



Bicycle Facilities

2018

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INTRODUCTION

Atlanta's Transportation Plan is the access strategy for Atlanta City Design. The Plan is divided into a concise final report and a series of detailed technical appendices. The final report summarizes Atlanta's Transportation Plan in an easily digestible manner using infographics, maps, and images and is intended for the general public and elected officials. The technical memorandums are intended for planners, City staff, and implementation partners that require a higher level of detail.

As part of Atlanta's Transportation Plan, this technical appendix outlines current bicycling infrastructure conditions and describes how planning and project implementation in the City have evolved over the last two decades. Bicycling is a key component of the project recommendations in Atlanta's Transportation Plan, though the planning strategy for meeting travel demand through non-drive alone assumes that bicycling occupies the smallest mode share of among the primary personal travel modes. With this in mind, this document also outlines strategic approaches to complement ongoing bicycle network expansion with behavior-changing approaches to increase the overall role of bicycling in Atlanta's urban mobility. The goal of building a bicycle infrastructure network is to attract travel demand to bicycle use, especially for shorter trips. This is not only consistent with Atlanta's larger stated goals of addressing automobile traffic congestion, carbon emissions, and climate change, but also helps to satisfy travel demand in a shorter time than what is needed to design and build transit projects.

BACKGROUND

Bicycle infrastructure in Atlanta has been remarkably improved over the last two decades, with the City adopting its first comprehensive bicycle plan in 1995 and achieving a sustained level of regular addition to the bicycle network since 2010. However, Atlanta still has much work to do to complete a safe, connected, and reliable bicycle network throughout its administrative limits. In addition, the physical challenges to bicycling as a means of transport—Atlanta's rolling terrain; the frequently substandard pavement condition on its streets; and frequent interruptions of the city's street grid from railroads, highways, and natural features—suggest careful planning continues to be needed to provide routes that will attract cyclists to use them.

Atlanta's bicycle network consists of over 100 miles of on-street bicycle facilities and off-street paths and trails. The on-street facility network has evolved through incremental contributions since the City developed its first bicycle master plan in the 1990s. At that time, on-street bicycle accommodation consisted mainly of striped bicycle lanes per guidance in the American Association of State Highway and Transportation Officials (AASHTO) Green Book and the Manual on Uniform Traffic Control Devices (MUTCD). This left implementation of the first plan limited to locations where these bicycle facilities could fit within existing street widths, which in turn resulted in a disconnected network of bicycle lanes implemented on an opportunistic basis.

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Additionally, the City of Atlanta did not have a formal means of integrating the bicycle plan projects with street resurfacing projects or capital programming.

Subsequent plans, such as the Connect Atlanta Plan and the Cycle Atlanta Plan have introduced new designs for bicycle facilities and allowed the City to be more creative in addressing gaps and adding to the bicycle system. At the same time, trail projects such as the Atlanta BeltLine and PATH 400 have demonstrated the potential for bicycling facilities to connect multiple neighborhoods, parks and community attractions. The popularity and success of these projects reflects Atlanta's potential as a city where bicycling is a legitimate and desirable travel option. Atlanta's commitment to bicycling is also demonstrated through by creating a full-time staff position (a Chief Bicycle Officer), allowing much more direct coordination between the various City agencies and functions associated with implementing bicycle projects.

The result of these combined efforts is that the City has greatly increased the pace with which it has built out its bicycle network. Atlanta had 100 miles of bicycle facilities in 2016 and launched its Cycle Atlanta Phase 2.0 implementation effort in mid-2017.

EXISTING CONDITIONS

CURRENT NETWORK

There are different types of bicycle infrastructure in Atlanta. These are listed below generally in order from the highest level of comfort and protection to the lowest level.

- **Multi-use paths** are typically fully separated from vehicle travel lanes, often running parallel to the street. In some applications, these paths in Atlanta use the space of a typical street sidewalk (though they are wider and designed for two-way bicycle travel). Around one third of Atlanta's bicycle system mileage is in this type of facility, which includes both bike-friendly trails and paths in City parks and separate facilities that have been developed by the PATH Foundation; it also includes the completed portions of the Atlanta BeltLine trail.
- **Protected bike lanes and cycle tracks** include physical separation of the bike travel lane from vehicle travel lanes, which may be through raised features such as medians or planters or may simply be through flexible posts or bollards.
- **Bicycle lanes (striped only)** are generally the most common type of bicycle facility in Atlanta and have a striped bicycle lane between the vehicle travel lane and the curb or on-street parking.
- **Neighborhood greenways**, sometimes referred to as bicycle boulevards, are generally designated by marking shared lanes (or sharrows) on low-volume, low-speed neighborhood streets, with selective use of traffic calming to improve safety for cyclists and further control vehicle speeds.
- **Shared Lane Markings**, commonly referred to as sharrows, are pavement markings indicating that bicycles and vehicles may share a lane. Since their adoption in the 2009 MUTCD, they have been used typically as a means of designating a bicycle route where a street or road does not have sufficient space to allow bicycle lanes or another separated facility. In limited cases in Atlanta, a single bicycle lane has been marked on sloping streets in the climbing (uphill) direction, while the corresponding descending (downhill) direction is marked with a sharrow.

The historic focus of bicycle implementation in Atlanta has been largely based on the types of facilities that were commonly pursued throughout the United States for much of the last 20 years, bicycle lanes. Today traditional bicycle lanes account for just under half of all completed bicycle facilities, with off-street paths making up a similar share. Figure 1 provides detail on current bicycle facilities in Atlanta.

FIGURE 1 BICYCLE FACILITY TYPES AND CURRENT MILEAGE

	Currently Completed
Buffered/Protected Bike Lane or Cycle Track	5.9
Hard Surface Multi-Use Path	35.7
Bike Lane (striped only)	43.7
Neighborhood Greenway/Bike Boulevard	0.0
Uphill Bike Lanes/Downhill Sharrows	2.9
Shared Lane Markings (Sharrows)	16.2

Figure 2 illustrates the location of the existing bicycle network by type of facility. While much progress has been made to provide facilities throughout the City, there are also many gaps in the bike network preventing a complete, interconnected system.

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FIGURE 2 EXISTING BICYCLE FACILITIES IN THE CITY OF ATLANTA, BY TYPE

Existing Bike Facilities

- Protected Cycle Track
- Multi-Use Path
- Bike Lane (striped)
- Shared Lane/Sharrows
- Expressway
- Major Roads
- Local Streets
- Water
- Atlanta City Limits



CURRENT PLANNING AND ENCOURAGEMENT EFFORTS

Atlanta has made significant progress to increase the safety and connectivity of the bicycle network since completion of the Connect Atlanta Plan in 2008. The Cycle Atlanta Plan has provided detailed, project specific guidance on implementing parts of the Connect Atlanta Core Connections network. Current efforts to increase bicycling in Atlanta are focused on implementation of Cycle Atlanta and expansion of the Relay bikeshare program. In addition, the City plans to introduce new facilities, such as the neighborhood greenways, to complement the existing system and address gaps in the network.

Cycle Atlanta Implementation

Cycle Atlanta's Phase 1.0 Study was based on Connect Atlanta Plan's division of recommended bicycle routes into Core Connections—intended to provide direct, relatively straight-path connections across long distances in the City and as such an important priority for projects to program solely for bicycle improvements—and Secondary Connections that were intended to follow a more opportunity-based program of network additions. Cycle Atlanta Phase 1.0 selected five primary corridors to emphasize as key connections within the BeltLine loop throughout the City and provided a detailed set of designs for how to implement them. In addition to a main corridor alignment, the study also provided designs for parallel alternative routes where available.

In 2017, the City began its Cycle Atlanta Phase 2.0 study, which expands this network of high-quality bicycle routes outside of the Atlanta BeltLine corridor. It uses a similar system of facility definitions and will develop a series of specific projects to which funding from available sources, such as the current TSPLOST or future renewals thereof, can be applied.

Relay Bikeshare

The City of Atlanta launched the Relay bikeshare program in 2016, beginning with 100 bicycles at ten stations downtown. Relay is accessed by mobile device application-based user interface and, unlike models used in other cities, does not require users to return bicycles to stations (referred to as 'hubs' in the Relay system's terminology). Users use the app-based technology to lock and locate bicycles anywhere within a defined service area and to reserve bicycles for a defined period of use. The system operates within a designated service area generally encompassing Atlanta's central urban core and surrounding neighborhoods.

The Relay system underwent its first major expansion in 2017, with a significant number of bicycles and hubs added to an enlarged service area now encompassing the Buckhead business district, Westview and West End neighborhoods, and the Edgewood and Candler Park neighborhoods in the DeKalb County portion of Atlanta. Relay also began a partnership with MARTA to locate bicycles at rail transit stations, intended to facilitate first- and last-mile

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connectivity from transit. Although pricing and payment for Relay and MARTA remain separate systems, both agencies have explored ways to integrate fare products to encourage joint use of the systems to complete trips.

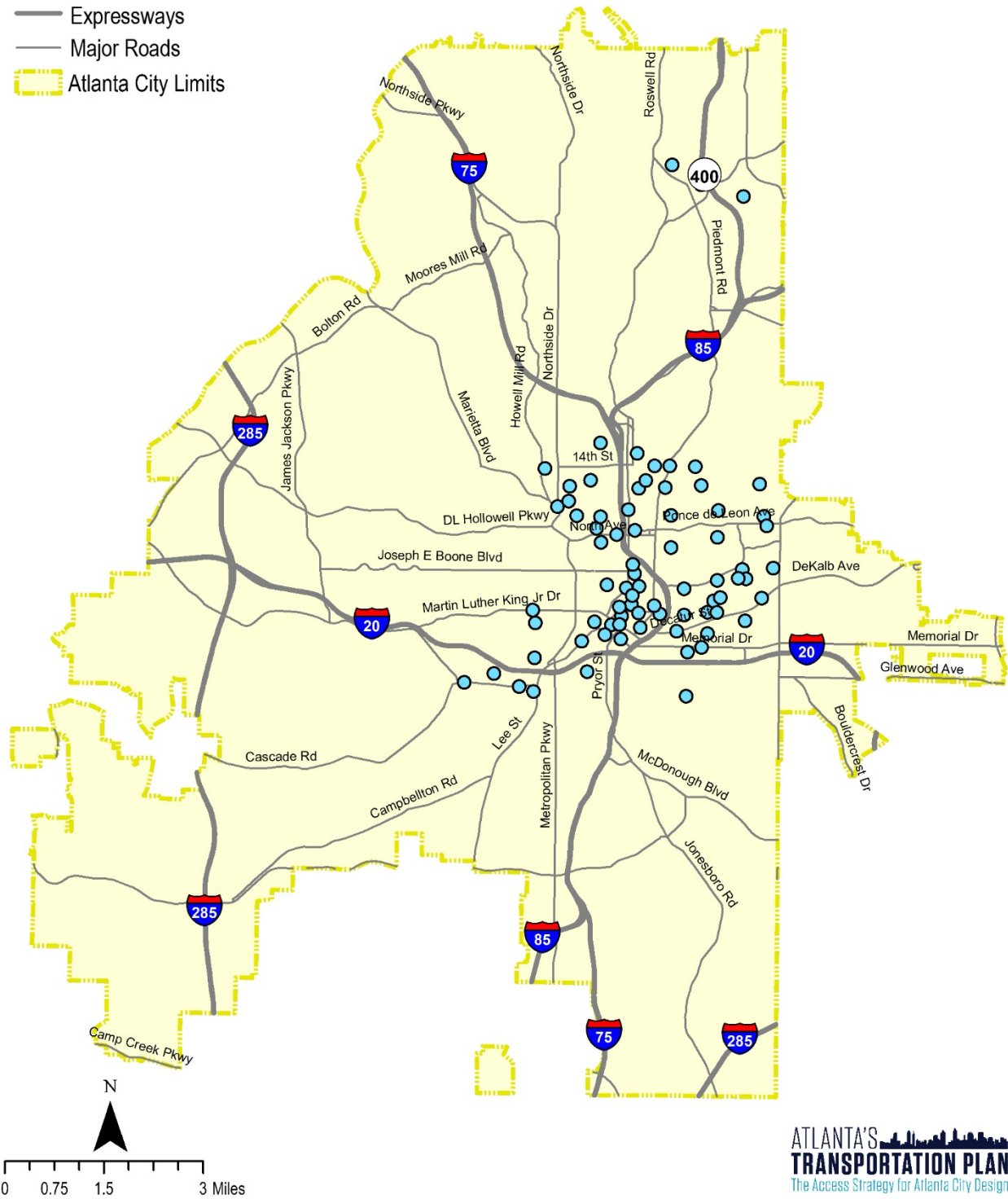
Figure 3 illustrates the locations of Relay bikeshare stations and the larger service area.

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FIGURE 3 RELAY BIKESHARE STATION LOCATIONS, SPRING 2017

Relay Bikeshare Station

- Existing (2017)
- Expressways
- Major Roads
- ▭ Atlanta City Limits



INCREASING BICYCLE USE

THE ISSUE

Although the City has continued expansion of the bicycle network, launched the Relay bikeshare program, and introduced new protected facilities since completion of the Connect Atlanta Plan, it has not yet seen a significant increase in bicycle usage to date. As a result, the initial travel forecasting methodology in Atlanta's Transportation Plan accounted for a mode share of just under one percent of all trips citywide. This is derived from information used in the Atlanta Regional Commission (ARC) Activity Based Model used for travel demand forecasting, itself informed by the ARC 2011 Regional Household Travel Survey.

Atlanta's Transportation Plan Multimodal Urban Growth (MUG) methodology for enhancing the ARC-based travel demand forecasts is based on nationwide academic and transportation industry research on the effectiveness of different project and policy approaches to reducing driving demand and satisfying urban mobility through a variety of travel modes. Because bicycling rates vary significantly between cities and data collection and surveying to adequately capture the share of trips made by bicycle is difficult, this is an area that requires further research and documentation. Current modeling suggests a modest impact on drive-alone travel demand from bicycling, particularly in more suburban and lower density areas of the City. While bicycle utilization is expected to grow with the application of Atlanta's planned bicycle network, the MUG modeling did not hinge on substantial increases in the bicycle mode share to accommodate the growth in future travel demand from new population and employment.

OPPORTUNITY

In spite of the low level of bicycle use assumed in the MUG forecasts, bicycle travel represents an opportunity to reduce the amount of drive-alone travel and improve public health and safety. In addition projects to expand the bicycle network are less complex and costly to implement than transit infrastructure (which accounts for the bulk of travel transferred from driving alone) and can support increased transit ridership by providing first- and last-mile connections to stations. Indeed, the City can continue its substantial progress in bicycle network expansion entirely through existing funding programs (Renew Atlanta and TSPLOST) and on local streets entirely within its control.

To realize cycling's full potential, however, it is essential for the City to do more than simply expand the network. The City must lead and provide resources to support programs and policies that do the following:

- Raise public awareness of bicycling, including the rights of cyclists and their vulnerability on streets and highways

- Provide incentives for cycling use, especially for employment-based commuting trips that occur in peak travel times
- Strengthen the requirements in zoning and development policies for accommodating cyclists
- Invest in supporting infrastructure and services to provide the same safety and comfort at the end of a bicycle trip that automobile drivers currently enjoy
- Enhance the presence of the City's Relay Bikeshare system and remove barriers to system entry, especially for City residents without access to mobile data devices (e.g. smartphones) and credit cards

The objective of programs like these should be to increase the bicycle mode share in the City beyond the one percent currently forecast, and especially in the immediate 10-year period that will presumably see no significant expansion to the City's premium transit network due to the time and complexity typically involved in transit project development.

BEST PRACTICES

Atlanta can draw from best practices and lessons learned in other cities, particularly those that have seen significant increases in bicycle mode share. As a comparison, many of these cities began planning and expanding their bicycle networks since the adoption of the Connect Atlanta and Cycle Atlanta plans. Highlights from other communities follow.

Ongoing maintenance and installation funds

Atlanta has successfully launched two funding programs - the Renew Atlanta bond and TSPLOST, but these funding sources are project-specific. Expansion of the bicycle network will require the City to identify ongoing and dedicated sources of funding to install and maintain the network. Further, Atlanta should reserve funding to install bicycle facilities quickly when detailed design and engineering are not required. More regular maintenance of City streets might be able to facilitate this approach by using signage and striping plans to reconfigure lane widths and include bicycle facilities as part of these other projects.

Bikeshare density

Bikeshare programs function best when bicycles are placed at a density that means virtually any location is within a short walk of a bike. Atlanta's Relay system uses a hub model that does not require selecting or leaving bicycles at stations, although users who leave a bicycle at locations other than a station currently pay an additional charge.

The City should continue with station and bicycle fleet additions to reach a target density of 20 to 30 stations per square mile in mixed-use districts of the City and 14 to 20 stations per square mile in residential neighborhoods. Station sizes should vary to accommodate more capacity in high-demand areas, but the objective of this station spacing level is to ensure that users have short walks to stations and can avoid additional user charges for leaving bicycles outside of them.

Bicycle parking

The City should take a proactive role in focusing on the public right-of-way for parking, allowing private development and non-governmental partners (such as the City's community improvement districts) to lead the advancement of bicycle parking on private property. Adequate supply of bicycle parking on the street contributes to orderly, usable and enjoyable streetscapes, prevents damage to trees and street furniture from parked bicycles, and keeps bicycles from falling over and blocking the sidewalk. Bicycle parking also increases the number of people on a street, thereby increasing levels of activity in a corridor and general security for street users.

Bicycle parking is increasingly provided through private development, and this is especially important in a less urban community context where the public street right-of-way may not be able to fit bicycle parking. Many municipalities use resources such as the Association of Pedestrian and Bicycle Professionals *Bicycle Parking Guidelines* to guide policy and decision-making on how much parking should be included, although as cycling increases and land development patterns feature stronger linkages to bicycle facilities and multi-use paths, zoning ordinances and development regulations may also allow increased flexibility in bicycle parking.

When installing short-term bicycle parking, either in right-of-way or on private property, consideration should be given to how and where the supply can be subsequently increased. Bicycle parking should be planned and installed to allow for additional capacity to be added in the future when demand changes. If possible, the placement of racks should not occur in a manner that removal and repositioning is necessary to accommodate more racks.

Access to rail stations

The MARTA rail network is a key partner to increasing bicycle utilization. Public transportation provides another option for people who bicycle who do not wish to travel long distances to extend their trips across the City on a bicycle-friendly mode of transportation. As MARTA and other transit agencies continue to increase service options, these partnerships will become increasingly important alternatives to driving. The City should consider prioritizing bicycle facilities that connect to MARTA stations and do not parallel major MARTA routes. As discussed previously, bicycle parking is also a crucial component of bicycle-transit connections.

MARTA, like most transit agencies, provides external bike racks on buses. Bike racks mounted on buses are most frequently located in the front of the bus. They typically flip up against the bus when they are not carrying any bikes. However, this capacity is limited (typically to two bikes per bus at a time), and on less-frequent routes cyclists may not be able to depend on availability of space. The City should partner with MARTA and transit service providers to explore on-board bike storage on buses and trains, especially trains as they feature level-floor boarding from platforms. This is useful not only for improving transit access, but also in allowing cyclists to easily reach the other end of their trip if transit connections are not available.

Zoning ordinance revisions for bicycle accommodation

Updates to the zoning ordinance will update the City's requirements for how much bicycle parking must be provided in new private developments, using resources such as the Association of Pedestrian and Bicycle Professionals (APBP) *Bicycle Parking Guidelines*. The zoning update also offers the opportunity to establish standards for simple signage and wayfinding to guide cyclists to the location of parking on a development site.

Focused outreach programs

While a safe and complete network of bicycle facilities is critical, it is expected that some areas of Atlanta will likely have a higher concentration of travel demand than others. In addition, the safety analysis identified specific areas throughout the City where pedestrians and cyclists face a higher safety risk, especially on the High Injury Network. The City should focus resources for education and enforcement on areas with a greater amount of safety risk to help community members—both cyclists and motorists—understand laws of the street and respect other types of users.

Employee-based incentive programs

Shifting travel from driving alone to bicycling can be incentivized by employers using some of the following best practices for transportation demand management. The City can work with businesses to offer these benefits to their employees and market them.

- **Pre-tax reimbursements.** As of 2009, bicycle commuting qualifies as a transportation fringe benefit covered under section 132(f) of the United States tax code. Employers may provide a reimbursement of up to \$20 per month to employees for bicycle-related expenses, which may include repairs. This is currently available only from employers—in other words, employees cannot elect to reimburse themselves through pre-tax payroll deductions as they can with parking and transit expenses, and employees may only receive one benefit or another in the same month, not both.
- **Parking cash-out programs** and other cash incentives typically provide a simple reimbursement for an amount equal to the cost of parking. Employers may increase this amount for bicycling or help to subsidize the costs of bikeshare memberships for employees that use them.
- **Health and wellness programs** tied to health insurance are increasingly common as ways for employers to control costs related to healthcare benefits. Under such programs, insurers may offer lower premiums or costs for employees that meet certain wellness and health targets. Coupling this with informational programs on cycling and its health benefits can help to encourage use.

RECOMMENDATIONS

To increase the number of people bicycling, especially for short trips and first- and last-mile connections from transit, the City must continue to expand the network and address key gaps. In addition, the City should recognize that cyclists must have a level of protection appropriate to the street or road on which they are traveling. This will lead to a greater emphasis on providing protected facilities, especially on high-speed or high-volume streets and roads where cyclists are most vulnerable and less experienced cyclists may forgo choosing bicycle travel.

STANDARDS FOR FACILITY PLANNING AND DESIGN

Because of this increased emphasis on protected facilities, Atlanta's Transportation Plan recommends setting minimum standards for when a facility must be designed with protection from vehicle travel lanes. These are described in the following sections.

Volume and Speed Thresholds for Protected Facilities

The City should design for protected facilities on all streets with annualized daily traffic volumes of 20,000 vehicles per day (VPD) or greater. In addition, the City should design for protected facilities for any streets in the City with a posted speed of greater than 30 miles per hour.

This volume threshold is based on current traffic volume distribution, where 20,000 VPD only occurs on select surface street corridors, mostly in north and northeast Atlanta. Adopting a posted speed threshold is intended to address the many streets in other parts of the City that may not carry the same traffic volume but nonetheless represent challenging corridors for cycling. In south and west Atlanta in particular, many streets previously designed for higher traffic levels prior to construction of the region's freeway system do not carry their design-level traffic volumes today; these lower volumes are also due in part to population and employment decline in many of these areas, leading to less traffic overall. Street and roadway design intended for higher traffic volumes facilitates high-speed travel when a street does not regularly feature traffic and congestion.

Additionally, continued growth as envisioned in Atlanta City Design is expected to increase traffic volumes; the MUG travel forecasting analysis assumed that traffic would increase to saturation levels on virtually all major corridors throughout the City. With many City streets able to carry more traffic than current levels, the 20,000 VPD threshold level can be expected to be more and more common into the future. Even on streets that do not currently meet either the speed or volume thresholds, future changes may require protected facility designs that would be less critical under current conditions.

Design Tradeoffs

As noted previously, a major reason that Atlanta's bicycle system has long featured many disconnected facilities and segments is its historic opportunity-based implementation, with many bicycle facilities being added as a result of resurfacing, restriping, and changing the configuration of vehicle traffic lanes.

Current planning efforts, especially Cycle Atlanta Phase 1.0, have emphasized preserving existing on-street parking wherever possible, although it made specific recommendations for selected removal or relocation of parking to safely accommodate the addition of a bike facility. In addition, current implementation of bicycle facilities has tended to avoid right-of-way acquisition due to cost and community impact, especially in residential neighborhoods. As many streets in outer neighborhoods of the City were originally designed with neither sidewalks nor bike facilities, the City's effective policy of prioritizing sidewalk construction has left insufficient space *within existing right-of-way* for additional dedicated space for bicycles.

Meeting a tradeoff point should not mean a bicycle facility cannot be added or must be reduced in level of protection to fit within current constraints. In the future, the City will need to address tradeoffs more directly, developing standards for:

- **Parking removal.** The City should require a minimum threshold for approval before replacing on-street parking with bicycle lanes. This would involve preparing an assessment of district-wide parking prior to beginning project development for bicycle facilities and a presentation of a parking strategic approach to affected communities.
- **Right-of-way acquisition.** The City should develop consensus with communities where adding protected facilities means addition of right-of-way and help to assess overall impacts and benefits based on the facility's addition. In business districts, this should include a basic assessment of new business potential from the bicycle facility and consider this against potential impacts such as parking removal or driveway consolidation. Additionally, zoning changes may be needed in certain districts and along certain corridors to require new development to create or allocate space for bicycle facilities.

Monitoring and Reporting

Bicycling as a travel mode has historically been underrepresented in data collection and reporting throughout the United States, and in the MUG forecasting efforts, an already-low level of bicycle mode share as reported from ARC's regional survey has underscored the difficult case for cycling to contribute significantly to reducing automobile travel demand.

To overcome this, the City must increase the availability and depth of data and information on both cycling use and the effectiveness of bike facilities, particularly in improving safety. The City should create a bicycle counting and corridor reporting program based on the following parameters:

- Collect daily counts on all corridors featuring bicycle lanes, protected bicycle lanes, or protected cycle tracks a minimum of twice per year for each corridor. Atlanta's Transportation Plan recommends basing these collection times on a school-year period and a summer holiday period to account for any differences in school-based cycle trips (both for grade schools and colleges/universities).
- Collect speed data on corridors prior to bicycle facility implementation, preferably at least two time points to account for seasonal variations. Speed data should be collected outside of weekday peak travel hours.
- For new bicycle facility projects, collect daily bicycle counts and vehicle speed data a minimum of four times per year for the first two years.
- Collect and analyze crash data for new facility corridors for the three years available prior to a new facility's implementation. Collect and analyze this data annually after implementation, noting the following:
 - Bicycle-related crashes and known causal factors, which may require access to individual crash reports through the Georgia Electronic Accident Reporting System (GEARS) or its successor systems
 - Pedestrian-related crashes on the same corridors
 - Severity of both bicycle- and pedestrian-related crashes
 - Trends in both bicycle- and pedestrian-related crashes, noting when facilities were implemented in each corridor

This data should be reported in a comprehensive bicycle system evaluation report that the Department of City Planning prepares regularly and presents to the City Council Transportation Committee.

EDUCATION PROGRAMS

Knowledge of the rules, regulations and rights regarding cycling is uneven, and many motorists who express an interest in having better non-driving options cite concerns over safety as reasons they would not consider cycling. This points to a need for a robust bicycle safety education campaign for everyone using the road.

Driver education programs

Driver education should focus on the newer types of bicycle facility design, so that people driving know how to operate a vehicle when the facility is present. The City should work with the Georgia Department of Transportation (GDOT) and Department of Driver Services to strengthen training curriculum, especially to address the following topics.

- Understanding Georgia's law to keep at least three feet of space between cyclists and vehicles, with more if possible, and what this means for vehicle operation
- Appropriate practices for passing cyclists

- Awareness of blind spots and checking for cyclists
- The function of bike boxes, dedicated bike crossings, and cycle tracks, and how cyclists can be expected to use them

Cyclist education programs

Many people are casual bicyclists and may be interested in learning more about how to do so more often or on less protected facilities. Local culture is important. Developing a healthy bicycling environment in Atlanta is an important part of supporting good bicycle access, especially integration with transit and other multimodal options. Building a strong and lasting bicycling constituency requires a multifaceted approach that not only provides required infrastructure, but makes cyclists feel they are part of a broad and growing community.

Education on safety is also essential, especially to overcome misconceptions that non-cyclists may have, but also to ensure that cyclists are taking appropriate measures to keep themselves safe. This includes clear understanding of basic rules and regulations, as well as helping cyclists understand the effects of weather and time of day. Cities have limited influence on cyclist and driver behavior at night and in wet weather but some municipal programs have been established to increase awareness and education in this area. The City of Portland and community organizations initiated a public awareness campaign entitled *See & Be Seen: Light the Bike, See the Bike* to bring greater awareness to the dangers of cycling without proper lighting. The campaign is complemented by the local Community Center providing free lights to lower-income cyclists through its *Get Lit!* Initiative, a program also used in the Atlanta region with the Decatur Active Living program.

A Bicycling Ambassador program is one way to conduct cyclist training and education. Ambassadors participating in the program are trained on local bicycle facilities, bicycling resources available to the public, any planning processes or other ways that residents can request improvements, bicycle safety statistics, bicycle laws, and successful outreach techniques. These paid or volunteer outreach staff provide information about bicycling to the public, help coordinate special events, and manage cycling on popular facilities.

SUPPORT SERVICES

Further linking public transportation and bicycling can increase utilization of both types of transportation and reduce driving alone in Atlanta. However, it will also be important for the City to explore further means of integration between the systems, especially for potential users lacking credit cards or smartphones to access the Relay system.

MARTA is currently developing an open-fare payment system for transit access, allowing contactless payment cards and mobile phones to be used for payment. However, it continues to accept cash payments on buses and requires use of the Breeze RFID smart cards only for access to the rail system. In the near term, Atlanta's transit coverage will be primarily bus-

based, and bikeshare can be a strategic means of allowing MARTA and other transit providers to shift operating resources toward increased frequency on high-demand routes. However, the lack of integration between transit fare payment systems can complicate this, especially for riders without smartphones.

The City should work with MARTA and other providers to explore technology solutions as part of the Relay bikeshare expansion that allow a single fare product to access multiple systems. Breeze already functions with this technology for transit providers, but the Relay system's payment collection technology is not linked to this program. Integrating the two may mean that select bikeshare stations are equipped with facilities to recognize transit fare media, or new transit fare media are integrated with the Relay program (effectively allowing use of the Relay system).

MARTA has installed self-service bicycle repair stations in many of its rail stations, which include basic tools and air pumps. Additionally, MARTA has installed bicycle parking racks inside the fare gates at several stations. As MARTA expands its retail offerings within stations, the City should work with MARTA to promote bicycle repair programs or services that could be housed in station facilities, especially in partnership with increased bicycle parking in stations.

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