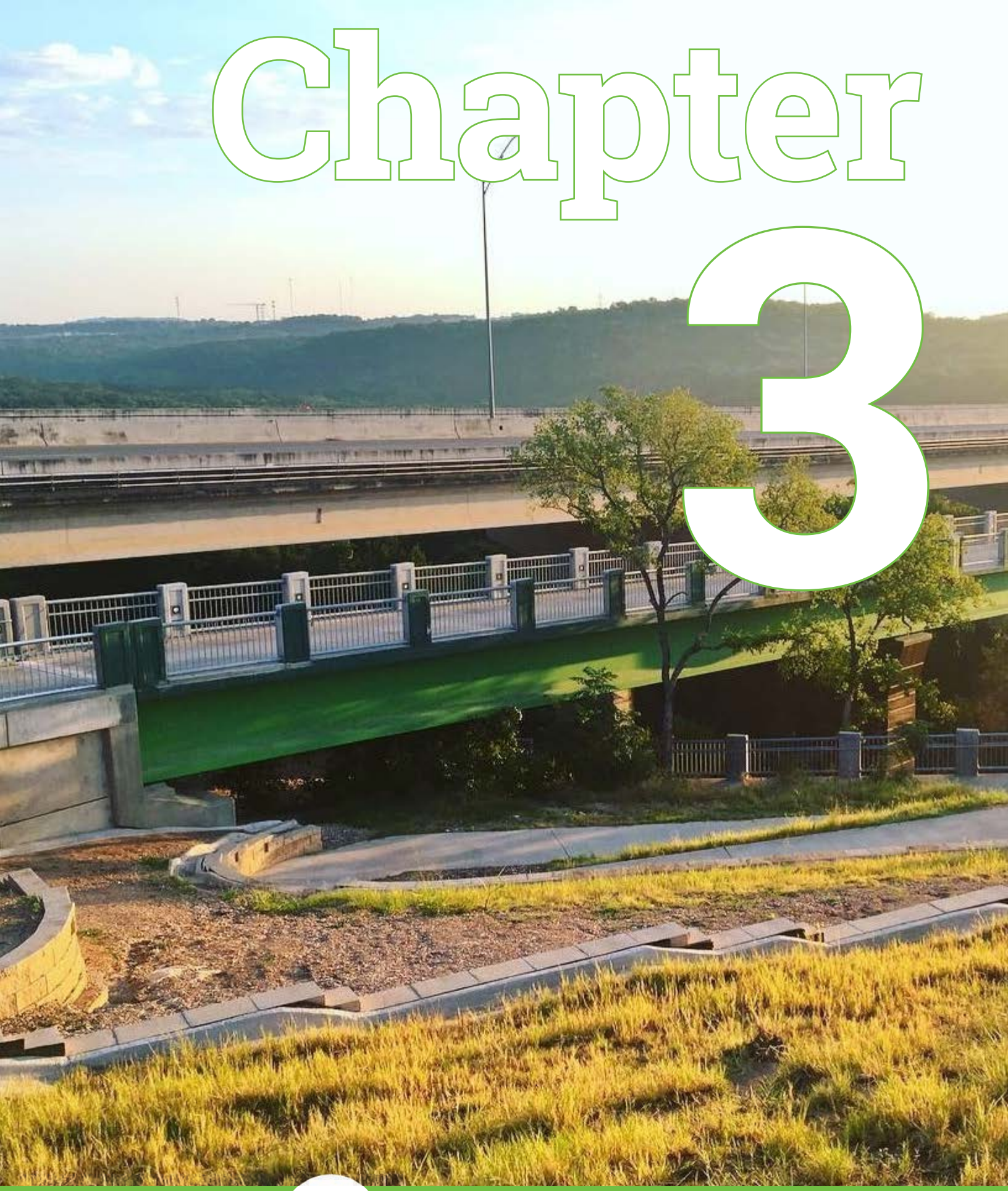
Chapter 3



GETTING THERE TOGETHER ASMP

Supplying Our Transportation Infrastructure

Austin's transportation network is made up of the infrastructure for many individual transportation systems. These systems, our sidewalks, roadways, public transportation services, bicycle facilities, and urban trails, among others, are supplied to our community to ensure we can use our transportation network to move around our community when and how we wish.

The amount of transportation infrastructure we can supply, the amount of and width of roads, for example, is limited. Physical space and financial constraints are two major forces that limit our transportation supply, but we also know that an unlimited supply of transportation infrastructure will not solve many of the problems we face today. Larger roads with more lanes increase vehicle speeds and bring more cars to them, a concept known as "induced demand," while also increasing harmful emissions, cutting off neighborhoods and communities, reducing travel choice, and decreasing the overall safety of our transportation network.

In addition to enabling our movement, the transportation network shapes our community's physical landscape, our social expectations, and our cultural values. Decisions made in the past affect our mobility today, and the transportation decisions we make today will affect how our children move around in 20 years.

Strategically planned transportation systems that supply our network with the appropriate infrastructure, in both size and location, are what enable us to travel around our community safely, reliably, and efficiently. A complete sidewalk system is integral to connecting people, resources and opportunities across our community. Building vehicle-related improvements and expanding strategic connections both north-south and east-west are necessary to support people on our roadways. Prioritizing speed, reliability, and comfort can encourage public transportation ridership. Safe and comfortable all ages and abilities bicycle facilities and related improvements support bicycle use. Austin's urban trails provide transportation options that are physically separated from our streets. New transportation systems, whether they are shared micromobility options like scooters, automated driving vehicles, or something else, will expand how we provide and operate our transportation infrastructure in the future. For our entire transportation network, we must responsibly extend the useful life of infrastructure, increase its resiliency, leverage mobility improvements through capital renewal, and ensure it is available to everyone whenever and wherever they need to go. We also must recognize the growing role our airport has in our transportation network. Individual mode systems should not be considered in isolation. Rather all modes should support each other to create a strong transportation network.

This chapter presents our proposed transportation network. It builds upon the strengths that exist today but also focuses on the systems that can achieve our mobility goals over the next 20 years. The full proposed transportation network is built around infrastructure that will get us where we want to go, when we want to get there, safely and cost-effectively.

Policy Summary

Sidewalk System

Policy 1 Complete the sidewalk system
Policy 2 Make the sidewalk system accessible and comfortable for all
Policy 3 Maintain the usability of the sidewalk system
Policy 4 Ensure new development connects to the sidewalk system

Roadway System

Policy 1 Strategically provide new roadway connections and add capacity for vehicles
Policy 2 Improve travel time reliability
Policy 3 Increase the person-carrying capacity of the highway system
Policy 4 Work with regional partners to upgrade the highway system
Policy 5 Manage right of way space for all users

Public Transportation System

Policy 1 Give public transportation priority
Policy 2 Enhance commuter public transportation service
Policy 3 Support local public transportation service
Policy 4 Invest in a high-capacity transit system
Policy 5 Improve the public transportation experience
Policy 6 Improve access to public transportation

Bicycle System

Policy 1 Make streets safe for bicycling
Policy 2 Complete the Bicycle Priority Network
Policy 3 Remove significant infrastructure gaps in the bicycle system
Policy 4 Provide a comfortable bicycle system with end-of-trip facilities
Policy 5 Work with partner agencies and other jurisdictions to develop a regional bicycle system
Policy 6 Maintain the usability of the bicycle system

Urban Trail System

Policy 1 Recognize the urban trail system as an integral part of the transportation network
Policy 2 Provide high-quality urban trails that can serve all users
Policy 3 Pursue opportunities to connect to and expand the urban trail system

Condition of Infrastructure

Policy 1 Responsibly maximize the useful life of transportation infrastructure
Policy 2 Pursue opportunities to increase mobility options during capital projects
Policy 3 Improve multimodal mobility through maintenance activities
Policy 4 Maintain the usability of all mobility infrastructure

Emerging Mobility Solutions

Policy 1 Evaluate emerging mobility solutions to meet community needs
Policy 2 Integrate emerging mobility solutions into existing transportation infrastructure systems
Policy 3 Invest in infrastructure that enables the adoption of emerging mobility technologies

Aviation

Policy 1 Expand mobility options to and from the airport
Policy 2 Increase multimodal connectivity and options on the airport campus
Policy 3 Inform visitors about Austin's mobility options
Policy 4 Prepare for and design aviation facilities to adapt to emerging mobility solutions
Policy 5 Coordinate wayfinding to, from, and at the airport

Sidewalk System

Everyone, at some point in their trip, is a pedestrian. Because of this, a complete and usable sidewalk system is necessary across all of Austin. Making Austin a more walkable city enhances our health and safety, sustainability, and economic competitiveness by improving our overall quality of life. Sidewalks also give people more options for how they move around the city. People might use sidewalks for their entire journey, as a short connection to some other mode of transportation, or for health and recreation. Since sidewalks are so critical to mobility, this makes a high-quality sidewalk system the backbone of our entire transportation network.

"I believe we must invest in additional alternative transportation including biking and pedestrian walkways."

—Community Member

We have over 2,100 miles of missing sidewalks spread throughout Austin, and it will require lots of resources to fill these gaps where sidewalks abruptly end. The Sidewalk Plan/Americans with Disabilities Act Transition Plan guides us in maintaining and improving the sidewalk system in Austin, laying out the challenges and needs of our community and the strategies we use to address them. Absent sections pose barriers for members of our community, making it difficult to access the places we go and the other modes we use to get there, like public transportation and bicycling. Missing sidewalks can cause people to use the street instead, which can lead to conflicts between vehicles and pedestrians and decreases safety.

We also have the challenge of maintaining the sidewalks we've slowly built throughout Austin's history. Our sidewalks do not function the same way today as they did when they were built, and the expected lifespan of a sidewalk is only around 75 years. As of 2016, an estimated 80% of existing sidewalks in Austin are considered functionally deficient. Clearing sidewalks overgrown with vegetation is challenging to keep up with, and preventing obstacles from blocking sidewalks requires planning, ongoing help from community members, and enforcement.

A connected and continuous sidewalk system is important to ensure that our community can move around Austin. It also provides numerous health benefits associated with active lifestyles and can help foster a dynamic public realm that makes commercial districts and neighborhoods vibrant places to be. Sidewalks are essential, and a high-quality sidewalk system will support all of our other transportation systems, providing the foundation for mobility throughout all of Austin.

Indicators and Targets

Increase the functionality of existing very high- and high-priority sidewalks

Achieve and maintain 95% functionality for very high- and high-priority sidewalks by 2026

Increase the functionality of the existing sidewalk system

Achieve and maintain 55% functionality for the sidewalk system by 2026

Increase the number of new very high- and high-priority sidewalks completed within 1/4 mile of all identified schools, public transit stops and stations, and parks, including both sides of arterial and collector streets and one side of residential streets

Complete 100% of missing very high- and high-priority sidewalks within 1/4 mile of all identified schools, public transit stops and stations, and parks by 2026

Improve the response time for sidewalk obstruction complaints

Increase the frequency of assessing the condition of the existing sidewalk system

Assess 10% of the sidewalk system annually

Increase the year-over-year miles of sidewalks constructed

Increase the share of Austin residents who walk to work

Achieve 4% of Austin residents who walk to work by 2039 (2.3% of residents walked to work between 2013 and 2017)

Increase the number of leading pedestrian intervals and pedestrian signal priority treatments

Sidewalk System Policy 1

Complete the sidewalk system

Provide a high-quality, continuous sidewalk system throughout all of Austin to meet existing and expanding demand

Sidewalks provide a safe, separated path of travel for pedestrians to get to the places they live, work and go for recreation, and provide vital connections to public transportation. They can help foster community and enhance our quality of life. The absence of sidewalks can decrease safety for pedestrians by putting them in conflict with cars. It is clear that sidewalks are an integral component of a safe and accessible pedestrian system. Walking and other active forms of transportation are also beneficial to people's health and are zero-emission ways to travel around our city.

Both the public and private sectors will be responsible for helping to complete the sidewalk system in Austin. Developers need to supply sidewalks when developing or redeveloping land, and public agencies need to construct missing sections to fill in gaps and reconstruct deficient sidewalks. To help prioritize which sidewalks to build first, the City uses scoring criteria in the Sidewalk Plan/Americans with Disabilities Act Transition Plan to rank every sidewalk in Austin. Prioritization rankings are intended as a tool to allocate limited City of Austin sidewalk resources. Just because a particular section of sidewalk is ranked as a lower priority does not mean it is not a necessary component of a complete pedestrian network.

Although we use prioritization rankings to help us know where to build and rebuild sidewalks first, we need to recognize that completing the sidewalk system is exceedingly important to reaching our mobility goals. This means we need to dedicate more resources to getting this basic infrastructure built and maintained. The demand for sidewalk investment already exists, with many community members requesting more and better pedestrian infrastructure each year. As Austin grows in the next decades, the demand for safe, quality, accessible sidewalks will only continue to grow alongside it.

Sidewalk System Policy 2

Make the sidewalk system accessible and comfortable for all

Implement sidewalk system projects and complementary transportation investments that increase accessibility to, and comfort using, the sidewalk system

Our sidewalk system is intended to be used by anyone of any age or ability in Austin. The Americans with Disabilities Act prohibits discrimination based on ability, including in transportation, and guidelines have been developed governing the design of transportation facilities to meet the requirements of this law. While the Americans with Disabilities Act is a driving factor in the design and configuration of new and existing sidewalks, the benefits of a well-designed and accessible sidewalk system can be enjoyed by the entire community. Universal design, or design that meets the needs of everyone who wishes to use it, considers the diverse needs and abilities of everyone throughout the process. From the parent with a stroller, to the senior with a walker, to the traveler with luggage, to the person using a wheelchair, everyone can enjoy a sidewalk that is accessible and comfortable. The design (and redesign) of our pedestrian infrastructure is a key component to achieving an accessible and comfortable sidewalk system.

We can also increase the comfort of our sidewalk system by adding complementary amenities. Trees, vegetation, shade structures, benches, handrails, crosswalks, signage, and many other things help pedestrians enjoy the sidewalk system while using it. These investments that support our sidewalk system should be integrated into sidewalk reconstruction projects. Transitioning all of our older sidewalks and pedestrian infrastructure to modern standards will require significant resources, but these resources are critical to expanding all of our sidewalk system to be accessible for everyone.

> *"Sidewalks would be helpful to those who need to depend on mobility scooters to be able to get to the corner store or be able to take a bus, giving them a little more independence."*
>
> –Community Member

Sidewalk System Policy 3

Maintain the usability of the sidewalk system

Proactively maintain and provide incentives to ensure our existing sidewalk system is functional and clear of obstructions

While missing sidewalks are a major concern with the sidewalk system in Austin, another and sometimes trickier problem is how to keep our existing sidewalks clear and functional. The Public Works Department is currently responsible for maintaining approximately 2,600 miles of existing sidewalks. To assess the condition of sidewalks, segments are scored A through F, based on their level of usability. Currently, only an estimated 20% of Austin sidewalks score an A or a B rating, which are considered functionally acceptable.

Vegetation impacts the usability of sidewalks by creating protrusions and obstructions that can make it difficult to get by. City Code requirements to maintain vegetation lack clarity and are infrequently enforced. Currently, the City addresses vegetation reactively by responding after community members bring obstruction issues to our staff's attention through 3-1-1. Vegetative obstruction removal costs are significantly lower than sidewalk repair and rehabilitation costs, and it is estimated that we could double the percentage of functional sidewalks in Austin from 20% to 40% if we addressed these barriers.

Other obstructions, such as dumpsters, dockless scooters, and utility poles will require increased coordination between the public and private sectors to address. A proactive approach, including clear education, incentives, and enforcement will help us all keep our sidewalks clear and usable. Implementing these strategies will dramatically increase the usability of our sidewalk system without constructing a single new sidewalk segment, and improve the quality of life and travel options for our whole community.

Vegetative Obstruction Removal Program

A proactive vegetative obstruction removal program would assess conditions throughout the City and fix problems without having to wait for a community member to lodge a complaint. It would include education for property owners about maintenance responsibilities, improved enforcement of violations, and proactive management by the City for obstructions in public rights of way. Such a program is a cost-effective strategy to help achieve a more functional sidewalk network.

Sidewalk System Policy 4

Ensure new development connects to the sidewalk system

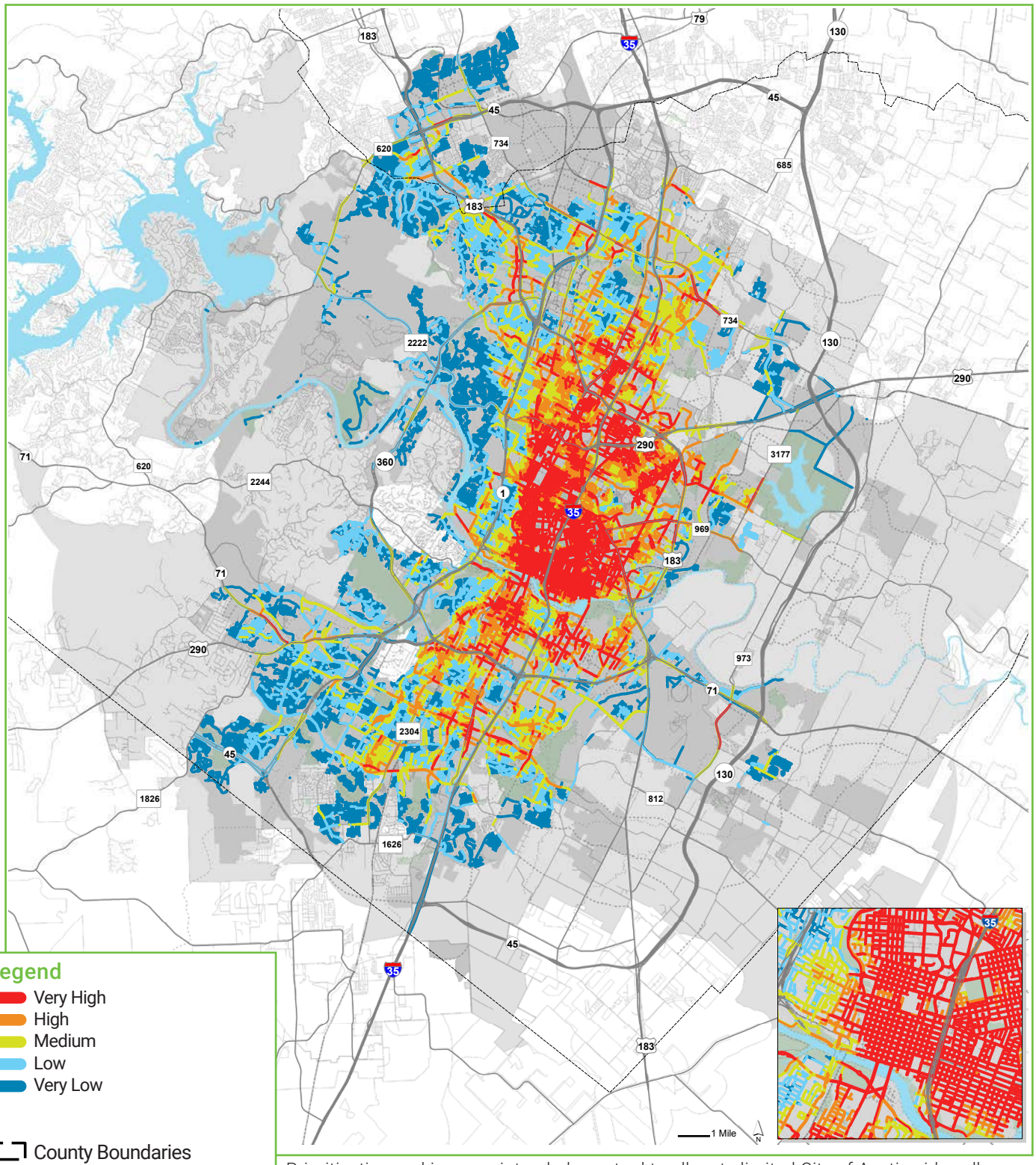
Promote and incentivize the expansion of the sidewalk system through new development and site redevelopment

New development and redevelopment is a great opportunity to fill in missing sidewalk gaps, and to construct new segments on streets where sidewalk do not exist. Currently, by City ordinance, any new building, building relocation, or construction that increases a building's footprint by 50% or more requires the installation of sidewalks. Developers in these cases are required to either construct a sidewalk or to pay a fee in lieu. If a developer pays a fee in lieu instead of constructing a sidewalk, then those funds are set aside for future sidewalk construction in the neighborhood.

Not all development currently requires the construction of new sidewalks or the payment of fees in lieu for future sidewalks, however. A building being fully remodeled but that does not increase in gross floor area would not be held to current sidewalk installation requirements.

Developing strategies that require both new development and redevelopment connect to our sidewalk system will speed the completion of our sidewalk system and help us realize all the benefits that come along with high-quality sidewalks. Strategies could include requiring more types of development to construct sidewalks, or incentivizing development and redevelopment to connect to existing sidewalks. City Code could also be updated to ensure that developers upgrade existing non-functional sidewalks to increase accessibility and usability. These strategies are just some of the possible ways that development and redevelopment can help us reach a complete sidewalk network.

Sidewalk Prioritization Map



Prioritization rankings are intended as a tool to allocate limited City of Austin sidewalk resources; just because a particular section of sidewalk is ranked as a lower priority does not mean it is not a necessary component of a complete pedestrian network. Consistent with City of Austin Complete Streets policies, all private and public development, redevelopment, and capital improvement projects should include ADA compliant sidewalks (or urban trails where appropriate) along the full length of every roadway.


Sunrise
Mini-
Mart

Roadway System

We rely on roads to get to work, school, the store, and many other places in our daily lives. The roadway system is made up of many types of roads, from the road in front of your home to the highway you use to get to work, and it is the only system dedicated to the movement of vehicles. It is necessary to have a roadway system that can transport people and goods safely and reliably. Austin's roadway system has not kept up historically with the amount of growth our region has experienced. More importantly, the roadway system was never built to manage today's population size which continues to grow. This insufficient investment in our roadway system and the number of people that use it are largely responsible for the congestion and unreliable travel times we experience today. Currently, our roadway system is concentrated north-south along I-35 and MoPac, leaving those needing to travel east/west without adequate connections. While we acknowledge that congestion cannot be solved solely by building more roadways, we can take advantage of opportunities to add roadway capacity, expand connectivity across Austin, and improve travel time reliability where we can. Leveraging funding for strategic investments at capacity bottlenecks in the roadway system will help manage congestion on a strained system.

> *"We need road investments to deal with short-term challenges of congestion and travel times."*
>
> —Community Member

Indicators and Targets

Improve travel time reliability

Provide predictable travel times on the Vehicle Priority Network by 2029

Increase the number of jobs accessible by vehicle in a 20 minute commute

Increase the number of roadway capacity improvements implemented

Increase the number of capacity-related intersection improvements implemented

Reduce the amount of time it takes to clear crashes from the roadway

Roadway System Policy 1

Strategically provide new roadway connections and add capacity for vehicles

Identify and develop projects that, while helping meet our mode share goals, increase vehicle capacity on our roadway system at strategic locations to manage congestion and facilitate emergency response, across a range of travel directions and distances, and prioritize connectivity of our streets for the common public good

Throughout the transportation network, there are opportunities to strategically provide new roadway connections to improve street grid connectivity and make improvements to existing roads and intersections that add vehicle capacity. These new roadways connect people to the places they want to go and these improvements help facilitate how efficiently they get there.

New roads and improvements to existing roads and intersections are necessary to keep up with the amount of growth Austin has experienced and continues to experience. In some suburban parts of Austin that continue to grow, these roadways provide the basis for how people not only get around, but they also shape their environment. In some areas of Austin these new roads and intersection improvements provide relief from a congested network by providing new alternative routes. We must also recognize the importance of new roads and improvements to existing roads and intersections in facilitating faster emergency evacuation and response, whether it is people evacuating from a wildfire or a patient being transported to the hospital.

Other opportunities to add vehicle capacity include expansion of existing roads, reconstruction of existing substandard streets, managed access along existing roads, and enhancement of capacity and efficiency at intersections of roads. Expanded road projects include adding travel lanes and constructing raised medians, as well as bicycle and pedestrian elements. A substandard street reconstruction project includes updating a road to modern standards by adding curbs, gutters, and facilities for bicycles and pedestrians. An access management project includes converting a center turn lane into a raised median and consolidating driveways for increased capacity and safety by reducing conflicts of turning vehicles. Other improvements, such as constructing turn lanes and traffic signals or even innovative intersections, such as continuous flow intersections, can also add vehicle capacity.

Delivering Capital Projects

Implementing capacity improvements on the roadway system requires a strong project delivery process in order to take them from planning to reality. As funding becomes available for study, design, and construction, the City will initiate a community engagement process. This includes notifying residents and businesses along the proposed project, holding open houses to gather stakeholder input before any improvements are implemented and during design, and determining the feasibility through detailed engineering analysis.

Roadway System Policy 2

Improve travel time reliability

Implement projects that improve travel time reliability on the Vehicle Priority Network

The Vehicle Priority Network is a subset of streets in the roadway system that carries the most vehicular traffic and are the most critical roadways to vehicle operations. This network includes more than 400 miles of City streets each carrying between 10,000 and 60,000 vehicles per day and also includes the highway system under the jurisdiction of the Texas Department of Transportation (TxDOT). Vehicle travel time is a measure of how long it takes someone to get somewhere on a typical weekday. Vehicle travel time reliability is meant to express the consistency and dependability of travel time on any given day, at any given time of day, and is measured based on the variability in travel time from the average weekday.

Travel time reliability on the Vehicle Priority Network is important because these corridors are critical for people who drive. Unexpected delays such as crashes along one's route or inclement weather impact travel time reliability. Having more predictable, reliable travel time is important to everyone trying to get around in Austin.

Improving travel time reliability on the Vehicle Priority Network can result from projects that improve mobility and safety. Access management projects can improve travel time reliability by removing conflict points in the road that result in crashes from turning vehicles. There are also opportunities to study corridors for mobility improvements through new Corridor Mobility Reports. Additional improvements could include signal timing and synchronization, limitations of street closures during peak travel times, and implementing emergency vehicle preemption technology that would allow safe management of traffic and reduced response times for emergency vehicles.

Corridor Mobility Reports

Corridor Mobility Reports were first created leading up to a successful 2010 Mobility Bond that funded the study of seven major corridors in Austin. These studies resulted in the identification of short-, medium-, and long-term recommendations that were designed to improve the safety, mobility, and connectivity of each corridor. Additional corridors were funded for study as part of the 2012 Mobility Bond, and reports for these corridors were subsequently used to develop the 2016 Mobility Bond, which partially funded construction improvements. Continuing to use Corridor Mobility Reports to identify mobility and safety improvements on additional corridors will help prepare us to construct improvements when funding becomes available in the future for design and construction.

Roadway System Policy 3

Increase the person-carrying capacity of the highway system

Collaborate with TxDOT, CTRMA, CAMPO, Capital Metro, and other agencies in the region to increase the ability of the highway system to carry more people by managing new and existing capacity

Austin's highway system carries more people than any other system in the region. The highway system is made up of I-35, Loop 1, and other various U.S. and State Highways going into, out of and around Austin. On an average day, more than 100,000 vehicles use each of those regional roadways and more than 200,000 vehicles use I-35.

We must recognize that the existing highway system does more than just carry vehicles; it moves people. Unfortunately, the number of people it moves is not enough, as most of those vehicles are only carrying a single person. Without significantly expanding the highway system we will not be able to carry more vehicles, but we know that it is not possible to expand these regional roadways enough to adequately serve the projected demand in the limited space that exists. It is imperative that we use strategies that increase the person-carrying capacity of the highway system to move more people and not just vehicles.

A highway is an access-controlled, multilane, divided facility

Increasing the highway system's capacity for people will require collaboration among transportation partners in the region, such as the TxDOT, Central Texas Regional Mobility Authority (CTRMA), Capital Area Metropolitan Planning Organization (CAMPO), Capital Metropolitan Transportation Authority (Capital Metro), and other agencies. Carpooling and vanpooling is another important strategy to further increase the number of people, rather than vehicles, on our highways. Commuter bus service from surrounding communities can carry more people in the same amount of space as several cars. However, due to induced demand, an effective strategy to increase the person-carrying capacity of the highway system is to manage any new capacity using tolled-lanes or dynamically-priced express lanes where transit has a travel time advantage, like the MoPac Express Lanes. High-occupancy vehicle lanes are a strategy to increase person-carrying capacity. Another strategy is to include access points to managed lanes that are configured to allow the efficient entrance and exit of commuter transit service. Without these strategies to manage new capacity, additional travel lanes would quickly be filled with more cars, perpetuating the congestion problem and leaving less room for more people.

MoPac Express Lanes

CTRMA implemented a solution to provide travel time reliability and relief from congestion on MoPac. Express Lanes were used as an innovative congestion management tool that allow drivers to bypass congestion when reliable travel time is needed by paying a toll. The cost of utilizing the MoPac Express Lanes is dynamic, changing throughout the day to respond to conditions on the highway. Analysis has shown that in the afternoon peak Express Lane drivers travel times are reduced by an average of 15 minutes.

Roadway System Policy 4

Work with regional partners to upgrade the highway system

Collaborate with TxDOT, CTRMA, CAMPO, and other agencies in the region to improve the safety and mobility of the existing highway system

The highway system, consisting of I-35, Loop 1, and various other US and State Highways, was built over decades, with much of its footprint established in Austin's early history. Many of these regional roadways were upgraded in the same footprint as the original system of state highways while a few others took on new alignments. With the development of the federal Interstate Highway System, Austin's highways took shape and resulted in the city's geography we know today.

Since the highway system that we know today was completed, Austin has grown up around it. Many past transportation planning efforts included the idea of expanding the highway system and building new freeways, but such efforts were never implemented. The reality that Austin faces now is that with the built environment that exists today there are no more opportunities to build new freeways through our neighborhoods, but only make improvements to safety and mobility on the highway system we have today.

The City of Austin must collaborate with TxDOT, CTRMA, CAMPO, and other agencies in the region to improve the safety and mobility of the existing highway system. Many of Austin's U.S. and State Highways still operate with traffic signals instead of overpasses and underpasses causing delay at every intersection. We must work with our regional partners to upgrade the existing highway system by constructing additional travel lanes, implementing managed lanes, and constructing grade-separated intersections.

Through the 2016 Mobility Bond, the City of Austin contributed $46 million to upgrade the Capital of Texas Highway. TxDOT matched local funds with $204 million to construct four grade-separated intersections and other improvements

City of Austin

Roadway System Policy 5

Manage right of way space for all users

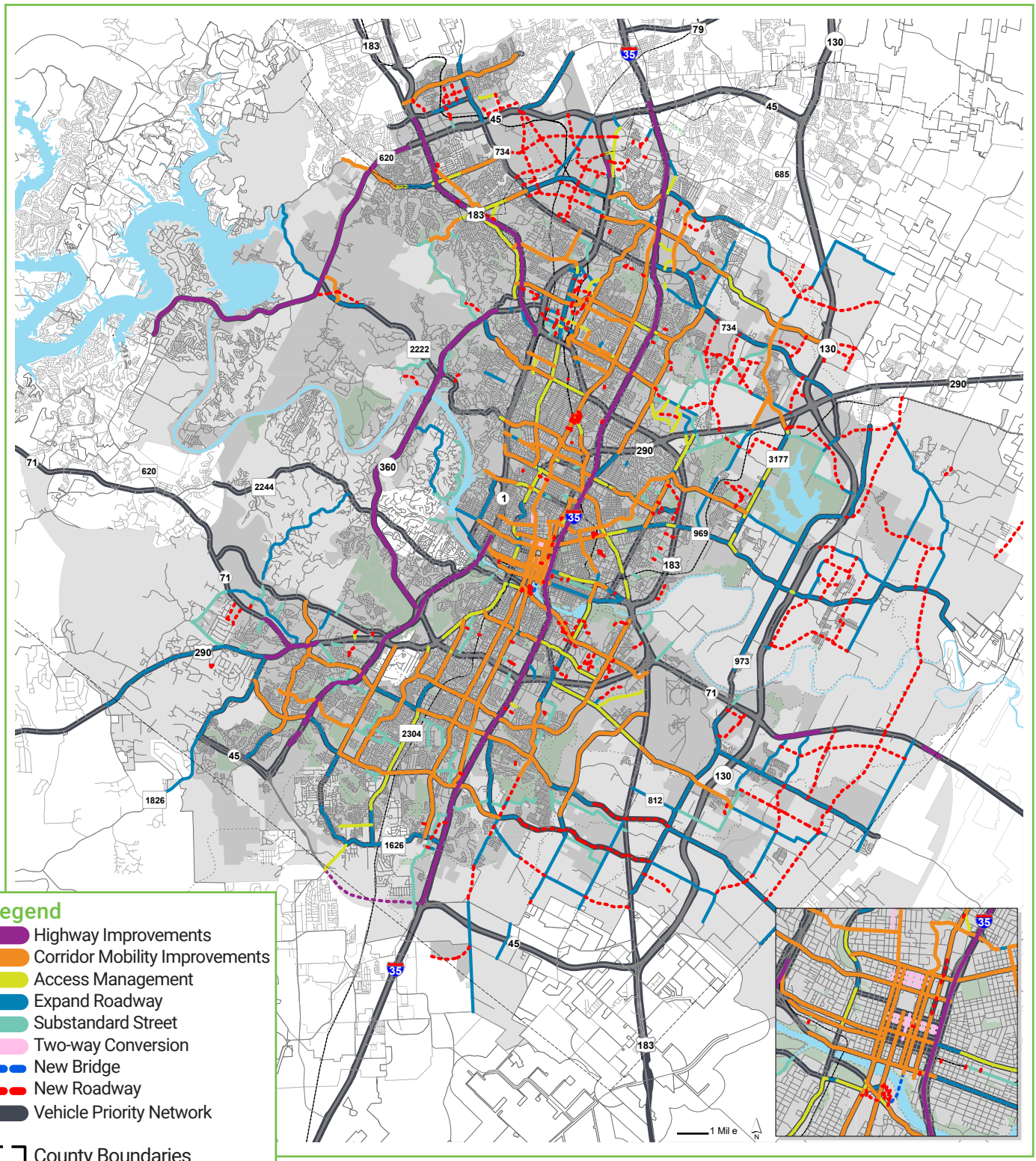
Optimize the use of space in constrained right of way for all travel modes while planning for the ultimate capacity needs of all users

The right of way is public space used for transportation and other municipal purposes such as utilities. Our community's right of way, that includes our roadway system, has taken decades to establish and, in some instances, has not changed since the first streets were laid out in Austin. There are some opportunities to expand the right of way to accommodate future improvements, but this is not always possible. In these constrained right of way situations, it is important to evaluate how that space can be optimized in the short term for all users while considering the ultimate needs of the roadway.

We must recognize the evolving nature of our community and understand that roadways can, and should, change over time to accommodate all travel modes. Historically, Austin's roadway system was designed around the automobile, but over the last few decades demand for improved conditions and use of other travel modes has increased. This ever-changing environment, as well as our commitment to mode shift and safety for all roadway users, means that we should evaluate when it is appropriate to reallocate space to different travel modes, such as public transportation, bicycles, scooters, and pedestrians, to address our safety and mobility needs.

Over the last ten years many of Austin's roadways underwent this transformation of reallocated space, resulting in a safer, more reliable travel environment. In the last few years there has been an increased focus on transforming street space to improve safety for all roadway users and also improving transit operations. We must continue to look for opportunities to accommodate all users by expanding the right of way to include the ideal amount of space, designing elements to fit within the existing right of way, prioritizing modes within the existing right of way, or privatizing elements, such as sidewalks, through public access easements. As we plan for roadway capacity needs, we must recognize the challenge of space allocation for people across different travel modes and consider the best strategies to address potential trade-offs.

Roadway Capacity Projects Map



The roadway capacity projects map offers a vision of the possible projects the City may pursue in the next 20 years based on a variety of factors, including the evolving needs of the transportation network, engineering analysis, public input, and available funding. Some of what is shown in the map is already in process and may be either fully or partially funded. Other recommended improvements would require further analysis, funding, and a public input process to be developed and constructed.

Public Transportation System

The public transportation system of Austin, operated by Capital Metro and the Capital Area Rural Transportation System (CARTS), serves a wide market of people in and around Austin, including commuters, students, recreational riders, seniors, and visitors. Both service providers operate commuter transit service, bringing people into and out of Austin from rural and suburban Central Texas communities. Capital Metro also provides frequent and local transit service within the urban core of Austin's neighborhoods and down our busy streets. These services are critical to those who need it most, but every market has its own unique set of mobility needs that the different services try to provide. All people, regardless of income or ability, should have access to a transit system that accommodates their daily needs.

> *"Austin is growing and needs better public transportation…. I believe that better public transportation options will lead to less congestion."*
>
> —Community Member

Austin's north-south development pattern, largely centered on the automobile, has created a public transportation system that has had difficulty offering an option that is as time-competitive, cheap, or enjoyable as a personal vehicle. The historical focus on the north-south pattern also has resulted in insufficient transit routes to support the increasing demand for east-west connections. When transit trips take as long or longer than trips in a car, gas prices are low and free or subsidized parking is available, and the public transportation experience is not rider friendly, transit ridership goes down. Ridership is further diminished when core public transportation riders, seeking more affordable housing, move outside of the city where public transportation options are more limited.

To make public transportation a viable option, we must work with our public transportation partners and enhance services to create an experience that attracts and retains riders. Capital Metro's Connections 2025 Service Plan has already made progress towards increasing ridership by streamlining routes and increasing frequency of service on Austin's busiest streets. Project Connect, Capital Metro's high-capacity transit planning effort, can continue the trend by investing in a system that operates congestion-free, separate from traffic where possible. CARTS provides critical links between Austin and the many different suburban communities surrounding us. These efforts will move Austin and the region toward a complete public transportation system that is an attractive alternative to driving.

Indicators and Targets

Increase the share of Austin residents who take transit to work

Achieve 16% of residents who take transit to work by 2039
(3.9% of residents took transit to work between 2013 and 2017)

Improve on-time performance for transit service that operates at a frequency of 10 or more minutes

Improve bunching and excess headway for transit service that operates at a frequency of 15-minutes or less

Increase the number of transit stops that have amenities such as real-time arrival information and off-board payment, shelters, benches, and supporting safety features such as improved access and lighting

Increase the percentage of electrified fleet

Increase the number of transit priority treatments at intersections along the Transit Priority Network

Increase transit ridership

Achieve at least a 1% year over year increase

Decrease transit travel time

Decrease transit travel time to work by 10% by 2039
(Mean travel time to work was 39.5 minutes between 2013 and 2017
for residents who took transit to work)

Public Transportation System Policy 1

Give public transportation priority

Improve the speed and reliability of public transportation service on the Transit Priority Network

Speed and reliability of transit service are decisive factors in attracting and retaining riders. Speed is the ability of transit to move along a route in a reasonable amount of time, competitive with a car. Reliability is the ability of transit to arrive at stops and travel between stops at a consistent and predictable time. The Transit Priority Network consists of the highest producing, highest-frequency transit service routes operating on Austin's streets. Transit priority treatments should be implemented on the Transit Priority Network to improve both the speed and reliability of its service. In order to make transit more time-competitive and move more people on our Transit Priority Network, transit priority treatments need to be implemented to meet the needs of the different types of service and demand. These improvements to our key network routes will increase transit ridership and improve public mobility.

Transit priority treatments available to use on the Transit Priority Network include transit signal priority and synchronization, queue jump lanes, peak-hour transit-only lanes, and all-day transit-only lanes. Other considerations that affect the attractiveness, comfort, and efficiency of transit include increased frequency of service, off-board fare payment, bus stop amenities such as shelters and benches, bus stop placement, roadway pavement conditions, and safety of customers at stations and on board.

"Providing fast, reliable service is paramount to creating and operating an efficient and effective transit system. Transit agencies around the world are interested in making transit as attractive as possible and work to put improvements in place to speed and enhance bus operation."

—King County Metro Speed and Reliability Guidelines and Strategies

Transit Enhancement Program

The purpose of the Transit Enhancement Program is to improve mobility and access to opportunity for those living in and around Austin, by fostering collaborative relationships with public transportation providers, working directly with communities to understand needs and opportunities, and systematically enhancing areas of the built environment identified as transit-supportive.

This program formed out of an earlier initiative, the Transit Priority Working Group, which was organized to implement small-scale projects that would improve the speed and reliability of public transportation. The work of the Transit Priority Working Group highlighted a need for dedicated funding toward transit-priority projects. In April 2018, the City of Austin and Capital Metro executed an interlocal agreement that committed $3 million, spread over three years, towards transit-priority projects. Additionally, both the City of Austin and Capital Metro dedicated staff to oversee the program and to manage the progress of individual projects.

The Transit Enhancement Program is a collaborative program by nature. Because of this, a framework has been developed that allows the City of Austin and Capital Metro to maintain realistic expectations of one another. Within this framework, tools and processes exist that allow individual projects to be identified, prioritized, and implemented in a systematic and inclusive manner.

National Example: King County Metro Transit Speed and Reliability Guidelines and Strategies

King County Metro developed a Transit Speed and Reliability document to strengthen the partnerships Metro has built with local jurisdictions on speed and reliability improvements. The document seeks to broaden the reach of transit partnerships to a wider range of local jurisdictions and provide diverse tools to implement speed and reliability improvements. Metro's long-range plan METRO CONNECTS proposes both capital and service improvements to the Metro System, and speed and reliability improvements are a major piece of the METRO CONNECTS vision and strategy. The document is designed to help facilitate discussions between Metro and local jurisdictions to implement speed and reliability improvements throughout King County.

Public Transportation System Policy 2

Enhance commuter public transportation service

Support commuter public transportation service from outlying neighborhoods and surrounding communities into and out of Austin activity centers utilizing managed lanes

Commuter public transportation service is another critical part of the complete public transportation system, providing access to the region's major job centers from the surrounding suburban and rural communities. This transit service, provided by Capital Metro and CARTS, operates on Austin's highway system which is often stuck in the same congestion as cars. However, this type of transit service has the potential to be more productive and time-competitive by prioritizing transit on Austin's highways using flexible and managed lanes. Commuter routes are often limited due to their less frequent yet more direct "one-seat rides." However, we have seen transit ridership increase by more than 65% for routes using the express lanes on MoPac, where the speed and volume of the lanes are managed and public transit users ride toll-free. This increased value of transit can ease commuter congestion and offset new congestion as the region continues to grow, possibly deferring the need to build additional vehicle capacity.

We must work with our regional partners to expand the coverage and frequency of commuter transit service but we must also ensure it is a more attractive alternative to driving by utilizing express lanes so that it doesn't get stuck in the same congestion as cars. In order to attract riders to this service, we must also provide convenient, accessible park and ride facilities with sufficient parking and supporting services and amenities. Additionally, some park and ride facilities may serve as Mobility Hubs, which serve a critical function in the regional transportation system as the origin, destination or transfer point for a significant portion of trips.

Photo credit: Capital Metro

Public Transportation System Policy 3

Support local public transportation service

Support local public transportation service within Austin to be an affordable, efficient, convenient, and attractive alternative to driving, especially to those who need it most

Capital Metro operates local public transportation service throughout Austin in some of its lowest density neighborhoods, connecting them to higher-frequency transit service and major destinations. Local public transportation services can complement the more frequent services by completing and extending their reach. These local public transportation services do not meet the requirements for higher levels of service, but the limited service provided is critical to those who need it most. Many people that do not have consistent access to a car or cannot afford one rely on Austin's public transportation system to get where they need to go. We must recognize the importance of local public transportation service in providing this basic level of access to those who need it the most. The City of Austin is working with Capital Metro to ensure transit can operate where it is needed and when it is needed.

Local public transportation service can be supported by making sure streets can accommodate buses. Transit improvements and design considerations need to be implemented to ensure local transit service is efficient, convenient, and does not contribute to significant pavement degradation. Together these strategies will help create an attractive and affordable alternative to driving. The Connections 2025 Service Plan proposes to operate local transit service every 30 minutes, providing east-west connectivity and convenient transfers to the high-frequency transit service. As Capital Metro continues to implement their plan during service changes, the City of Austin continues to be an active partner in the process and continue to support these improvements.

> *"If we truly want to encourage people to use other modes of transport, we have to invest heavily in those other modes (as we have with roads) in order to make them attractive enough to lure drivers off roads. There are so many simple options to encourage more efficient transportation options. The city's transportation investments have created a situation where driving oneself is by far the most reliable, efficient, and pleasant option. We must make public transport competitive.*
>
> –Community Member

Public Transportation System Policy 4

Invest in a high-capacity transit system

Support the creation of a high-capacity transit system in Austin

Austin is one of the largest cities in the United States to not have a high-capacity transit system. High-capacity transit service can be any variety of high-quality transit services, including commuter rail, light rail, streetcar, bus rapid transit (BRT), and other emerging technologies. High-capacity transit service is intended to be fast, frequent, and convenient, and is differentiated by other public transportation service by operating in fully dedicated space separate from the rest of traffic, or in "dedicated transit pathways."

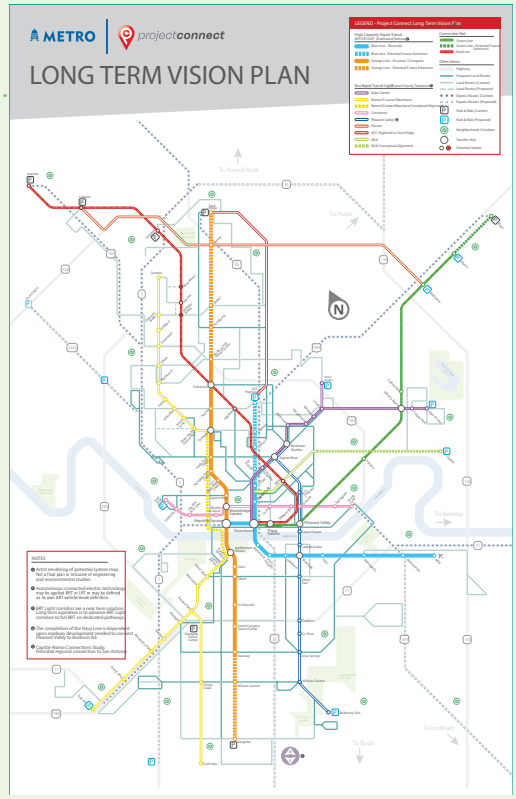
In order for the City of Austin to accomplish our mode share goals, it must create a complete transit system, including investing in high-capacity transit. High-capacity transit provides a substantially higher level of passenger capacity, speed, and reliability that will undoubtedly change the landscape of Austin, influencing where we choose to live and work, and how we choose to get around.

In 2016, Capital Metro began updating their high-capacity transit planning effort, called Project Connect. The planning effort followed the Federal Transit Administration's process to identify corridors that meet all of the criteria to support a high-capacity transit investment. These corridors are included in the Project Connect Long Term Vision Plan and include high-capacity transit operating in its own dedicated pathway. These corridors include some of Austin's highest transit ridership corridors, North Lamar, Guadalupe, South Congress, and Riverside. The City of Austin will continue to work with Capital Metro and other regional partners as Project Connect advances the Vision Plan further in 2019 and into 2020.

For the BRT Light corridors in the Project Connect Long Term Vision Plan that are not slated for dedicated transit pathways in the near-term, we must continue to advance the levels of transit service, such as by increasing frequency to less than 15 minutes on both weekdays and weekends and by providing high-capacity vehicles. We should commit to evaluating opportunities to make near-term operational improvements, including the full range of transit enhancement treatments, while pursuing longer-term opportunities to incrementally transition to operating transit in dedicated pathways in the future when transit service levels justify such a transition, in order to have a complete high-capacity transit system that connects passengers both north-south and east-west by 2039.

> *"We estimate that with Americans taking over 1,300 trips per year, a shift of transit mode share from 1.5 percent to 3 percent could accomplish anywhere from a 10 percent to 40 percent reduction in traffic fatality rates. It is time we employ public transit as a traffic safety tool because it can dramatically reduce the crash risk for individuals as well as a community. While no mode of travel is risk free, the safety of public transit is striking when observing the number of fatalities that are a result of auto crashes."*
>
> —American Public Transportation Association

Project Connect Long Term Vision Plan



Project Connect is Capital Metro's long-term vision plan to create a high-capacity public transportation network serving Austin and the Central Texas region. The goal of Project Connect is to provide the region with an efficient, sustainable public transportation system that can help relieve congestion on our transportation network. It focuses on providing short-term enhancements for its existing services such as MetroRail, MetroRapid, and MetroExpress, while also investing in a long-term high-capacity public transportation system. These long-term investments focus on several things, such as the electrification of Capital Metro's fleet, the potential automation of transit vehicles, and the use of dedicated pathways.

Dedicated pathways are separate lanes on the roadway that would allow the high-capacity vehicles to move more quickly and efficiently. These pathways could be alongside other vehicles, or above or below the ground. Where these dedicated pathways would be, what they would look like, and the specific mode of public transportation traveling in them are all questions that Capital Metro, the City, and the community are working on answering together. Capital Metro is studying the Project Connect corridors to determine how much right of way different modes and configurations require. The study results inform overall costs and what the final cross sections might look like.

Public engagement, as we learn the results of these technical analyses, is critical to ensure the public is determining how and where we move around our community. This is especially important because each Project Connect configuration will have tradeoffs. For example, below-ground transit lanes allow vehicles to move extremely quickly and reliably, and don't disrupt other modes, but are also the most expensive to construct. On-street lanes are cheaper to construct, but may not allow vehicles to travel the same speeds, and may require decisions about certain modes when there is limited right of way.

As Project Connect continues moving forward, unprecedented collaboration between the community, the City, and Capital Metro is critical. So far, weekly planning meetings, a joint community advisory commission, and attendance at public events have helped guide a joint vision for growth between the City and Project Connect. As our community continues to develop and we need to make decisions about how best to achieve our mobility goals, it is important that the City and Project Connect continue to collaborate to make high-capacity transit a viable travel choice for our community.

Public Transportation System Policy 5

Improve the public transportation experience

Develop infrastructure that promotes an attractive public transportation experience to maintain and encourage ridership throughout the city

In order to attract and retain public transportation riders, it is important that the City of Austin and its public transportation providers create a transportation service that can rival the comfort and convenience of individual automobiles. During the Connections 2025 planning effort, a survey of riders conducted found that the second highest reason riders use Capital Metro was because it is more enjoyable than driving. What makes a transit rider's experience more enjoyable is influenced by many factors, from the time traveling to the time waiting. The City of Austin and public transportation providers must emphasize quality experiences at stops and stations, in addition to frequent service, travel time, reliability, and safe, comfortable roadway pavement conditions in order to grow the number of public transportation users.

There are a variety of services and facilities that the public transportation system should offer to make the system appealing. Public transportation stops and stations should be well lit, and they should be safe, accessible and well-connected to the surrounding transportation network. Public transportation vehicles, stops and the areas surrounding stops should be clean, and the local streetscape should welcome people. Stops and stations should provide shade and a place to sit as people wait for their ride. Information, such as when vehicles are expected to arrive or how riders should pay their fare, should be provided in a clearly visible location. All of these factors are important to achieve the best overall public transportation experience.

Photo credit: Capital Metro

Public Transportation System Policy 6

Improve access to public transportation

Supply infrastructure to provide safe, expanded, and seamless multimodal access to public transportation

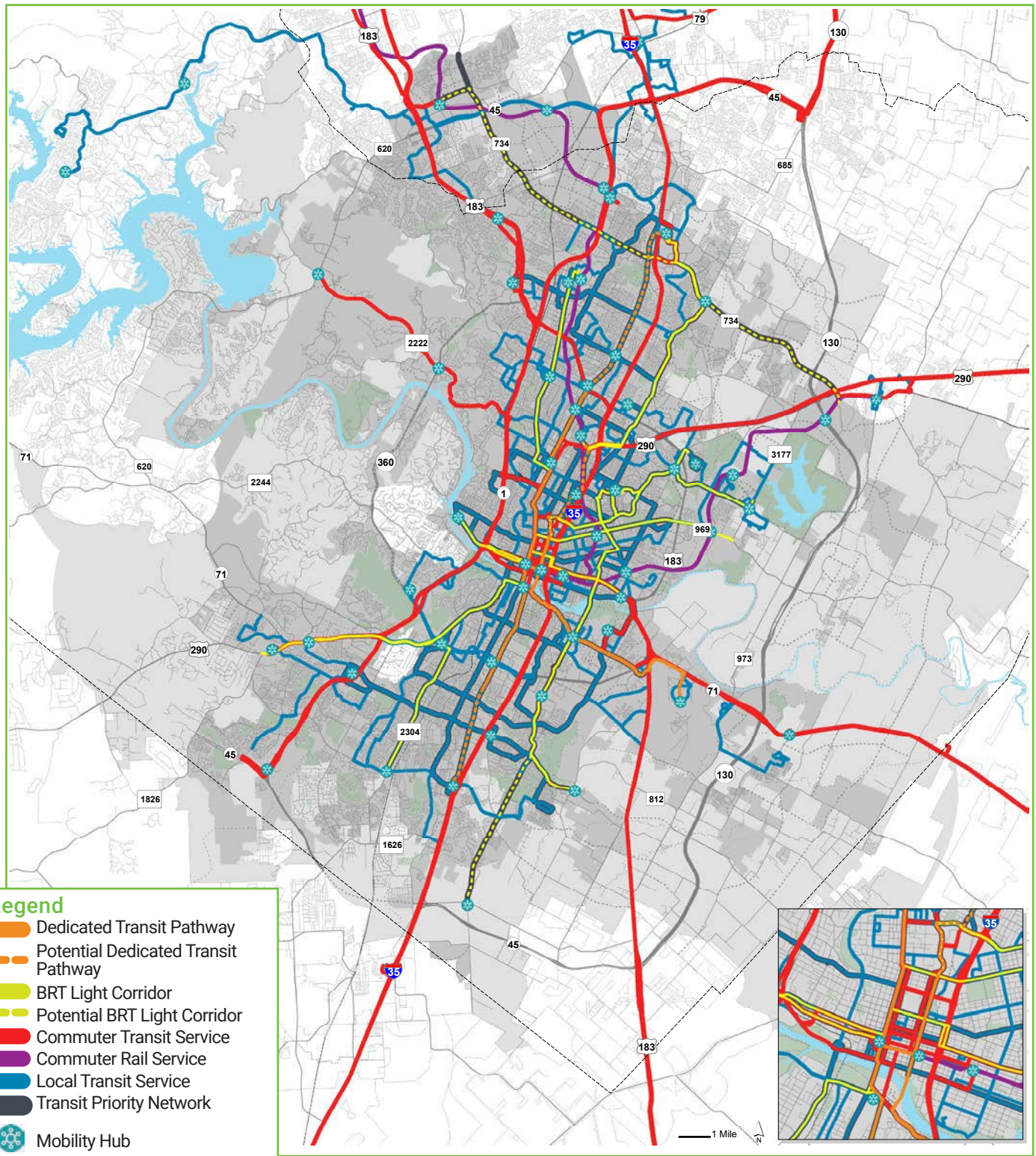
Access to public transportation is an essential component of the overall public transportation experience and vital to its success. Public transportation users should have as many travel options as possible to access stops and stations, from walking and bicycling, to scooting or driving. The City of Austin must continue to provide infrastructure to ensure safe, expanded, and seamless multimodal access to public transportation to not only improve the overall transit experience, but to also extend the reach of the public transportation system to more customers. Most transit trips begin and end as pedestrian trips, making it critical that we have a complete sidewalk system with safe crossings. A typical distance to walk to access transit is between 1/4 mile and 1/2 mile, or between 5 and 10 minutes. There is an even greater opportunity to access transit by bicycle, as a reasonable distance for bicycling is 2 to 3 miles. Improving access for pedestrians and bicyclists can significantly increase the market for transit and convert drive alone trips.

The City of Austin must prioritize access to transit in order to fully recognize the benefit of a complete public transportation system. If no one is able to access the system, no one will be able to use its services. The City of Austin must continue to collaborate with its public transportation providers to coordinate improvements for pedestrians and bicyclists around transit. Beyond simply constructing missing sidewalks and providing connecting bicycle facilities to stops and stations, we should also provide wider sidewalks with cafes and storefronts that encourage economic activity and a sense of place, ensure safe environments through enhanced crossings and superior design, and provide clearly visible and consistent wayfinding.

Austin 2014 Bicycle Plan: Fully Integrate Cycling with Transit Services

The 2014 Bicycle Plan identifies the importance of pairing cycling infrastructure with public transportation services. This is because bicycling has the potential to significantly improve transit service by providing a solution for the first and last mile. The range of a reasonable bicycle trip can significantly increase the potential market for transit. The Bicycle Plan recommends safe and secure bicycle parking be implemented at key transit stops. Additionally, bicycle accommodation on all bus, rail transit, and vanpool vehicles should be provided to help people seamlessly transition from one mode to another on their trip.

Public Transportation System Map



Supporting our public transportation partners, Capital Metro and CARTS, and enhancing services are crucial to creating an experience that attracts and retains riders. A complete public transportation system of high-capacity transit operating in dedicated pathways, high-frequency service with transit priority treatments, and commuter and local service supported by Mobility Hubs are identified in the map.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Bicycle System

People ride bicycles for different reasons. Some people ride for fun with their families on off-road trails, while other people commute by bicycle on the roads, mixing with other traffic. Some people ride to enjoy a beautiful day, while others ride because it is the quickest way to get to their destination. Regardless of how or why someone rides a bicycle in Austin, a safe and well-connected bicycle system is needed to support riders of all ages and abilities throughout the city.

"Prioritize cycling lanes and pathways with significant mileage so that they become viable commuting and travel options."

—Community Member

Our bicycle system includes, among other things, bicycle lanes, urban trails, shared-use paths, neighborhood bikeways (quiet streets) crossing treatments for major streets, wayfinding signage, and end-of-trip facilities such as parking areas designed to make it safe, easy, and comfortable to ride a bicycle around and through our community.

A high-quality bicycle system creates a safe and comfortable experience for cyclists of all ages and abilities and supports different types of trips. Bicycling is often comfortable, time-competitive, and easier than other modes for trips up to 3 miles long. Additionally, bicycle infrastructure can accommodate emerging mobility solutions that operate at similar speeds and with similar profiles, such as scooters.

Although bicycle usage in Austin is growing, it still faces many challenges. For our bicycle system to flourish we need to develop a safer and more complete bicycle system, improve our collective understanding of how to share the limited roadway space, and enhance education and enforcement efforts on Austin's roadway laws. While Austin's bicycle network has rapidly expanded, from 2009 to 2019 we more than doubled our miles of streets with painted bicycle lanes to 260, this rapid growth has created a need for increased maintenance, parking enforcement, and street sweeping. Finally, we need to provide tools and education to help people overcome obstacles like the summer heat and our beloved hills.

Despite these challenges, Austin's bicycle system remains an important tool for helping our community achieve its mobility goals. The bicycle system helps relieve demand on our roadways, removing cars and relieving congestion. Bicycling gives people reliable mobility choices, and also provides a safe place for the new scooters and other low-speed micromobility devices to operate. As an active form of transportation, it supports increased public health while supporting our environment and helping us connect to the outdoors and our public spaces. It is important that we create and support a safe bicycle system that serves people of all ages and abilities.

Indicators and Targets

Increase the number of major roadways that have all ages and abilities bicycle facilities

Increase the linear miles of all ages and abilities facilities

Increase the number of children commuting to school by bicycle

Increase the share of Austin residents who bicycle to work

Achieve 4% of residents who bicycle to work by 2039
(1.3% of residents commuted to work by bicycle between 2013 and 2017)

Increase the share of Austin residents who live in the central city and bicycle to work

Achieve 10% of central city workforce commuting by bicycle by 2020; 15% by 2025

Decrease travel time to work by bicycle

Bicycle System Policy 1

Make streets safe for bicycling

Provide safe, comfortable bicycle facilities on roadways through all phases of all projects for people of all ages and abilities

To maximize the benefits that bicycling can bring to our community, and to achieve the high-level community goals of Imagine Austin, it is critical that our streets are safe and comfortable for people of all ages and abilities to bicycle. Since 2014 City policies and strategies have deliberately focused on implementing infrastructure that serves people of all ages and abilities through the Bicycle Plan, Urban Trails Plan, and Complete Streets Policy. Our current bicycle system reflects this. Despite this growth and shift in focus the bicycle system is still fragmented for people who are only comfortable riding on protected bicycle lanes, urban trails, and quiet neighborhood streets.

Protected bicycle lanes provide a physical separation from vehicle traffic through bollards, traffic buttons, or concrete curb. These lanes are also separated from sidewalks to reduce conflicts with all roadway users. Protected lanes are critical to providing safe and comfortable bicycle facilities. We know over 55% of our community would ride in protected bicycle lanes, while only 15% of our community is willing to ride in a painted bicycle lane. When streets have moderate to high speeds or volumes protected bicycle lanes become necessary to accommodate people of all ages and abilities.

Not all streets require a protected lane to be safe and comfortable for people of all ages and abilities. Neighborhood bikeways enhance local streets that are often comfortable places for bicycle riders through speed and volume control, wayfinding signage, and providing crossings of major streets. Ultimately, the facility type used should be appropriate for the context with the goal of accommodating people of all ages and abilities, offering the highest degree of comfort possible where there are conflicting needs or constraints. In addition to street type, other context-appropriate facilities should be considered to increase safety for bicycle riders. Adequate lighting helps ensure that cyclists are seen by other road users, and it allows riders to see obstructions or debris in the road. A well-designed intersection includes protected treatments such as a smaller turning radius, advanced bicycle stop bars, and bicycle signal timing.

Making our streets safe also requires that we evaluate the opportunity to rethink our streets to serve all modes and all ages and abilities at every phase of every project and maintenance activity. This could take place during a large reconstruction project or when reconfiguring the striping of a street during resurfacing.

Rio Grande Street Protected Bicycle Lane

The Bicycle Priority Network aims to provide facilities for people of all ages and abilities. On busy streets, this often means offering a physical separation between riders and cars. The two-way protected cycle track on Rio Grande Street between 29th Street and Martin Luther King, Jr. Boulevard (MLK) is protected by concrete islands. Several cuts were made to allow safe turns into the businesses and residences along the west side of the street. There are also two bicycle signals at major intersections, at 24th Street and at MLK. The signal at MLK includes bicycle signal detection, which helps ensure cyclists can cross this busy street even if no cars are detected waiting at the intersection.

Before the protected bicycle lanes were installed , Rio Grande Street had only a painted bicycle lane. A study analyzing bicycle traffic before and after the installation of the protected bicycle lane showed that bicycle traffic increased by 126%.

Bicycle System Policy 2

Complete the Bicycle Priority Network

Provide a feasible, short-term, fully connected, comfortable system of on- and off-street bicycle facilities

The Bicycle Priority Network is a short-term all ages and abilities network based on the 2014 Bicycle Plan. The Network consists of connected protected bicycle lanes, urban trails, and neighborhood bikeways. All facilities are designed to comfortably accommodate all bicyclists, regardless of their age or their comfort on a bicycle. By designing facilities for people of all ages and abilities, the Bicycle Priority Network could serve a family with young children out for a recreational ride, a commuter going to work, or people riding to meet friends across town. It is designed to allow people to use bicycling as a mode for many different types of trip, and to be a robust, connected network of bicycle facilities across Austin.

The Bicycle Priority Network is comprised of three types of bicycle facilities. The first type is protected bicycle lanes. These lanes have a physical barrier, such as concrete, between cyclists and motor vehicles. Urban trails are the second type of facility. These are off-road, hard-weather surfaces connecting neighborhoods, parks, and greenways. The third type is "neighborhood bikeways." These are quiet, neighborhood streets that are appropriate for people of all ages and abilities to safely and comfortably use; these are most of the streets in the Bicycle Priority Network. These local, neighborhood streets are naturally more attractive for all cyclists, and can be further improved for people through smaller measures such as traffic calming, improved wayfinding signage, or improved lighting.

The Bicycle Priority Network is a collection of connected existing or cost-effective improvements to streets and trails. It is designed to allow our community to enjoy the many benefits of bicycling in the near term with modest levels of capital investment. The Network is prioritized in locations where higher levels of short trips exist to enable a shift of trips to bicycle. It supplies comfortable and connected bicycle routes for people of all ages and abilities for a financial investment that is less than most single highway projects in the Austin Area over the last decade. While the Bicycle Priority Network is a strategic investment to increase bicycle use, all streets are recommended to accommodate people of all ages and abilities as projects and private development occur.

Bicycle System Policy 3

Remove significant infrastructure gaps in the bicycle system

Ensure connectivity in the bicycle system and resolve geographic and infrastructure barriers to cycling

While Austin's bicycle system has been growing rapidly, there are still many areas that have incomplete bicycle facilities or barriers that prevent connectivity even for the system of painted bicycle infrastructure. These infrastructure gaps present opportunities to develop a better connected bicycle system to make bicycling between two adjacent areas safer and less difficult.

Infrastructure gaps can take many different forms. A gap could be the abrupt end of a bicycle lane at an intersection, a high-speed highway with a shoulder that disappears on a bridge, a creek or a railroad. Although some of these gaps represent major obstacles, some can be removed through inexpensive means such as the reconfiguration of roadway striping or improved routing and wayfinding. Other barriers do require larger capital investment. Bicycle projects that require greater investment, such as the reconstruction of a roadway would be coupled with projects for additional modes or through support by private development.

Whatever the type or location, gaps weaken the bicycle system. Fewer people can access work, school or other necessities, even when they are close to home, without confronting the gaps. Additionally, a fractured bicycle system creates a major barrier for new people to try bicycling. To ensure that Austin's bicycle system is not a patchwork of safe and comfortable facilities, we must erase the gaps that currently exist by providing the appropriate infrastructure to link neighborhoods and areas across town.

Bicycle System Policy 4

Provide a comfortable bicycle system with end-of-trip facilities

Invest in, partner to create, and require facilities that meet end-of-trip needs

End-of-trip facilities are amenities that cyclists need for their trips in addition to a bicycle and a place to ride. Secure parking is an important end-of-trip facility, but there are other amenities that can increase bicycle ridership by increasing cyclist comfort and making more trips possible. Examples include a place to shower and change (especially during Austin's hot weather), parking locations that are numerous and close to destinations, bicycle stands for small fixes and repairs, and maps with information on bicycle routes or shops.

There are different ways Austin can supply or facilitate more end-of-trip facilities. The City should continue to provide, require, and incentivize the provision of end of trip facilities through development across Austin. Parking that is secure and protected from both theft and the elements is already in demand in many places. This demand will continue to grow as scooters and other emerging micromobility devices continue to share limited public space. Secure parking and facilities, such as longer- term parking at public transportation locations, will also facilitate combining bicycle and public transportation trips. Seamless integration of bicycle and public transportation trips significantly increases the amount of places, distances, and types of trips people can take. TDM programs and incentives can help employers and institutions to make it easier for people to shower or change after riding to a destination. Having no place to clean up, change clothes or dry off after a short ride in the Austin heat often deters people from choosing to make a trip by bicycle.

Bicycle System Policy 5

Work with partner agencies and other jurisdictions to develop a regional bicycle system

Enhance regional bicycle connectivity through the provision of inter-jurisdictional bicycle facilities

Regional partner agencies have an important role to play in the success of Austin's bicycle system. To create a connected bicycle system within Austin that is also integrated to nearby jurisdictions, destinations, and services like public transportation requires collaboration with other entities that own or manage rights of way, public lanes, or operate transportation services. Additionally, many important roads and barriers in the All Ages and Abilities Bicycle Network fall under the jurisdiction of TxDOT, counties, CTRMA, or neighboring cities, and we must work with them to fund and implement these priority connections. We must also work with transit agencies to develop and improve easy and reliable multimodal connections between cycling and public transportation infrastructure and services, extending the reach of each mode.

Since many local trips cross municipal, county and other boundaries, it is vital that different agencies and entities coordinate to ensure that a safe bicycle facility crosses jurisdictions when necessary, rather than ending abruptly. While our bicycle system is most often used for trips of three miles or less, Austin's expanding footprint creates the case for a regional bicycle system. Creating a regional bicycle system can help address regional transportation issues by allowing people who live further away from their homes, jobs, or schools to take longer trips and consider bicycling as a feasible mode of transportation. Bicycling can become even more attractive as a regional transportation mode as traffic congestion and the unreliability of motor vehicle travel times in peak periods slows down vehicle speeds and could allow time-competitive travel.

National Example: Razorback Regional Greenway

The Razorback Regional Greenway is 36 mile shared-use path that runs from Bentonville to Fayetteville, Arkansas. The greenway is primarily off-road, and connects six communities, the University of Arkansas, three major corporate headquarters, and hospitals, parks, schools, and shopping areas throughout the region.

The Razorback Regional Greenway took strong regional collaboration to complete. It was first considered in a long-range regional planning process led by the local metropolitan planning organization. The Walton Family Foundation supported the idea, recognizing its many regional economic, health, and environmental benefits. They helped spearhead collaboration among the many municipalities involved, and together with a federal grant the foundation helped fund the $38 million project.

In 2017, the Walton Family Foundation released several reports examining the greenway's economic and health effects since it opened in 2015. It has increased bicycle ridership by 24% annually, generated over $50 million in economic development annually, provided over an estimated $85 million in health savings through reduced mortality and health care benefits, and is considered a core component of the region's high quality of life.

Bicycle System Policy 6

Maintain the usability of the bicycle system

Proactively maintain the existing bicycle system, ensuring it is safe, functional, and comfortable

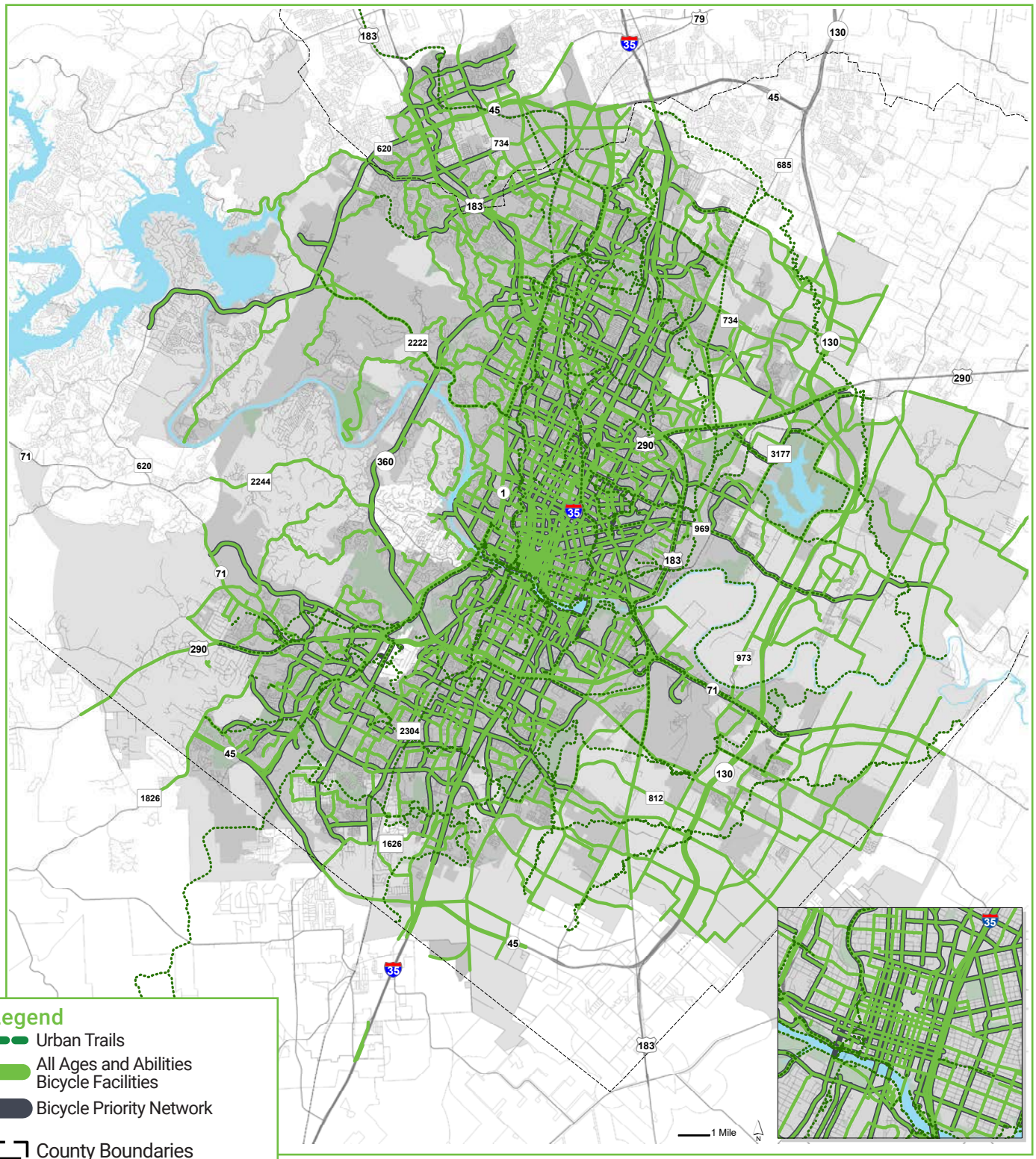
If we want our bicycle system to be usable, we need to make sure it is not only well-designed and complete, but well-maintained. This means that it should be easy to report hazards and debris so that they can be quickly cleared, bicycle facilities should receive proper and preventative maintenance to extend their useful life, closures and detours should be maintain the facilities comfort and directness, and roadway surfaces should be kept in a safe and comfortable condition for cyclists.

Bicycle lanes, whether they are protected or painted, require routine maintenance for the safety and comfort of cyclists. Paint wears off, physical barriers degrade and, without proper maintenance, cyclists can find themselves in a roadway space without a clearly designated lane to use. It is important that the Transportation, Public Works, Resource Recovery, and other partner departments work together to track and provide maintenance on bicycle facilities across the city.

Street surface treatments for vehicles and road drainage structures can also create conditions for cyclists that render parts of the bicycle system unusable. Rumble strips, steel grates, steel plates, and curb inlet openings are common features of roadways that do not affect cars, but can cause serious safety issues for cyclists. It is important that bicycle routes are designed in such a way to provide safe passage around these obstacles and do not assume cyclists can maneuver over them.

Keeping a safe and usable bicycle system also means keeping bicycle facilities clear of debris and parked vehicles. This includes having enough narrow street sweepers that can fit into our expanding network of protected lanes and adequate resources to maintain an expanding network. Having dedicated city-wide parking enforcement resources are also necessary to keep bicycle lanes clear. Creating and maintaining an efficient public input method to allow the community to report dangerous conditions, as well as quick responses by the City to conditions that make the bicycle system unsafe or unusable is also important.

Bicycle System Map



A high-quality bicycle system creates a safe and comfortable experience for cyclists of all ages and abilities and supports different types of trips. All ages and abilities bicycle facilities include a range of facilities that are appropriate to the type of street, ranging from Protected Bicycle Lanes, Buffered Bicycle Lanes, Quiet Streets, and Bicycle Lanes.

City of Austin

Urban Trail System

Urban trails are off-road trails with an all-weather surface (such as asphalt or concrete) that are wide enough to accommodate multiple people and connect seamlessly with our on-street bikeways and sidewalks. Urban Trails are physically separated from vehicle traffic, and they are a part of our active transportation system. They are used for both recreation and transportation purposes. Not all trails within Austin's trail systems are urban trails. Many trails have a natural surface, such as dirt, are narrowly built, and do not connect to our sidewalk or bicycle systems. The primary purpose of those natural trails is often recreation, as opposed to transportation.

> *"Increasing the miles of urban trails, sidewalks, and bicycle facilities are most important to me."*
>
> —Community Member

The urban trail system's connections to the sidewalk and bicycle systems allow for both recreational and transportation uses. This gives our community the opportunity to travel across all parts of Austin by foot or active transportation options. Urban trails offer families and friends comfortable routes to travel together and opportunities for people to exercise. They are often a great introduction to running and bicycling, especially as a new form of travel. As off-road facilities, urban trails offer people a pathway that is more comfortable. Urban trails offer our community the opportunity to integrate with nature, even within our urban ecosystem. Ecologically, Urban Trails support the use and expansion of parks and open space, and they help promote an active and healthy lifestyle with access to the outdoors.

Austin's urban trail system encompasses many of our community's best attributes. It showcases our beautiful natural features, offers an array of activities, and helps connect our unique and diverse neighborhoods and communities.

Indicators and Targets

Increase the linear miles of Tier I urban trails

Complete 100% of Tier I urban trails by 2029

Increase wayfinding elements on existing urban trails

Install wayfinding elements on 100% of existing urban trails by 2022

Improve lighting for existing urban trails

Light 100% of urban trails as defined by a citywide trail lighting plan by 2028

Increase trail usage

Reduce the response time to address unforeseen trail damage

Urban Trail System Policy 1

Recognize the urban trail system as an integral part of the transportation network

Acknowledge urban trails as assets that should be constructed, operated, and maintained in a manner equivalent to other parts of the transportation network

Our urban trails are much loved and heavily used. The urban trail system, just like the roadway, sidewalk, bicycle, and transit systems, is a piece of the transportation network that is important to our mobility. It is important that these trails are recognized as the critical pieces of infrastructure that they are within our community. We must supply resources for building and maintaining urban trails as we would to streets, bridges, bikeways, and sidewalks.

We must recognize the importance of building and maintaining the Urban Trails network across the city to create a well-built, balanced network of off-street paths for recreation and transportation purposes. We must provide important amenities such as lighting or benches so people can use the trails and have an enjoyable and comfortable experience. We must also maintain our urban trails so they are functional, clean, and have a long lifespan. Trimming vegetation, solving drainage issues, and removing obstructions are some frequent maintenance issues we must confront immediately upon our trails without letting them fall into disrepair. We must allocate resources in such a way to communicate value for urban trails that mirrors other systems of the transportation network.

Tier I and II Urban Trails

The 2014 Urban Trail Plan identified two types of urban trail: Tier I and Tier II. A Tier I trail has been identified as a high-priority trail. High volumes of people have access to Tier I trails for transportation and recreation purposes, and they connect significant and dense populations of people. The Urban Trail Plan identified 47 miles of Tier I trails to be constructed by 2029. Tier II trails are urban trails that have been identified during previous planning processes. Most Tier II trail alignments are still conceptual in nature, although some have been constructed through cost-share or development opportunities. Tier II trails represent a desired trail connection, but are considered less critical for connectivity than Tier I trails, and the Urban Trail Plan identified 360 miles of Tier II urban trails.

Urban Trail System Policy 2

Provide high-quality urban trails that can serve all users

Implement a system of urban trails designed for people of all ages and abilities

Urban trails are not just for highly skilled athletes to use as training facilities. By design, the urban trail system is built to support all ages and abilities within our community, including seniors, young children, and people in wheelchairs. Along with our sidewalks and bicycle facilities, the urban trail system must be designed, built and maintained to allow for our entire community to safely and comfortably use it. Although some trails emphasize the natural ecosystems within and around Austin, many of those trails do not allow people with mobility impairments, people using strollers, or others the opportunity to use them. On the other hand, urban trails provide accessibility to all people, by strictly adhering to building material and construction standards for surface materials, trail widths, slopes, and curvatures.

Urban Trail System Policy 3

Pursue opportunities to connect to and expand the urban trail system

Expand the urban trail system to connect more people to nature and provide recreation and mobility opportunities

Urban trails have the important ability to connect our neighborhoods to the natural features, resources, and communities surrounding us. While Austin has several dozen miles of urban trails already, there are still many barriers to accessing these important facilities. Urban trails can be a tool to connect the street grid to provide additional pedestrian and bicycle connectivity and shorten walking and bicycling distances. New trail connections will increase connectivity between neighborhoods, facilitate active trips, promote healthy lifestyles and outdoor experiences, and strengthen our community's connection to nature and our ecosystem.

Opportunities to expand our urban trail system include land development incentives and community partnerships. Austin's land development code offers multiple opportunities. Developers could be provided with incentives to include new urban trails and connect them to our existing networks. It is also possible to consider allowing new and expanded urban trails to be a mitigation technique for developers as they build or redevelop areas. Mitigation techniques are actions taken to relieve the stress on the transportation network caused by increased development in places.

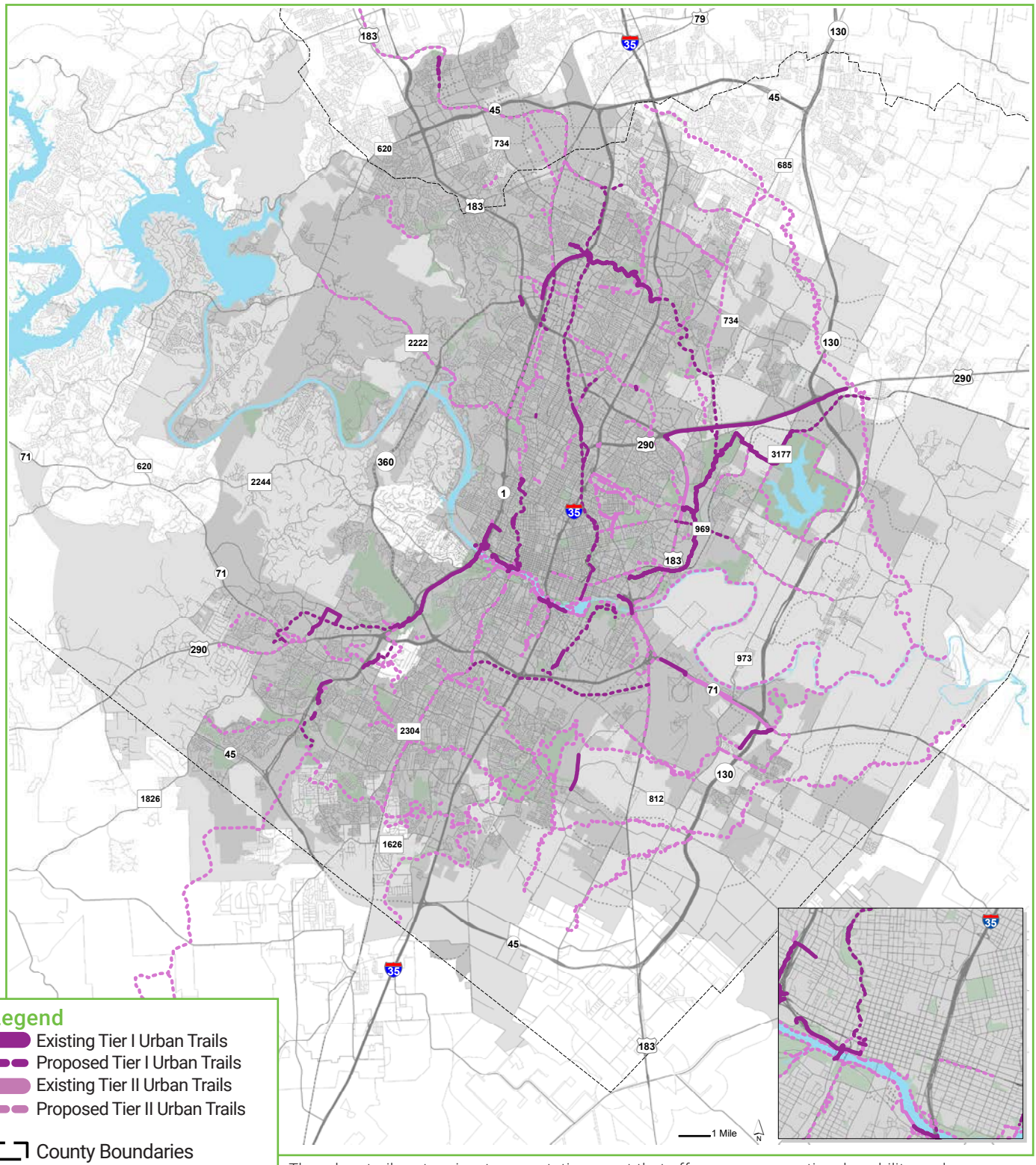
Working with neighborhoods and community groups also offers the chance for increased partnerships. These partnerships offer new and innovative ways to plan, design, and maintain trails in support of neighborhoods and trail users. Allowing these groups, such as "Friends of" groups, to take on increased responsibility in the planning and care of trails can allow improvements to be identified and made more quickly. This allows limited resources to be shared equitably throughout the system.

To support the expansion of this cherished community resource we should continue to explore the possibilities of new urban trails across our entire community when planning processes, development, and the public interest allows.

Neighborhood Partnering Program

New and expanded partnerships with neighborhood and community groups offer another opportunity for the expansion of the urban trail system. The City of Austin's Neighborhood Partnering Program (NPP) provides assistance to groups for small and medium improvement projects in the City's right of way or on City-owned property. Cost-sharing options in this program for community members to use include cash contributions, in-kind contributions, or donated labor. Although the cost for the planning and construction of an urban trail is higher than what a neighborhood is able to receive through NPP, NPP funding can be used to develop plans for urban trails. This can help begin to move a desired trail from an idea towards becoming a project, or help with the removal of small barriers to constructing an urban trail.

Urban Trail System Map



The urban trail system is a transportation asset that offers many recreational, mobility, and environmental uses and benefits for our community. The Urban Trail Plan identified 47 miles of Tier I urban trails for transportation and recreation purposes, and they connect significant and dense populations of people. Tier II trails are urban trails that have been identified during previous planning processes. Most Tier II trail alignments are still conceptual in nature, although some have been constructed through cost-share or development opportunities.

Condition of Infrastructure

Our transportation infrastructure is made up of physical assets that must be well-maintained to be accessible, usable, reliable, and safe. Infrastructure assets are City-owned items with a useful life of more than one year and an acquisition cost or value of $5,000 or more. Mobility infrastructure assets include streets, bridges, sidewalks, bikeways, urban trails, traffic signals, communication technologies, City vehicles, and aviation facilities.

It is critical to the operation of the transportation network that we have our infrastructure in good condition. A poor condition in infrastructure can result in closures, or other failures, that can compromise the reliability and safety of our network. Our transportation infrastructure supports vital activities, such as goods movement, emergency response, stormwater conveyance, and mobility for all. Our streets are also our most abundant public spaces that, if maintained in good condition, will improve the quality of our experiences as we travel from place to place.

Transportation infrastructure, along with the ability to move people and goods, is also critical to overall climate resilience and our ability to effectively manage short- and long-term impacts related to climate change and weather extremes, such as longer droughts, increased flooding, and greater wildfire risk. These impacts can not only affect the condition of our infrastructure, but our ability to access services, respond to emergencies and, when needed, evacuate.

"I think we need to continue to maintain and enhance the roads we have but put a larger focus on creating a reliable, affordable, and far-reaching public transportation network."

—Community Member

We regularly collect information and assess the condition of transportation infrastructure. It is important that we collect and maintain information on the status of our existing infrastructure, like the number and type of assets, their condition, any plans for preservation and maintenance, and what the critical needs are to keep assets safe and in operation. The data from these assessments allow us to make decisions about maintenance and capital renewal. It is also important for financial planning to consider the maintenance and replacement costs of infrastructure when investing in new or upgraded assets.

Indicators and Targets

Increase citizen satisfaction with the physical condition of major City streets

Increase citizen satisfaction with the physical condition of the Transit Priority Network

Increase citizen satisfaction with the overall maintenance of City sidewalks

Increase citizen satisfaction with the physical condition of bicycle facilities, including urban trails

Decrease the lane miles of City streets in poor or failing condition

(In FY2018, 26.2% of City streets were in poor or failing condition)

Increase the frequency of sweeping and maintenance of protected bicycle facilities

Improve the response time of requests for vegetation maintenance in the public right of way

Respond to 100% of requests within 2 weeks by 2039

Decrease the percentage of major bridges in poor or failing condition

(In FY 2018, 10% of major bridges were in poor or failing condition)

Condition of Infrastructure Policy 1

Responsibly maximize the useful life of transportation infrastructure

Design, maintain, and improve the condition of transportation infrastructure to reach its useful life and increase its resiliency in a fiscally responsible, context-sensitive manner

Maximizing the useful life of transportation infrastructure means that we make sure an asset lasts as long as intended, whether it is a traffic signal, bridge or roadway surface. Doing so reduces taxpayer dollars needed to prematurely replace infrastructure that should have lasted longer. By proactively maintaining transportation infrastructure, we can maximize its useful life. When maintenance is deferred, an asset becomes unreliable and may have to be taken out of service, affecting the safety and operation of our transportation network.

For example, scheduled preventative maintenance will help prolong the life of streets and bridges by protecting the surface from the effects of aging, cracking, deterioration and water infiltration. Prolonging the life of our city streets in using these methods saves taxpayer money by intervening before more costly full reconstruction of the street is needed.

Asset management strategies should be used to identify rehabilitation projects to maintain and when ultimately needed, replace assets. Additionally, new assets need to be designed to withstand changing environments and climate change impacts, like increased flooding and highly elastic soils, because resiliency will be important to realizing the useful life of infrastructure into the future.

Central Texas Extreme Weather and Climate Change Vulnerability Assessment of Regional Transportation Infrastructure

The City worked closely with CAMPO and other state, regional, and local entities to evaluate infrastructure vulnerabilities, including for roadways, bridges, and rail. The climate-related stressors that were considered as part of the assessment were flooding, drought, extreme heat, wildfire, and extreme cold. The assessment focused on "critical transportation facilities," which are those that would have the greatest impacts if they were taken out of service due to extreme weather.

The assessment determined that the nature of inland extreme weather and climate challenges may differ from those faced by coastal communities. Some risks that impact central Texas are more localized, like flooding, or chronic, like extreme heat or drought, than storm surge, a risk faced by coastal cities. The assessment also showed that critical assets are not necessarily the ones most vulnerable to extreme weather and climate change. Many critical assets are higher volume roadways that are already designed to higher standards. Older and smaller roadways, while not necessarily as "critical," may be more sensitive and need to be made more resilient.

Condition of Infrastructure Policy 2

Pursue opportunities to increase mobility options during capital renewal projects

Use street rehabilitation and reconstruction projects as opportunities to achieve future street conditions as indicated in the Street Network Table

With regular maintenance and rehabilitation, streets typically have an 80-year lifespan. Over that time, the land uses adjacent to the street and the uses of the street space can change, sometimes dramatically, as parts of our city experience significant growth. We need to use street rehabilitation and reconstruction activities as strategic opportunities to make changes to the allocation of space in the right of way based on current and future mobility and safety needs.

One example of this approach would be widening a roadway to add additional space for sidewalk and bicycle facilities, which could occur when a street is being reconstructed, thus improving mobility for pedestrians and bicyclists along that street. Another example could be the addition of a median along a street with a high volume of vehicular traffic and many driveway access points for commercial uses. The addition of the median with a street rehabilitation or reconstruction project would improve safety by reducing the potential for head-on collisions and conflicts between left-turning vehicles and more vulnerable users. The addition of the median and the resulting reduction in conflicts would also help to improve the operation of the street and increase vehicular throughput, or the number of vehicles that would be able to move through a section of a street in a given amount of time. These opportunities for street rehabilitation and reconstruction do not come along very often, which makes it even more important that we take advantage of the opportunity to improve mobility and safety for all.

Condition of Infrastructure Policy 3

Improve multimodal mobility through maintenance activities

Pursue opportunities to improve the multimodal network as part of planning transportation infrastructure maintenance

We regularly perform street preventative maintenance to improve the roadway surface and maximize the lifespan of roads through various treatment types and applications. When the City performs street maintenance activities like resurfacing, workers must reapply roadway markings and striping. This is an opportunity to allocate space differently. The space between the existing curbs can be used for travel lanes, turn lanes, parking, bicycle lanes, fire access, or other needs. These regular maintenance activities allow us to reconsider the operation of the street and the space allocated to different modes and uses.

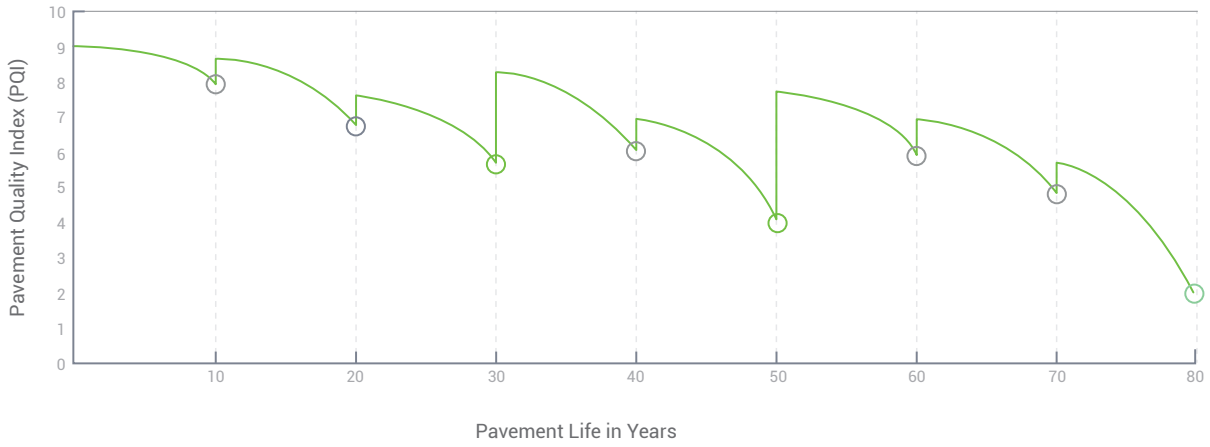
For example, bicycle lanes have been added to certain streets through street resurfacing activities since the 2000s, quickly and cost-effectively increasing the number of miles of bicycle facilities in the transportation network. In these situations, impacts to other modes and safety are studied and streets must have certain volumes to justify adding or removing travel lanes for vehicles to accommodate bicycle lanes. In the near term, if a road is not at capacity and vehicular operations would not be significantly impacted, allocating space currently used for travel lanes for a bicycle facility, turn lane, parking, or other use in a more temporary way is an approach we should use to meet mode share goals, especially when funding for a costly street reconstruction project is not currently available.

Opportunities for Multimodal Improvements During Preventative Maintenance

Depending on where the street is in its life cycle, preventative maintenance may include surface treatments, an overlay, street rehabilitation, or full street reconstruction. Each of these treatments, applied at the appropriate point throughout the life of the street, maintains the street through its full, useful life. Each time we do preventative maintenance, it is an opportunity to reassess mobility and safety needs and, potentially, make changes that help us better achieve our goals.

Year	Treatment
0	Initial Construction (RC)
10	Surface Treatment (ST)
20	Surface Treatment (ST)
30	Standard Overlay (OL)
40	Surface Treatment (ST)
50	Rehabilitation (RH)
60	Surface Treatment (ST)
70	Surface Treatment (ST)
80	Reconstruction (RC)

Optimal Pavement Life Cycle with Preventative Maintenance



Condition of Infrastructure Policy 4

Maintain the usability of all mobility infrastructure

Proactively maintain all mobility systems, recognizing that each system has unique needs

Maintaining usability in our transportation infrastructure means that it is functional, safe, and accessible for all. In order for infrastructure to be usable, it needs to be in good condition and available. Infrastructure that is not available due to poor maintenance practices creates issues for our mobility and safety. This is especially true for users who are mobility impaired and rely on infrastructure to be accessible at all times to make their trips safely and reliably.

While a sidewalk can be completely accessible in theory because it follows proper design standards, if vegetation grows over it and blocks the pathway, then it is no longer usable. As of 2016, approximately 80% of our existing sidewalk network is functionally deficient, and, in some cases, this is due to vegetative overgrowth. We need to pursue strategies to quickly react to issues like these when they are reported and proactively work to maintain the right of way to ensure existing infrastructure is usable for everyone. Another example of proactively maintaining our transportation network is testing the flashing beacons used in school zone signs before the beginning of every school year. By proactively checking the condition of the lights on these signs, we can improve safety for all the people traveling through a school zone.

Comprehensive Infrastructure Assessments

The City regularly conducts a Comprehensive Infrastructure Assessment to account for infrastructure assets, including transportation infrastructure, and assess their condition. Infrastructure condition is dependent on multiple variables including intensity and frequency of use, weather and other environmental factors, the frequency of regular maintenance, age, human factors such as damage from crashes or other incidents, and relation to other infrastructure systems (e.g., electrical system).

Knowing this information is necessary to value assets and calculate replacement costs and remaining life. It also allows us to be proactive about managing, repairing, maintaining, rehabilitating, and replacing those assets. Infrastructure costs can be mitigated if deterioration is minimized by preventative maintenance and damage is detected early, rather than when the infrastructure is in poor or failing condition. Unanticipated emergency repairs or replacements are much more costly than work that is planned and budgeted. Having a consistent way to compile information about the transportation infrastructure conditions also allows decisions to be made about what to prioritize based on the relative needs of other assets.

Other factors such as risk, criticality, resilience, age, expected useful life, acceptable levels of service, desired performance, and capacity are important considerations in identifying capital maintenance and operational infrastructure needs.

Emerging Mobility Solutions

Emerging mobility solutions can be defined as new technologies and services that are currently developing or can be expected to develop in the near term, and have the potential to enhance while also disrupt the status quo of the mobility landscape. Emerging technologies are not limited to new modes of vehicular travel, like scooters, connected and automated vehicles, low speed electric vehicles, and pedicabs. They also include innovation in operating our transportation network, such as sensors and communication systems. These technologies have the potential to move people and goods through our city in faster, safer, cleaner, more affordable, and more equitable ways. We must learn how to direct, adapt, and harness these emerging mobility solutions continuously over the next 20 years in order to meet our mobility goals.

"Autonomous cars will revolutionize transportation."

—Community Member

Emerging technologies are evolving at a rapid pace. Traditional transportation options like walking, driving, taking public transportation, and bicycling will continue to be crucial ways to get around. But integrating emerging solutions into our current transportation network may improve efficiency and accessibility for our community. Automated vehicles, for example, have the potential to increase safety and accessibility for travelers, but also to create more congestion if not managed well. As with any new solution, however, challenges will arise that need to be addressed in order to ensure emerging options best help us balance community needs, safety concerns, and other shared values in Austin.

To maximize the benefits of emerging technologies, we must also continue to pursue collaborative partnerships and investments with local, regional, and national organizations in the public and private sectors. These partnerships help us learn from one another and create common standards related to emerging technologies.

Austin is known for its ability to embrace and encourage innovation. We prioritize solutions that improve the quality of life for Austinites by adapting technology to meet our community needs and goals. Policy development, public engagement efforts, education, infrastructure projects, and inclusion efforts are vital to the success of emerging mobility solutions.

Indicators and Targets

Increase the number of intersections with smart and connected technology that exchanges information with vehicles or devices

Increase the number of emerging mobility proposals evaluated annually

Emerging Mobility Solutions Policy 1

Evaluate emerging mobility solutions to meet community needs

Test emerging mobility techniques and technologies to better understand their impacts and opportunities and gather stakeholder input to maximize community benefits

The majority of new transportation technology innovations, from the bicycle to the airplane, were once emerging mobility solutions. As a community, Austin has often been an early adopter of technology, and new transportation solutions are no exception. We will strive to pilot emerging mobility solutions that help us meet our community goals and align with adopted plans.

Deliberate and careful testing in real-world conditions should be paired with interactive community engagement to improve community members' understanding of emerging solutions and their potential impacts. Incorporating feedback from community members will help us make decisions about where and how we use new services. This process will be continuously refined with local, regional, and national partners to ensure that we are supporting the best of emerging mobility solutions throughout the community.

Smart Mobility Technology Pilots Process

Austin Transportation has instituted a process that demonstrates, pilots, and proves emerging mobility technologies in partnership with the private sector. As an initial step in the development process, companies interested in testing their technologies in Austin must submit an Expression of Interest Form. This form allows staff to catalog and vet proposals based on municipal goals and community needs. These forms describe the company itself, the product they with the City to consider, and the municipal purposes the technology would serve.

After reviewing these interest forms, staff help companies move through three tiers of testing. The three testing tiers grow progressively, testing new features in additional locations for longer periods of time. Between each testing tier, Transportation staff conducts an analysis that assesses how well the technology worked, if it fulfilled its purpose, and if it should continue to be tested on a large scale. By the time a technology reaches the end of the process, it has been thoroughly evaluated and refined. This process helps Austin Transportation determine whether a given technology is suitable for Austin's mobility landscape.

Emerging Mobility Solutions Policy 2

Integrate emerging mobility solutions into existing transportation infrastructure systems

Incorporate emerging mobility technologies into the transportation network based on speed, size, and other safety characteristics

As emerging mobility solutions arrive in Austin, these solutions should be integrated into the current transportation network in a way that fits our needs. We will work to provide new infrastructure features, like electrification and communication systems as well as supporting systems, like data management and analysis, to accommodate new modes and transportation technologies. However, retrofitting our current systems and infrastructure takes time, and emerging solutions should be able to fit into the current transportation network in the meantime.

A good example of integrating emerging mobility solutions into our existing transportation infrastructure is using our existing Bicycle Priority Network to accommodate electric scooters. Our existing transportation network was not designed for or around the low-speed, electric scooters that are now in use in our community. However, electric scooters are very similar to bicycles due to their low-speeds and narrow profile. Our existing bicycle system infrastructure, including lanes on the street and parking off of the street, must be used in the short-term to accommodate scooters. Long-term planning will be able to take scooters, and data on their use, locations, and best safety practices, into account when designing new infrastructure systems.

For all emerging mobility solutions, we will use short-term measures to address physical and digital implementation needs until long-term improvements can be made. We will take speed, safety measures, size, and other characteristics into account when examining the best locations and ways to integrate emerging mobility solutions. We must ensure that the seamless integration of new innovations works for Austinites and makes our mobility options more effective for all.

Emerging Mobility Solutions Policy 3

Invest in infrastructure that enables the adoption of emerging mobility technologies

Invest in infrastructure that supports the adoption of emerging mobility technologies through innovative business models

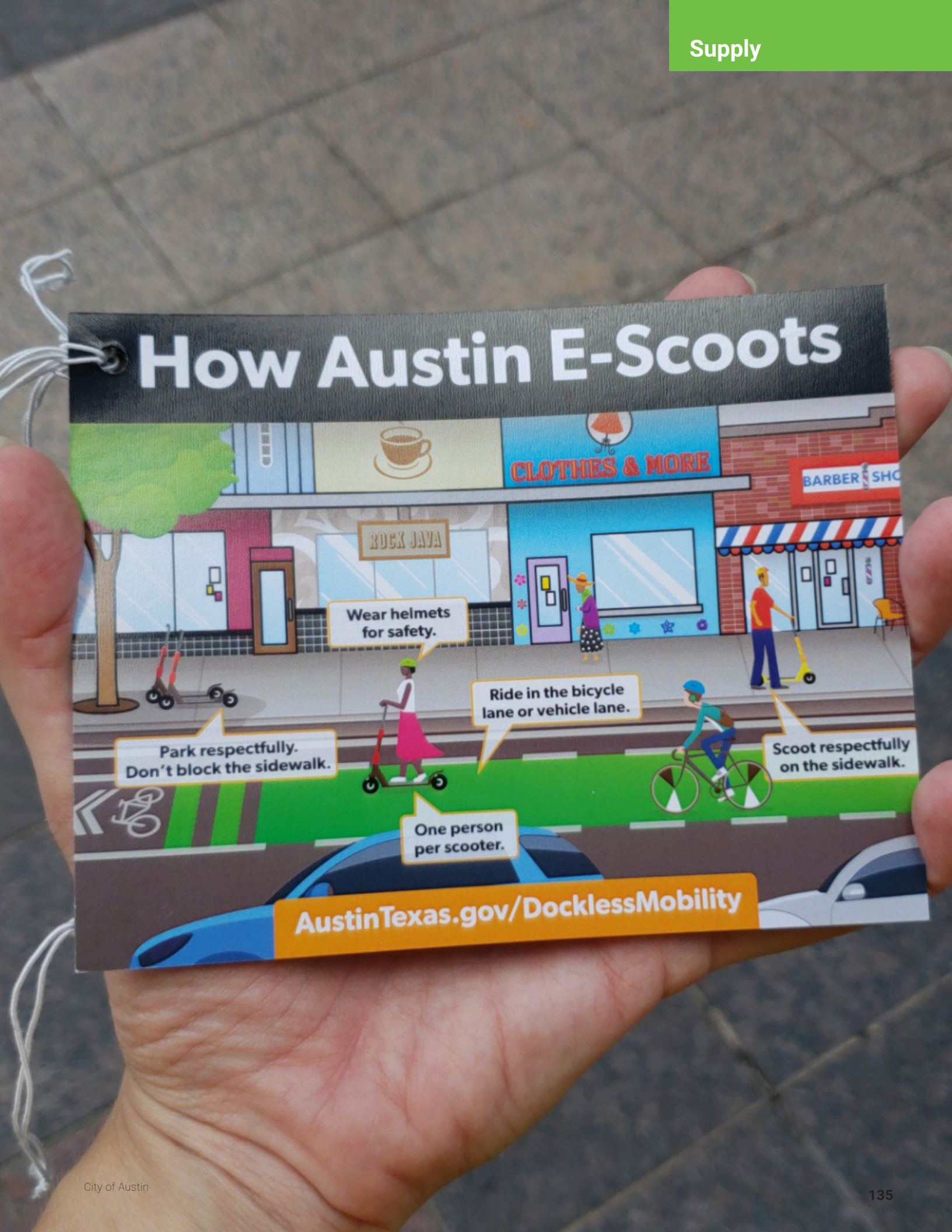
We must ensure that emerging mobility technologies and solutions contribute to the long-term viability of our transportation network. New investments in strategically planned and placed capital improvements, along with supporting features, like data analytics and processing, may be needed to help connect these emerging technologies to our transportation network. Wi-Fi and connected vehicle technology are a few examples of placemaking infrastructure that can enhance our community and improve safety, accessibility, and digital connectivity.

Investment in new types of mobility infrastructure is a long-term measure. However, both the public and private sectors can help us support our growing need for adaptable infrastructure through innovative business models and partnerships. In the long term, this investment in and development of new transportation-related infrastructure and supporting features will contribute to securing the future financial, environmental, and social sustainability needed for a truly resilient community.

Vehicle to Infrastructure Communication Technology

Communication technologies between vehicles and infrastructure are an innovative way to increase the safety, reliability, and efficiency of our transportation network. In 2018, Austin became the first city in Texas to install Vehicle to Infrastructure (V2I) technology on our transportation network. The V2I technology was installed at five major intersections in 2018, and two more intersections will receive the same technology in 2019. V2I uses digital short-range communication to connect vehicles with the traffic signal controller in real time, in essence, allowing vehicles and other devices to "talk" to each other. This can improve pedestrian and vehicle safety as part of the operations of the signalized intersection.

The small test devices can broadcast industry standard basic safety messages in the immediate vicinity of the intersection to surrounding vehicles equipped with onboard units. The basic safety messages indicate vehicle position, motion, brake system status and size, and provide vehicles with information and data, which is then used to illustrate intersection geometry using high-resolution formatting. This type of information will help future connected traffic signals and equipped vehicles communicate about pedestrian or bicyclist presence in the intersection, improve vehicle performance, and provide engineers with traffic data that can be used to improve safety and operations.



City of Austin

Aviation

While air travel is not a daily activity for most Austinites, it is an important part of our transportation network and vibrant economy. Central Texas depends on reliable air service from Austin to foster business and leisure opportunities as well as connect friends and families.

"Better connectivity to ABIA would help promote greater levels of community and economic development."
—Community Member

The vision for Austin-Bergstrom International Airport is "to be the airport of choice for Central Texas" and its mission is "to connect our community to the world with an Austin-style experience." As a destination city that people want to visit, and as the airport increases departure options, demand for air service continues to rise. This demand also means more airport-related jobs and local economic activity. The Austin airport generated $7.6 billion in economic activity and supports more than 74,000 jobs in the Austin area, according to a 2018 Economic Impact Study from TxDOT.

Originally constructed in 1999, the Austin airport is a growing transportation hub for locals, visitors, and freight. Austin-Bergstrom currently serves more than 15 million passengers annually, beyond its original design capacity of 11 million passengers, and that number continues to grow. According to the airport's 2040 Plan to expand the airport, annual passenger volume is anticipated to grow to more than 30 million by 2040. While the majority of our airport passengers come from Travis County, in recent years passengers have come from 21 counties surrounding the greater Austin region, and even south of San Antonio. In addition to serving the Central Texas region, Austin-Bergstrom is also a reliever airport to surrounding Texas airports when they reach capacity, such as Dallas-Fort Worth, San Antonio International, George Bush Intercontinental, and Houston William P. Hobby airports. Due to this, the airport receives more flight diversions than any other airport in the country.

As more people and goods move to and from Central Texas, it is critical that our airport infrastructure and options in getting to and from the airport expand to support Austin remaining a regional and national leader. A steady increase in travelers, domestic and international flights, new technologies, and passenger safety regulations make it necessary for us to envision and position the airport to meet future needs. With expanded options in the future for transportation to and from Austin, Austin-Bergstrom International Airport could also serve as a mobility hub for communities traveling to and from the city by different modes, providing jobs and access to public transportation and other mobility services.

Indicators and Targets

Increase transportation options to and from Austin-Bergstrom International Airport

Increase shared mobility solutions on the ABIA campus

Increase the number of airplane passenger seats in Austin market

Increase the number of ABIA destinations

(In 2017, there were 58 domestic destinations; In 2018, there were 9 international destinations)

Aviation Policy 1

Expand mobility options to and from the airport

Increase the options for both travelers and employees to get to and from Austin-Bergstrom International Airport

As the eleventh largest city in the country, Austin visitors and residents expect many options to travel to and from the airport. In order to better manage congestion and provide options for travelers and employees to get to Austin-Bergstrom International Airport, we need to increase the number of affordable multimodal options to and from the airport. Currently, Austin-Bergstrom International Airport is not served by high-capacity transit and is only served by one frequent bus line. The airport's location southeast of Central Austin means that most people traveling to and from the airport are doing so by car, whether it's their personal vehicle, taxicab, or ride-hailing service, all of which add to the cost of air travel.

Providing more affordable options, such as high-capacity transit and urban trails, to get to the airport would reduce travel costs, increase access, and decrease the space needed for parking which could be used for other aviation and commercial functions. Additional transportation options would also increase access to employment at the airport for people who do not have access to a car or are not able to drive. As passenger volumes are expected to double over the next 20 years, expanding mobility options will become even more necessary. We need to especially work with Capital Metro to plan for and provide high-capacity transit that connects to the airport.

Aviation Policy 2

Increase multimodal connectivity and options on the airport campus

Provide more ways for employees and visitors to get around the airport campus to reduce reliance on fossil fuels and encourage active transportation

With thousands of passengers and employees traversing the airport campus every day, it is important that we increase options to get around that don't require getting into a car. Currently, the transportation options on the airport campus are limited. Adding circulator services and micromobility devices, like scooters or bicycles, could help employees travel around the airport campus without having to drive a car. Active transportation modes can also decrease the reliance of airport operations on fossil fuels, reducing the airport's contribution to emissions generated by the transportation sector.

A personal rapid transit system, defined as an autonomous circulator for passengers as they arrive or depart from the airport, could greatly reduce the amount of vehicular traffic that needs to access the terminal and provide an opportunity for a regional ground transportation center or mobility hub at the airport. A personal rapid transit system would also reduce congestion at the terminal by allowing people who choose to park and those being picked up or dropped off at the airport to arrive at separate locations on the airport campus, but still make the final journey to the terminal via the same system.

Aviation Policy 3

Inform visitors about Austin's mobility options

Assist travelers in being less car-dependent when visiting Austin by providing them with convenient information to help them make mobility decisions

One of the ways we can improve the experience of visitors to Austin and reduce congestion is to inform them of their transportation options, potentially allowing them to be "car free" while in Austin. We should use technology and communication strategies to provide visitors with clear information about mobility options so they know they don't need a car to begin or end their trip to Austin. Driving around an unknown city can be stressful, and Austin offers different transportation options to travelers if they wish to be car-free. However, if we do not provide them with information on our public transportation and shared mobility systems when they arrive, they may have a difficult time learning about these systems. Visitors who have more information about mobility options, which can be delivered through tools such as display screens at the airport and mobile device applications, can make better decisions about how they can get around while in Austin.

Aviation Policy 4

Prepare for and design aviation facilities to adapt to emerging mobility solutions

Plan for, design, construct, and manage the airport campus to respond to changes in transportation preferences and technologies

Transportation to and from the airport diversify and emerging mobility solutions enter the market, our airport needs to be adaptable. It is important that, as we expand Austin-Bergstrom International Airport to respond to increasing passenger growth, we consider the changing needs of transportation.

Currently, large portions of the airport campus are dedicated to parking private vehicles for passengers and employees. However, as high-capacity transit to the airport and automated driving vehicles become a reality, it will be necessary to repurpose facilities dedicated to housing automobiles for better uses, such as cargo facilities, other commercial uses, or facilities to support airport operations. In preparation, parking garages should be built to be adaptively reused to make the best use of airport land when parking demand decreases.

Shared mobility solutions, such as transportation network companies, also require us to adapt to accommodate waiting vehicles as well as passenger loading and unloading to ensure efficient airport operations. As dockless mobility services expand beyond the urban core, we will also need to prepare to manage the storage of these vehicles so they are accessible by passengers and employees.

Aviation Policy 5

Coordinate wayfinding to, from, and at the airport

Provide a seamless user experience when navigating to, from, and within the airport

Wayfinding is a system of signs and markings that show us how to get to where we are going. Wayfinding to and from an airport is especially important, since visitors may not be familiar with our transportation network. We can make arriving at our airport a more user-friendly part of someone's journey by having clear messaging about how they can get to their destination.

Most people who arrive in or leave Austin, whether they are residents or visitors, arrive at Austin-Bergstrom International Airport by car. For this reason, it is critical that we have clear signage along major corridors that lead to the airport to make that experience more seamless. Fixed route signs, such as the standard green highway signs, should be clear, well-maintained, and consistent. Digital signs that are dynamic and offer more information, such as how far in minutes someone is from the airport, also strengthen wayfinding. Public transportation options should have clear signs indicating which routes service the airport. As transportation options to and from the airport evolve, it is increasingly necessary to work with our partners at the TxDOT and Capital Metro to expand wayfinding tools to provide clear information on how to navigate seamlessly between the airport and different parts of Austin. Similarly, wayfinding within the airport campus should be clear and easy to understand, minimizing decision points and providing ample advance notification.

International Example: Heathrow PRT System

Heathrow Airport in London has a 21-vehicle personal rapid transit (PRT) system that connects travelers using Heathrow's Terminal 5 with its designated parking lot. Each driverless vehicle, known as a pod, is powered by electric batteries and can hold up to four people and their luggage. The PRT at Heathrow has three stations. When riders enter the pod they select their destination. Unlike traditional transit systems, the pod will go directly to the destination entered by the passenger and will not continue to a station if the riders do not select that station.

Austin Bergstrom International Airport (ABIA) is exploring the possibility of a PRT system and other circulator technologies. ABIA hopes these systems could offer several benefits, including decreasing roadway and curbside congestion on the airport campus. They could also provide inter-terminal and/or concourse transportation, while potentially integrating with a high-capacity transit system.