



CHARLOTTE STRATEGIC PARKING PLAN

 CITY *of* CHARLOTTE | 2024



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Parking along Martin Luther King Jr. Boulevard in Uptown.



EXECUTIVE SUMMARY

In response to the need to modernize the on-street parking program and respond to and plan for the rapid growth and development of two of Charlotte's urban districts, the City of Charlotte completed a Strategic Parking Plan for the Uptown and South End study areas. For this plan, the city evaluated the on-street parking and loading system within these study areas to develop the following recommendations:

- **Hours and Days of Operation:** Expand the parking system within South End and Uptown to operate managed parking from 7:00AM to 10:00PM.
- **System Expansion:** Convert existing unmanaged parking to managed parking, resulting in an additional ~1,220 managed spaces within Uptown (170) and South End (1,050).
- **Loading Zones:** Update loading zone typologies to include mixed-use loading and curbside pick-up and drop-off locations and implement additional recommended loading zone locations. Develop a process to expand the city's loading zone system

and improve access for people and goods.

- **Residential Permit Parking (RPP) Program:** Expand access to the RPP Program to manage on-street parking needs in neighborhoods as growth places increased demand on the curb.

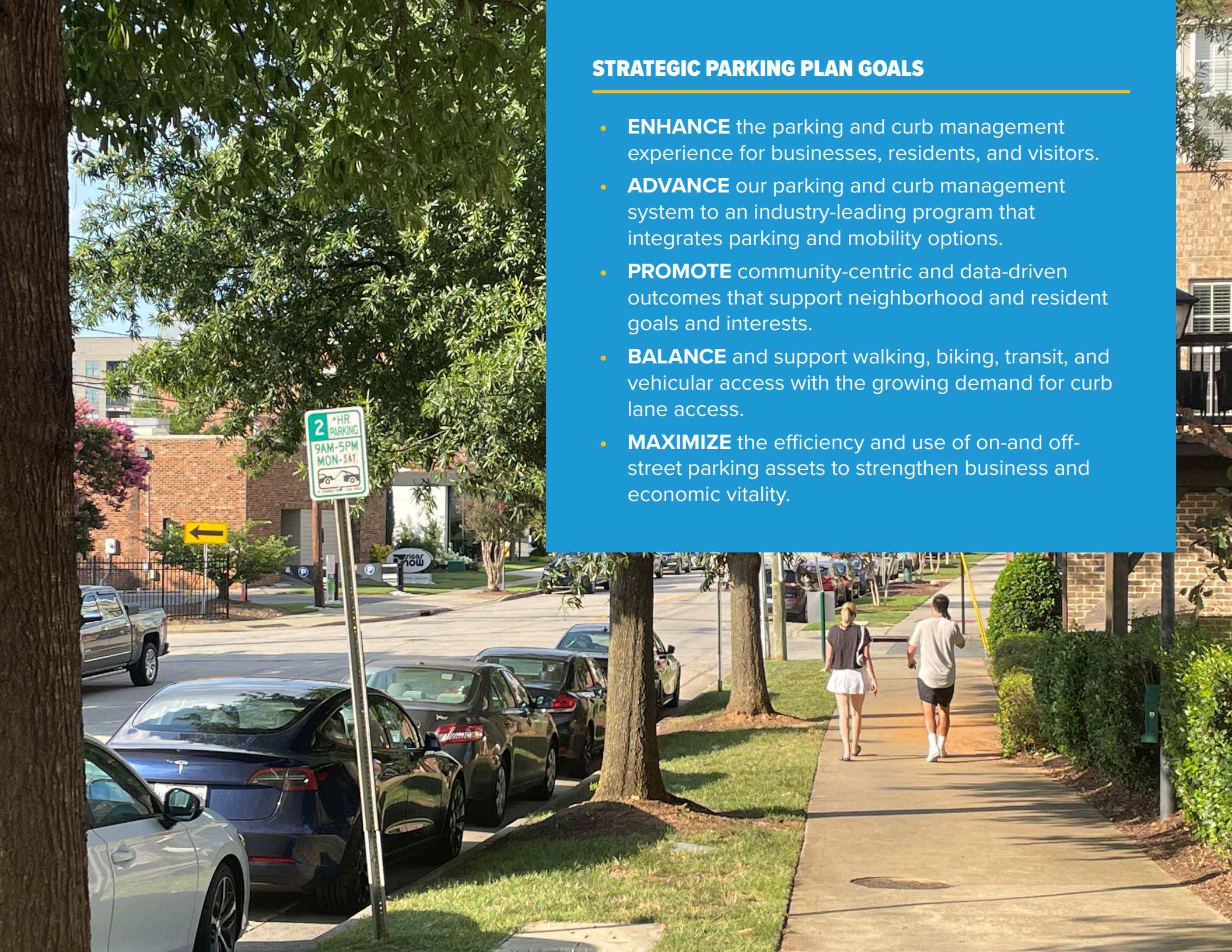
To develop these recommendations and balance competing demands for access, including loading and parking needs, with the safe and comfortable movement of people and goods, the Strategic Parking Plan includes the following project components:

- A review of the existing on-street parking and curbside inventory
- Stakeholder engagement to understand business, resident, and visitor priorities and needs
- Occupancy and utilization of the existing on-street parking system
- Best practice identification and peer city research
- A review of existing policies guiding implementation

STRATEGIC PARKING PLAN PURPOSE

The purpose of the Strategic Parking Plan is to evaluate the on-street parking and loading system within Charlotte's two largest managed parking areas, Uptown and South End.

Parking and public realm along Winnifred Street in South End.



STRATEGIC PARKING PLAN GOALS

- **ENHANCE** the parking and curb management experience for businesses, residents, and visitors.
- **ADVANCE** our parking and curb management system to an industry-leading program that integrates parking and mobility options.
- **PROMOTE** community-centric and data-driven outcomes that support neighborhood and resident goals and interests.
- **BALANCE** and support walking, biking, transit, and vehicular access with the growing demand for curb lane access.
- **MAXIMIZE** the efficiency and use of on-and off-street parking assets to strengthen business and economic vitality.

INTRODUCTION & PLANNING PROCESS

Accessible on-street parking in Uptown.

What is a Strategic Parking Plan?

A Strategic Parking Plan (SPP) is a framework to guide parking management throughout the City of Charlotte, with a specific focus in the managed parking districts. The framework will serve as a blueprint for Charlotte to implement curb lane operations and management strategies that support multimodal access for a variety of users and promote vibrant and thriving neighborhoods.

The SPP recommends ways to balance competing demands for access, including loading and parking needs, with the safe and comfortable movement of people and goods.

As Charlotte continues to grow, demand for access to curb space will increase, leading to a need for additional curb management. To address parking demand, increase system efficiency through parking turnover, and enhance curb lane access for all, Charlotte will continue to evaluate opportunities to implement curb management strategies.

Parking in Charlotte

The Charlotte Department of Transportation (CDOT) is responsible for the administration of the on-street parking program, including curb lane compliance of all on-street parking (metered and non-metered spaces), the residential parking permit program, and loading zones within the program's five parking areas in the following neighborhoods: Uptown, South End, Plaza Midwood, Elizabeth, and NoDa.

To manage Charlotte's metered parking system, CDOT has embraced an asset-light approach to parking management, including multi-space meters and the ParkMobile mobile app.

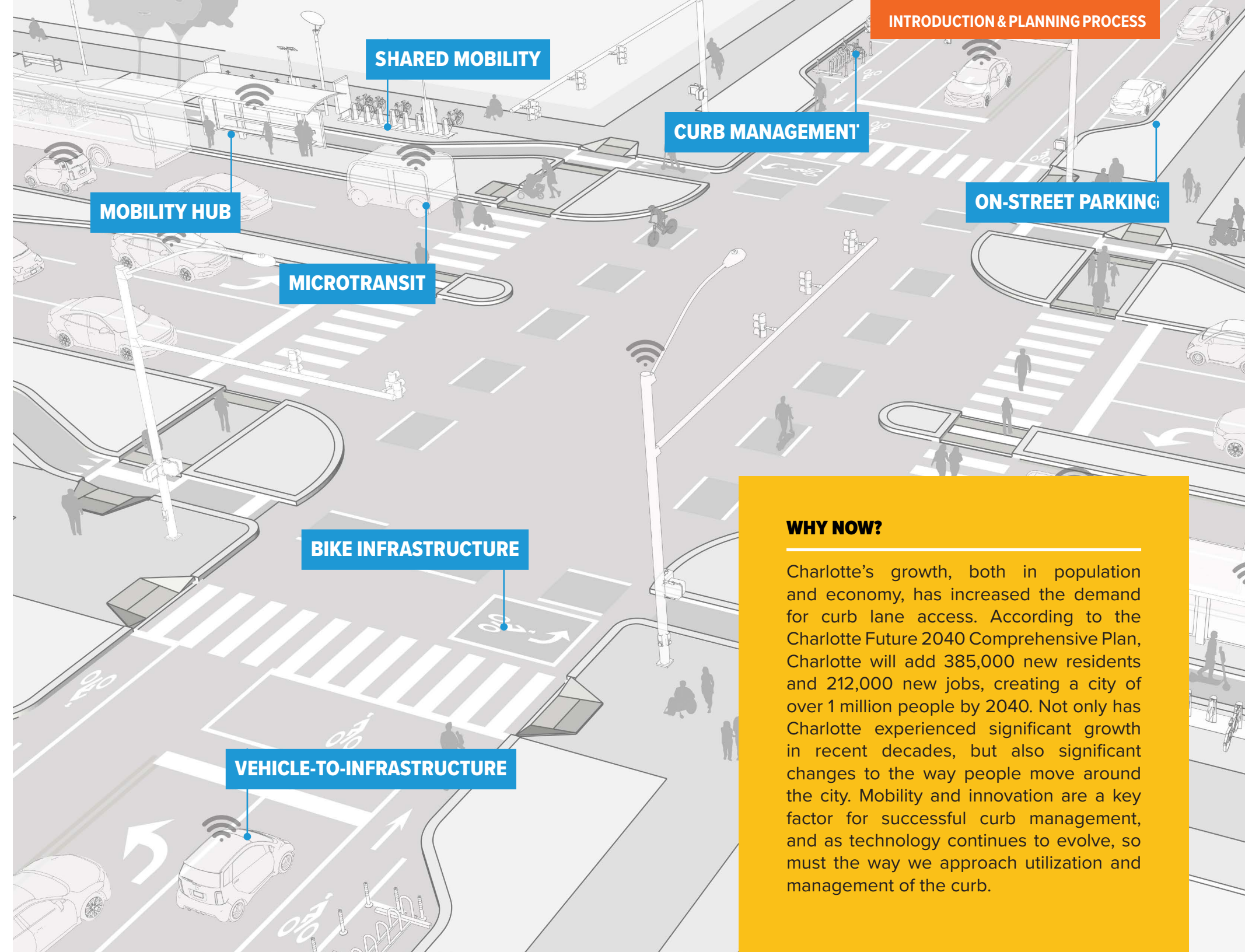
Since the program launched in 1997, the on-street parking system has remained relatively static. With Charlotte's continued growth outpacing program updates, increased demand is being placed on the curb. The program is now at a crucial point with the opportunity to establish new strategies that align with city programs and plans, replace aging technology, and establish a dynamic curb environment.



WHAT IS CURB MANAGEMENT?

Curb Management, according to the Institute of Transportation Engineers, seeks to inventory, optimize, allocate, and manage the curb space to maximize mobility, safety, and access for the wide variety of curb demands. Users of the curb include vehicle storage, micromobility, ridehailing, freight loading, and more.

Mobility graphic courtesy of Kittelson & Associates, Inc., 2023



WHY NOW?

Charlotte's growth, both in population and economy, has increased the demand for curb lane access. According to the Charlotte Future 2040 Comprehensive Plan, Charlotte will add 385,000 new residents and 212,000 new jobs, creating a city of over 1 million people by 2040. Not only has Charlotte experienced significant growth in recent decades, but also significant changes to the way people move around the city. Mobility and innovation are a key factor for successful curb management, and as technology continues to evolve, so must the way we approach utilization and management of the curb.

PLANNING FOR GROWTH & INNOVATION

Charlotte is planning for growth and innovation through the implementation of citywide plans and policies that guide land use, development, mobility, and urban design. Most recently, Charlotte adopted the Charlotte Future 2040 Comprehensive Plan, the Strategic Mobility Plan, and the Unified Development Ordinance. These plans establish the blueprint for growth and innovation in Charlotte.

Charlotte Future 2040 Comprehensive Plan

The Charlotte Future 2040 Comprehensive Plan is the long-range plan that will guide the development and investments made in our city over the next two decades.

The 2040 Comprehensive Plan also establishes Place Types, which define the land use, transportation, and design characteristics of a community. South End and Uptown’s predominant Place Type is *Regional Activity Center*, which reflects the large-scale growth and development of these transit-oriented areas.

Strategic Mobility Plan

The Strategic Mobility Plan (SMP) implements Goal 5: Safe and Equitable Mobility of the 2040 Comprehensive Plan and outlines a curbside management strategy that guides the development of the Strategic Parking Plan.

With the overarching goal of developing safe and equitable mobility, the Strategic Mobility Plan sets an ambitious but attainable goal of shifting Charlotte’s single-occupancy vehicle commute mode share from 76.6% to 50% by 2040. To support changing mobility options and needs, Charlotte will continue to invest in an integrated mobility system that connects all Charlotteans to jobs, housing, amenities, goods, services, the region, and each other.

To accomplish this goal, Charlotte’s curbside management system must be responsive to and plan for shifting demands. The on-street parking system must support a “park once” experience, where people who decide to drive and park can use one parking space and access multiple destinations in an area.

In partnership with the 2040 Comprehensive Plan, the SMP manages growth, prioritizes multimodal transportation investment, sets new policies, and supports equity and affordable transportation choices in all areas of the city.

OUR MOBILITY VISION

Charlotte will provide **safe** and **equitable** mobility options for all travelers regardless of age, income, ability, race, gender, where they live, or how they choose to travel. An integrated system of transit and tree-shaded bikeways, sidewalks, shared use paths, and streets will support a **sustainable, connected, prosperous,** and **innovative** network that connects all Charlotteans to each other, jobs, housing, amenities, goods, services, and the region.

Strategic Mobility Plan: Prosperous Strategy 2.1 | Manage the Use of the Curb

Charlotte will manage the curb lane in a manner that recognizes competing demands for space, and balances access, loading, and parking needs with the safe and comfortable movement of people and goods.

Curb Lane Strategic Action Plan	Develop a dynamic curbside management strategy to manage and create flexible curbside space for different uses, including loading and unloading of people and goods and the storage/parking of all types of vehicle and mobility options.
On-Street Parking Expansion	Evaluate expanding priced/metered on-street parking to more corridors and activity centers. Collaborate inter-departmentally and externally to develop and refine shared parking solutions (i.e., shared parking lots or garages, municipal parking).
Technology	Utilize technology to manage and incentivize desired uses and access of curbside lanes in activity centers and main streets.
Neighborhood Parking Program	Expand strategies to manage on-street parking needs in neighborhoods as on-site parking is reduced or eliminated.

Streets Manual & Streets Map

The Charlotte Streets Manual (Streets Manual) is a technical support document for implementing the Unified Development Ordinance. The Streets Manual includes documentation for the Charlotte Streets Map (Streets Map).

The Streets Map is a citywide mobility policy map that categorizes Charlotte’s arterial street network into defined street types that reflect our multimodal vision for our

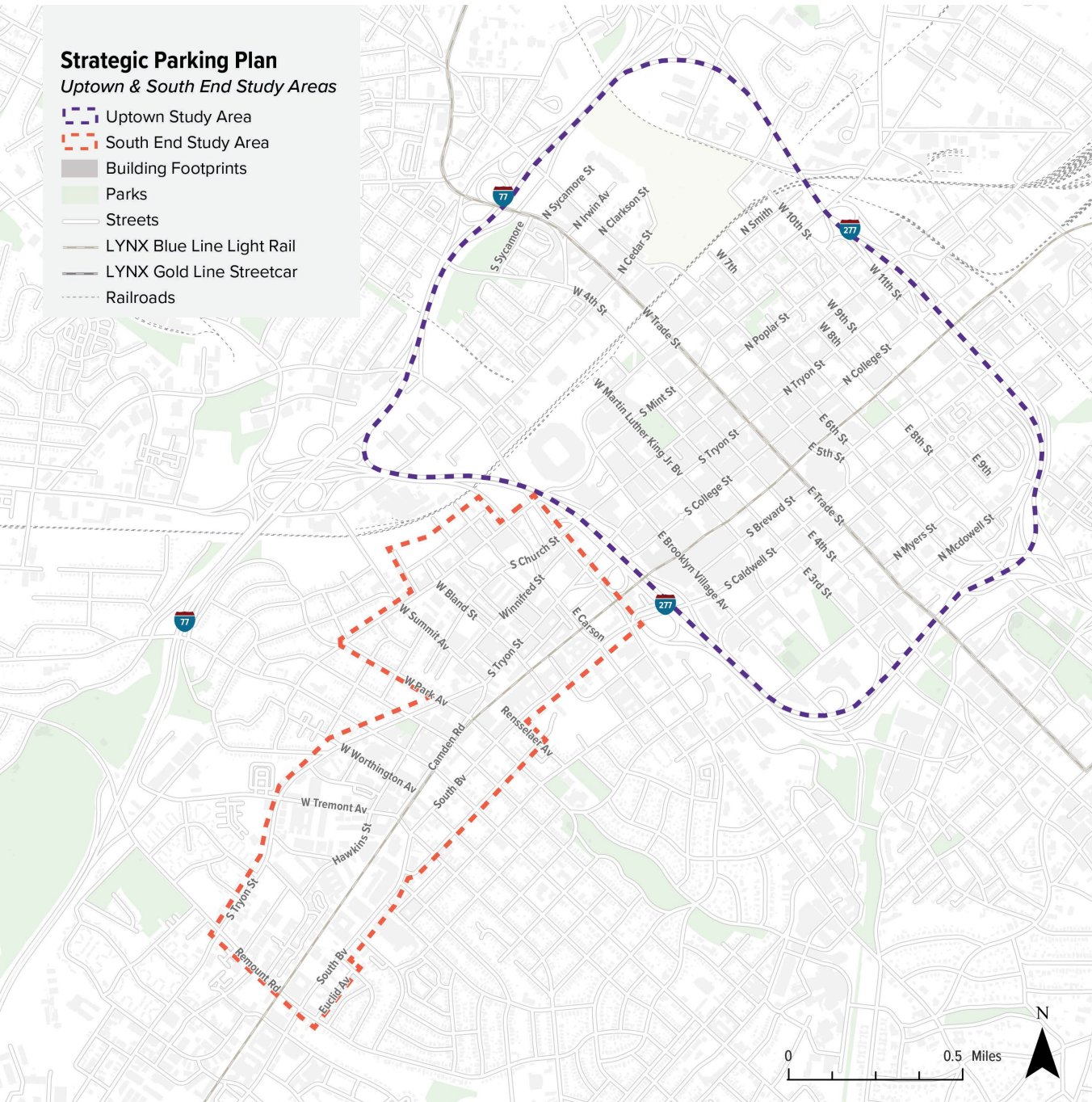
streets. Each street type guides public and private investment to plan for and protect envisioned future streets that accommodate our multimodal needs (pedestrian, bike, transit, and car). The Streets Map identifies on-street parking requirements and recommendations on certain street types, with main streets such as Camden Road requiring on-street parking.

Previous Planning Studies

Various planning studies have served as a guide for recent updates to the on-street parking system and this Strategic Parking Plan. These studies include the Charlotte Center City Curb Lane Management Study (2011), Uptown Charlotte Parking Inventory (2016), South End Parking Strategy (2021), and Uptown Parking Strategy (2021).

Building upon this previous planning work, the recommendations of the Strategic Parking Plan are the first steps for the city to identify and implement effective curbside management strategies which will result in the following:

- Increased access for businesses, residents, and visitors
- Additional capacity to manage the curb successfully and efficiently
- Strategic management strategies that create a positive customer experience
- Support the development of a safe and equitable mobility system
- Adaptability to new technology and innovation



STUDY AREAS

The SPP focuses on the city’s managed parking areas of Uptown and South End, which represent 95% of the on-street metered parking system with approximately 1,180 metered spaces. Uptown serves as the city’s Central Business District while South End has quickly grown to be a key destination for Charlotte. The multimodal and mixed-use nature of both areas reflects the need for dynamic curb management strategies that increase access while also encouraging alternative forms of transportation.

Regional Context

South End and Uptown are important economic drivers within the Charlotte region and the Charlotte Future 2040 Comprehensive Plan identifies both as *Regional Activity Centers*. These areas are dense, urban, mixed-use Place Types that accommodate a variety of land uses, mobility needs, and mobility choices. These areas also create a “park once” environment, which means that even those who drive to the center are comfortable and encouraged to use other modes within the center.

Over the past decade, South End and Uptown have experienced some of the largest growth in Charlotte and will require implementation of significant curb management strategies to increase access and meet the demands on our curb.

Study Area Place Types

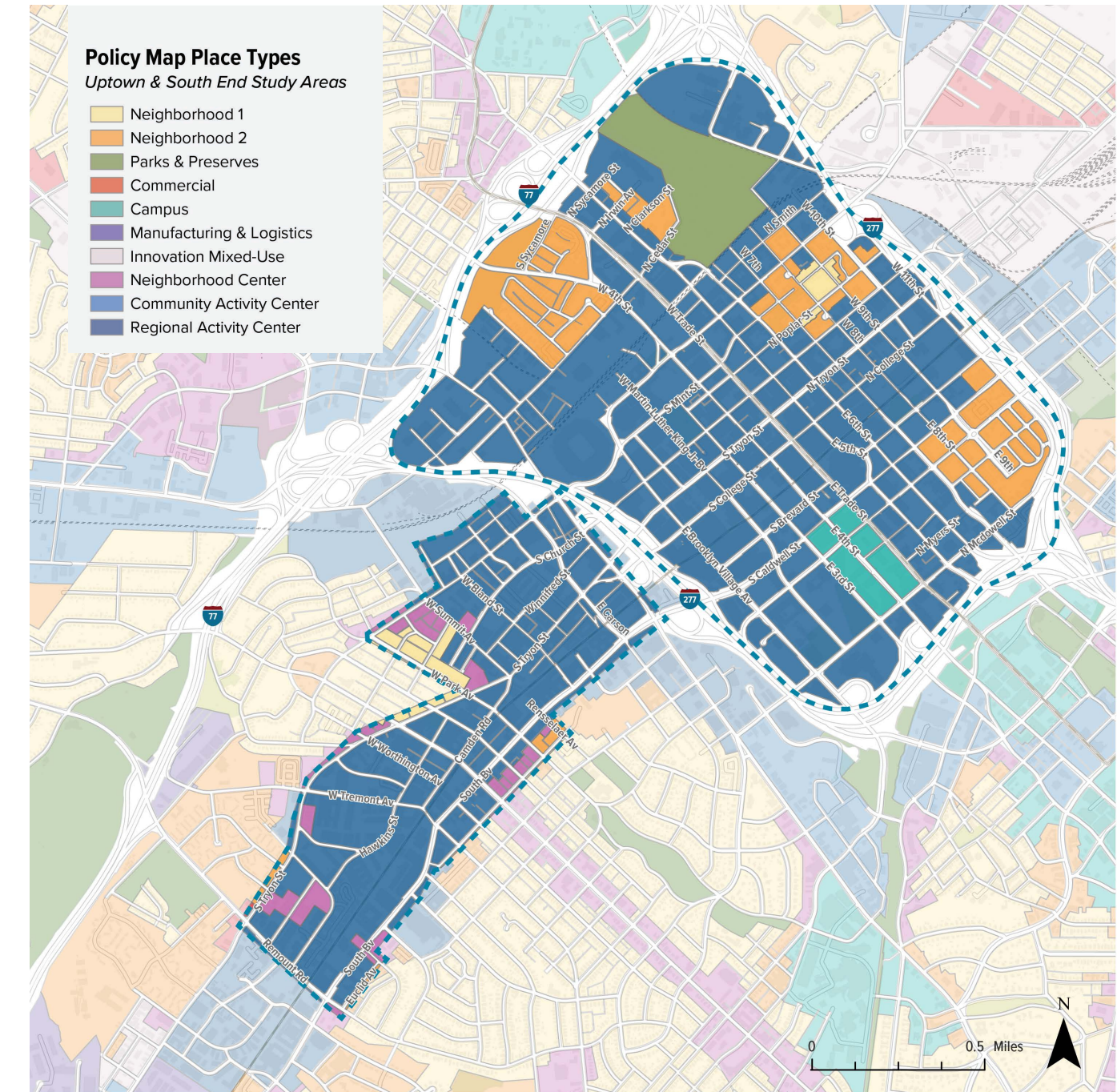
Regional Activity Centers are large, high-density mixed-use areas, typically along transit corridors or major roadways, that provide access to goods, services, dining, offices, entertainment, and residential for regional residents and visitors.

Neighborhood 1 places are the lower density housing areas across Charlotte, where most of the city’s residents live, primarily in single-family or small multi-family homes or accessory dwelling units (ADU). ADUs are small, secondary residential units located on a property with a larger, primary residential unit.

Neighborhood 2 places are higher density housing areas that provide a variety of housing types such as townhomes and apartments alongside neighborhood-serving shops and services.

Neighborhood Centers are small, walkable mixed-use areas, typically embedded within neighborhoods, that provide convenient access to goods, services, dining, and residential for nearby residents.

Campuses are a relatively cohesive group of buildings and public spaces that are all serving one institution such as a university, hospital, or office park.



Curbside uses as depicted in Curb Appeal, NACTO, 2017.

WHAT IS THE CURB LANE?

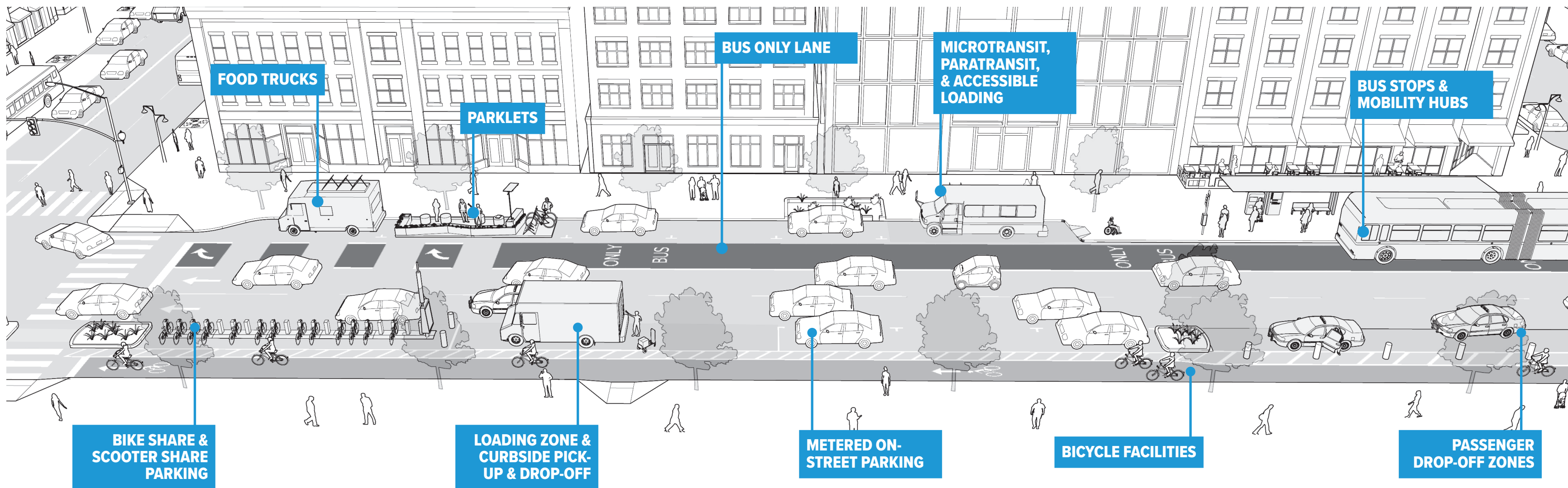
Curb Management

Curb management includes the evaluation of curb demands and the implementation of management practices to increase access and respond to a variety of uses.

There are multiple, competing demands on curb space in urban environments such as Uptown and South End. These competing demands vary from on-street parking and loading to bike lanes, bus lanes, transit pick-up and drop-off (PUDO), and ridehailing.

To begin responding to increased demand on the curb, the City of Charlotte conducted peer city research and evaluated best practices, which led to the increase in hourly on-street parking rates in 2022. At that time, the rate increased from \$1.00 to \$1.50 per hour, which had previously remained stagnant since 1997.

As the demands on our curb continue to evolve with the adoption of new technology and shared mobility, so will the need to be innovative and responsive to a changing curb environment.



Future Curb Management Needs

With multiple, competing demands for curb access comes the need to evaluate and plan for curb space that serves a variety of users. Charlotte's existing curb management is relatively static, with majority of curb space designated for on-street parking and commercial loading needs (Figure 02).

With new mobility needs placing increased demands on the curb, other curb management strategies will be needed to increase access (Figure 03). The Strategic Parking Plan is the first step in recommending curb management strategies that provide better access for residents, employees, and visitors.

Figure 01: Existing Aerial

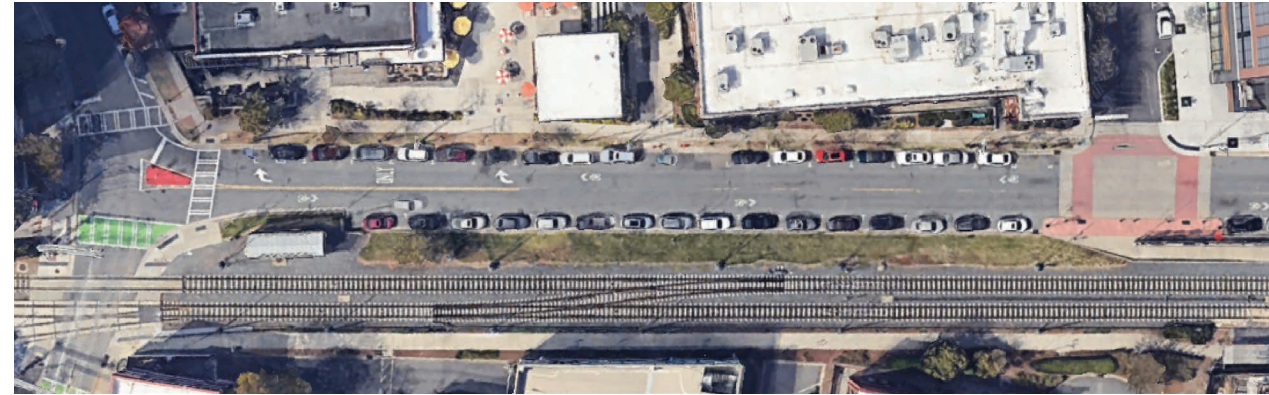


Figure 02: Existing Curb Management



Figure 03: Example Future Curb Management

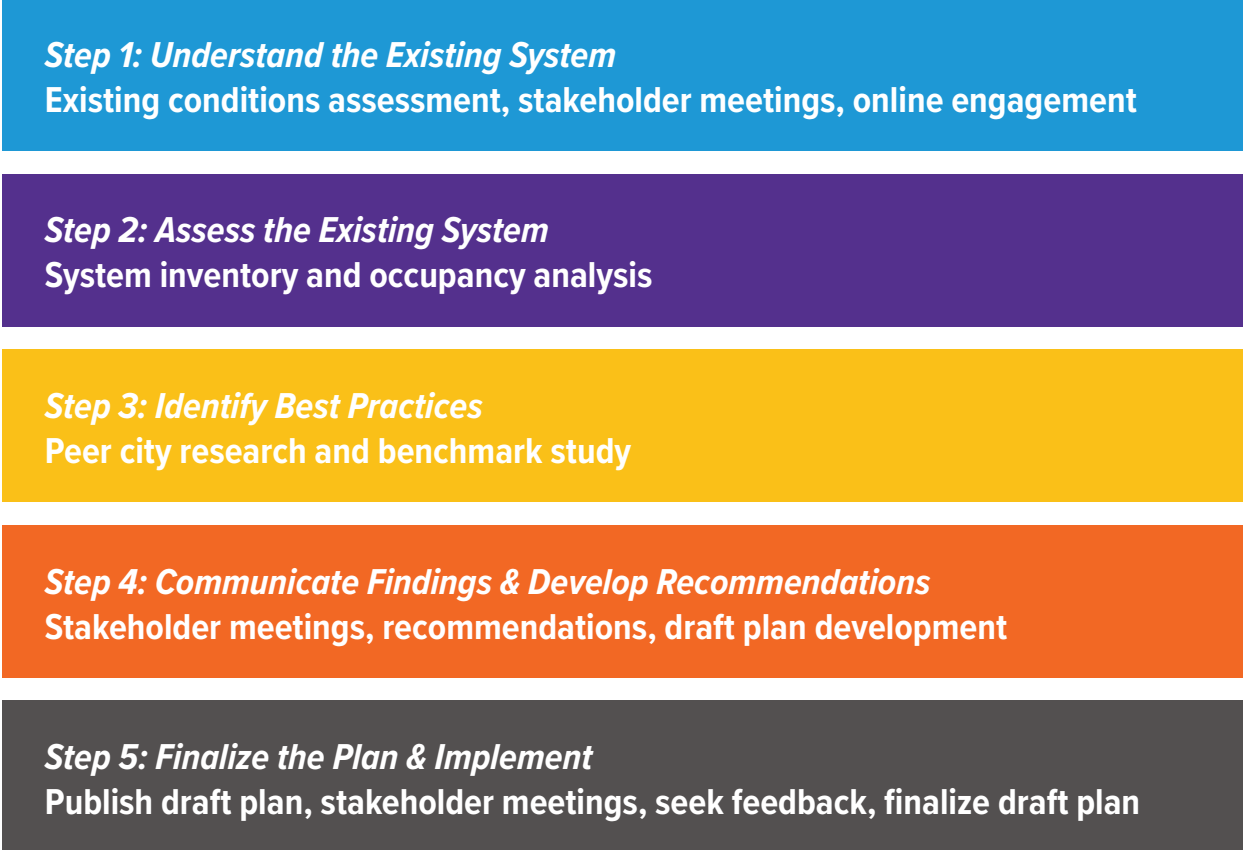


PLANNING PROCESS

The purpose of the SPP is to evaluate the on-street parking and loading system within Charlotte’s two largest managed parking areas, Uptown and South End. To achieve this goal, CDOT has conducted a multi-step planning process to recommend ways to balance competing demands for access, including loading and parking needs, with the safe and comfortable movement of people and goods.

The planning process, completed in five steps, includes an existing conditions assessment, system inventory and occupancy analysis, peer city research, and online and stakeholder engagement, resulting in an SPP that is reflective of community needs.

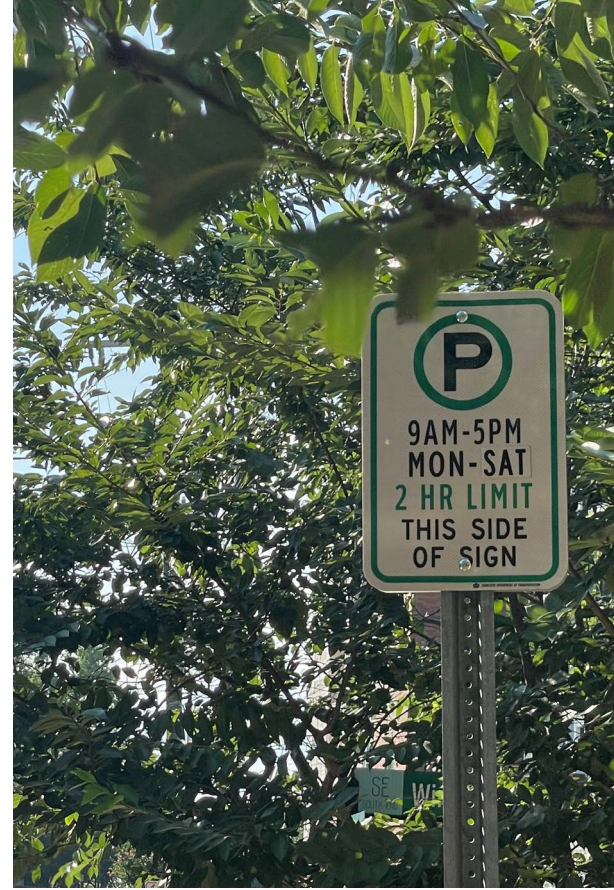
Additionally, CDOT hosted a project website utilizing the Public Input platform, an engagement platform used citywide for a variety of projects, programs, and resident notifications. The website, www.publicinput.com/CLTSPP, included project information, milestone dates, stakeholder meeting presentations, and the online engagement portal.



Parking and public realm along Winnifred Street in South End.

EXISTING CONDITIONS

Parking sign located on West Boulevard. ▶



The existing conditions assessment documents the baseline conditions of the parking and curb management system within South End and Uptown. These conditions guide the plan to improve access for residents, employees, and visitors throughout the city's urban core.

On-Street Parking System Overview

Charlotte's on-street parking system provides parking and curb lane access for residents, employees, and visitors within the managed parking areas of Uptown, South End, Elizabeth, NoDa, and Plaza Midwood. Of these parking areas, Uptown and South End account for 95% of the managed parking within the on-street system.

The on-street parking system is comprised of metered, time limited, and unrestricted parking spaces. The managed system includes both metered and time limited parking. Time limited spaces have a maximum duration of two hours and require parkers to move their vehicle after reaching the maximum time limit. Unrestricted parking spaces offer free parking without time limits.

The managed parking system operates Monday to Saturday from 7:00AM to 6:00PM at a rate of \$1.50 per hour for metered parking locations (hours of operation may vary by area). Parkers can park for up to two hours. CDOT does not require payment for parking Monday to Saturday from 6:00PM to 7:00AM, Sundays, and most holidays.

In addition to Charlotte's metered on-street parking system, CDOT operates five residential parking permit zones in Uptown. Charlotte's Residential Parking Permit (RPP) Program seeks to ensure that residents have adequate access to on-street parking near their places of residence.

On-Street Parking Operator

In 2021, SP+ was selected by CDOT through a competitive bid process in search of an on-street parking operator. In 2022, SP+ began overseeing day-to-day operations with the goal of (1) improving the customer experience, (2) modernizing the existing system, and (3) growing the curb management system.

ON-STREET PARKING

Charlotte's on-street parking system in Uptown and South End consists of approximately:

- 1,180 paid spaces,
- 210 time limited spaces,
- 1,340 unrestricted spaces,
- 1,085 permitted parking spaces, and
- 320 other parking spaces.

Types of Parking & Loading

Charlotte's on-street parking and loading system contains a variety of types to serve the needs of residents, businesses, and visitors. The following types of parking exist within the managed parking system:

- **Paid Parking:** Charlotte's paid, or metered parking, is managed parking that requires a parker to pay for a parking session at a rate of \$1.50/hr for up to two hours. Paid parking transactions can be conducted through meters or mobile apps.
- **Time Limited Parking:** Time limited parking is managed parking that allows parking in a space for a set amount of time. Charlotte's time limited parking does not exceed two hours.
- **Unrestricted Parking:** Unrestricted parking is free, unmanaged, and unrestricted on-street parking that is not time limited.
- **Permit Parking:** Permit parking is managed parking with parking restrictions that can include time of day and day of week. The primary permit parking type within Charlotte is residential.

- **Other Parking:** Other types of on-street parking include parking with rush hour restrictions and unrestricted residential area parking.

Additionally, there are two on-street electric vehicle charging stations (EVCS) located along South Boulevard, which provide options for electric vehicle charging to those that have limited access.

The On-Street Parking Program does not manage any off-street parking throughout Charlotte.

Charlotte's on-street loading system contains the following types to serve a variety of users:

- **Commercial Loading Zone:** Charlotte's typical commercial loading zones provide on-street loading for 15- to 30-minutes.
- **Passenger Loading:** Passenger loading zones are designated for passenger pick-up and drop-off.
- **Bus Passenger Loading:** Bus passenger loading zones are located at bus stops and only serve bus transit passenger loading.

- **Temporary Curbside Pick-up and Drop-off:** Temporary curbside pick-up and drop-off locations were implemented to address the need for delivery pick-up and drop-off during the COVID-19 pandemic. These zones still exist in several locations.
- **Taxi Stands:** Although passenger loading zones serve a similar purpose to taxi stands, these zones still exist in several locations within Uptown.
- **Valet:** Charlotte's valet program designates permitted on-street loading and curb space for specific valet purposes during permits days and times. These locations generally utilize on-street parking to serve patrons of restaurants and entertainment in Uptown, South End, and Elizabeth.

In partnership with Charlotte Center City Partners, the City of Charlotte operates a food truck pilot program where permitted food trucks can apply to park in designated on-street spaces.

A sample of signage located in South End and Uptown.

Signage

Charlotte’s on-street parking and loading signage varies from metered parking to two-hour parking, 15-minute to 30-minute loading, and 10-minute passenger loading. Some parking signage specifies hours and days of enforcement while other signage does not. Similarly, some loading zones specify the type of loading allowed, while others do not, and some signs list time restrictions, while others do not.

A full signage inventory and review was not completed as part of the Strategic Parking Plan, but is needed as the City of Charlotte continues to evaluate curb management strategies and implements the updated guidance of the 11th Edition of the Manual on Uniform Traffic Control Devices (MUTCD).



Parking and public realm along Tryon Street in Uptown.

PLACE TYPES & MOBILITY CONTEXT

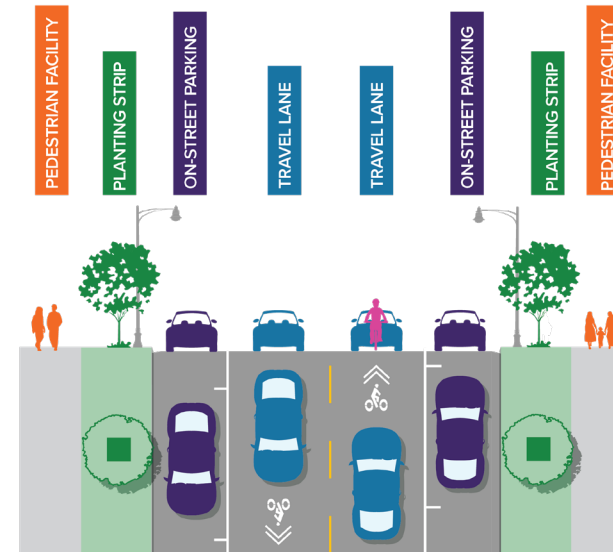
Place Types reflect the land use, urban design, and mobility context of a community and work in tandem with the Charlotte Streets Map and Streets Manual to create a street network that provides safe and equitable transportation options.

The Streets Map defines and maps a range of Street Types and Special Facilities, as summarized within the Streets Manual, including the locations and cross-sections for the arterial street network, which includes parkways, boulevards, avenues, and main streets.

Additional street types included within the Streets Map are limited access and collectors and are identified by location only. These street types do not include a representative cross-section. Local streets are any street not mapped on the Streets Map as an arterial, limited access, or collector.

Certain streets will include on-street parking, dependent on the mobility and land use context. For example, main streets (Figure 04) always include on-street parking and to provide additional buffering for the pedestrian space. Avenues will include on-street parking in some contexts, typically in higher-intensity Place Types that include walkable destinations oriented to the street.

Figure 04: Example Main Street Section



The Charlotte Future 2040 Comprehensive Plan identifies South End and Uptown as predominant Regional Activity Centers with surrounding Neighborhood 1, Neighborhood 2, Neighborhood Center, and Campus Place Types.

Included within each Place Type are recommended curb management and on-street parking needs to guide development and access to the curb.

Regional Activity Centers

The street network within this Place Type is well-connected and supports multimodal trips and connectivity within the center, and to and from surrounding neighborhoods.

As identified, on-street parking is required along main streets and might be provided along some arterial streets. The curb space has high turnover, particularly along local streets and main streets, requiring curb management to accommodate multiple users.

Additionally, curb management strategies will be required to implement mobility hubs with transit stations, pick-up and drop-off areas, bike parking and share, and micro-mobility options within this Place Type to accommodate the high level of non-vehicular traffic.

Neighborhood Centers

Arterial streets within this Place Type provide for safe and comfortable pedestrian, bicycle, and transit travel along and across them for easy access to and from the Neighborhood Center and surrounding areas.

On-street parking is typically provided along local and main streets and may be provided along some arterial streets. The curb space has high turnover, particularly along local and main streets, requiring curb management to accommodate multiple users.

Campuses

Campuses are typically located along at least one arterial street with an internal street network that encourages walking and bicycling, particularly when sites are located near transit routes and stops.

In more intensely developed institutional Campuses, on-street parking is included along Local streets, collector streets, and main streets, and may be included along some types of arterials. In less intensely developed Campuses, on-street parking is less prevalent, but might be included on some local streets, collector streets, and some types of arterials. On-street parking will always be included on main streets.

The curb space has moderate to high amounts of turnover in more intensely developed institutional Campuses and will require some degree of curb management to accommodate multiple users. In lower-intensity Campuses, the curb space along local streets and collector streets has relatively low turnover and will require less curb management, depending on the type of Campus (institutional Campuses might require more curb management, for example).

Neighborhood 1

Within the Neighborhood 1 Place Type, a well-connected local street network provides safe and direct access through the neighborhood and adjacent Place Types. Arterial streets also support walking, cycling, and transit use by providing a safe and comfortable environment to reach transit or nearby destinations.

On-street parking is moderately to heavily used, and street widths are scaled to accommodate the expected demand for parking. The curb space has moderate turnover and may require implementation of curb management strategies to accommodate multiple users in locations where there is competing demand for curb space.

Neighborhood 2

Within the Neighborhood 2 Place Type, both local and arterial streets are designed to support and encourage walking, cycling, and transit use to reach transit or nearby destinations.

On-street parking is expected to be heavily used, and street widths are scaled to accommodate the expected demand for parking. The curb space has moderate turnover and may require implementation of curb management strategies to accommodate multiple users.





UPTOWN STUDY AREA

Overview

Uptown is the city's primary business, office, entertainment, and institutional district. Uptown is home to multiple event venues that attract event goers from across the city and state throughout the year, with increased demand in the evenings. Major attractions in Uptown include the Bank of America Stadium, Spectrum Center, Charlotte Convention Center, Harvey B. Gantt Center for African-American Arts + Culture, The Mint Museum Uptown, Bechtler Museum of Modern Art, Blumenthal Performing Arts Center, NASCAR Hall of Fame, Discovery Place Science Museum, and Truist Field, to name a few.

As the city's central hub for commerce, Uptown is comprised of both newly constructed and historic buildings that showcase the Queen City's charm. Characterized by office towers, hotels, and sporting venues, Uptown's parking and mobility system must meet the needs of diverse user groups.

As detailed in the SMP, the mobility system in Uptown demands a complete and prioritized system of multimodal infrastructure that meets the city's key goal to provide a safe and equitable mobility system.

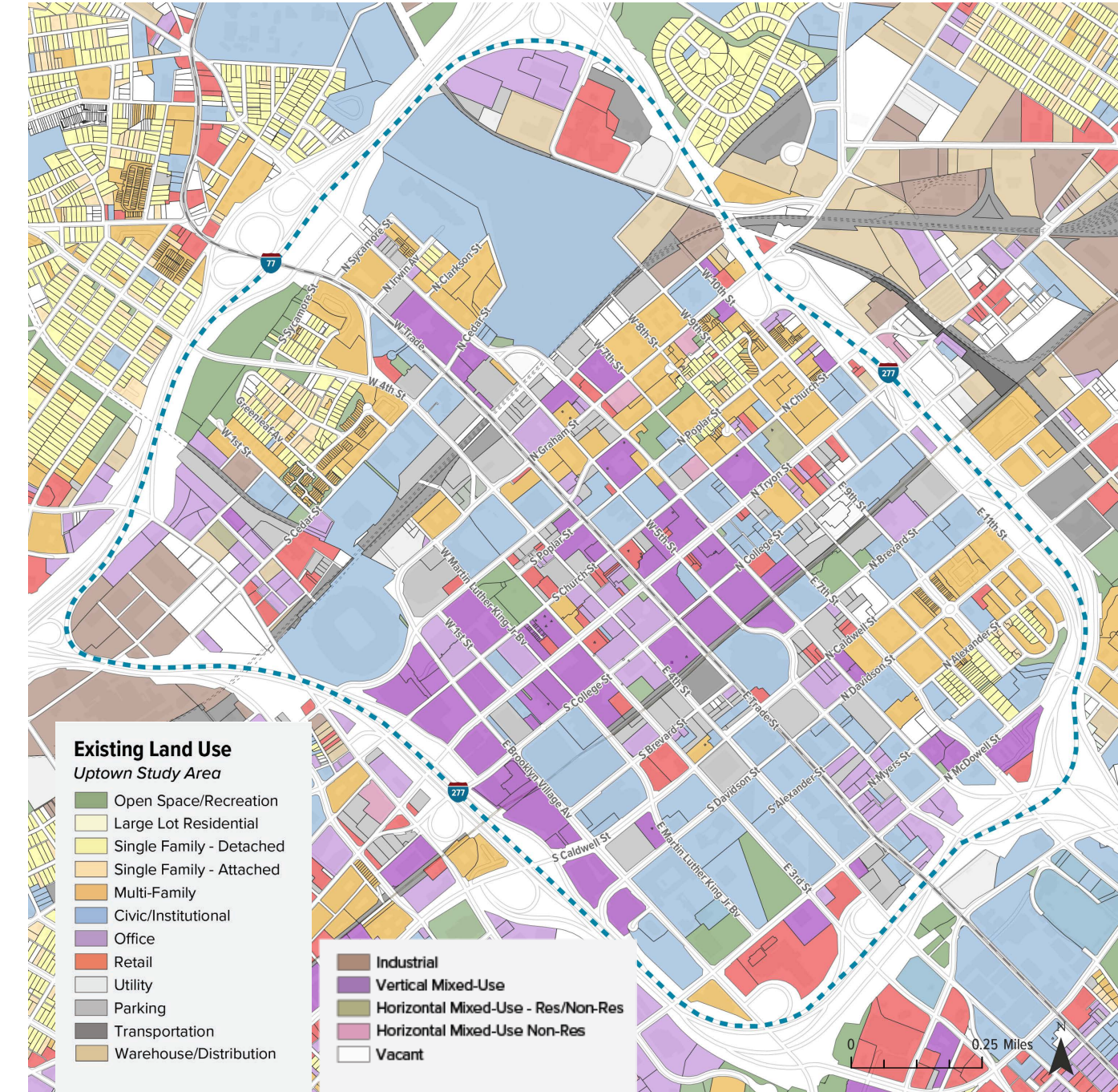
View of Uptown looking southwest.

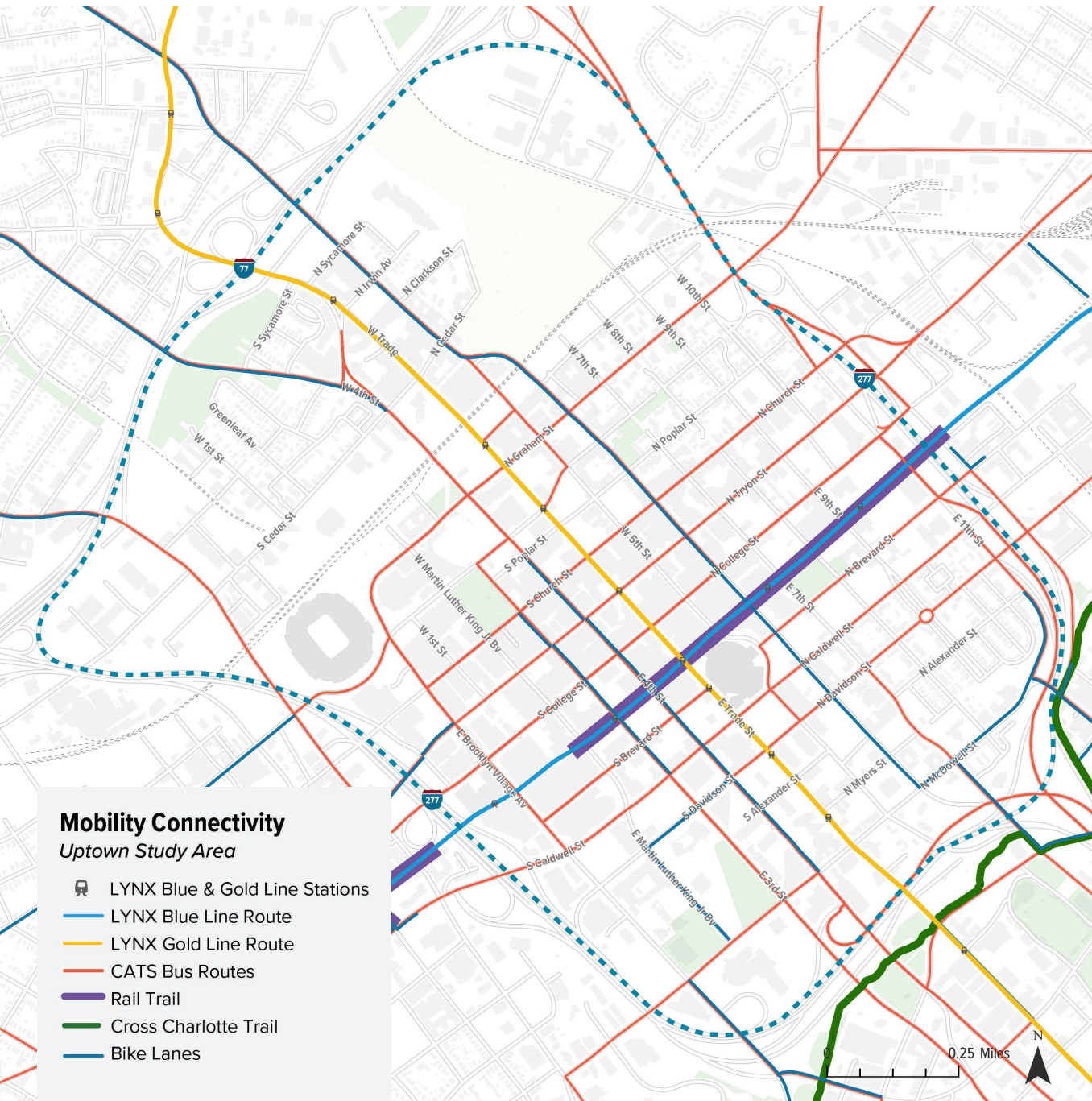
Land Use Context

As Charlotte's Center City, Uptown is a hub for mixed-use office, residential, and institutional land uses, which include stadiums, event venues, and government buildings.

While government buildings are typically active during the standard business hours of Monday to Friday, 9:00AM to 5:00PM, the stadium and event venues included in this land use type are typically active during evenings and on weekends. These attractions generate travel and parking demand that extends beyond the city's on-street parking hours of operation and well into the evening.

Additionally, hotel, retail, and restaurant land uses dominate the Center City along key corridors such as Tryon Street, Trade Street, College Street, and 5th Street. To promote vibrancy in Uptown, retail and restaurant hubs should be supported by an efficient parking and mobility system. By promoting parking turnover, increasing access to micromobility and transit, and improving the passenger loading experience, Uptown's curb lanes can be used to support land uses over a 24-hour cycle.





Mobility Connectivity
Uptown Study Area

- LYNX Blue & Gold Line Stations
- LYNX Blue Line Route
- LYNX Gold Line Route
- CATS Bus Routes
- Rail Trail
- Cross Charlotte Trail
- Bike Lanes

Mobility Context

Uptown has a robust street grid including north-south and east-west mobility corridors. The primary north-south mobility corridors include Church Street (one-way), Tryon Street (two-way), College Street (one-way), Caldwell Street (two-way), and Davidson Street (two-way). The primary east-west mobility corridors are Martin Luther King Jr. Boulevard (two-way), 4th Street (one-way), Trade Street (two-way), and 6th Street (one-way).

Uptown has a diverse local and commuter mobility network which includes light rail and commuter bus services. The Charlotte Area Transit System (CATS) provides light rail service via the CityLYNX Gold Line along Trade Street and LYNX Blue Line along the Charlotte Rail Trail. There are ongoing plans to expand the current mobility offerings throughout Uptown. Based on the CATS Transit Vision: 2030 Transit Corridor System Plan, future transit service may include the LYNX Silver Line and LYNX Red Line.

Additional mobility offerings in Uptown include the Charlotte Rail Trail, 6th Street Cycle Track, and expanding bike network. Shared mobility offerings in Uptown include e-bike share and e-scooter share.

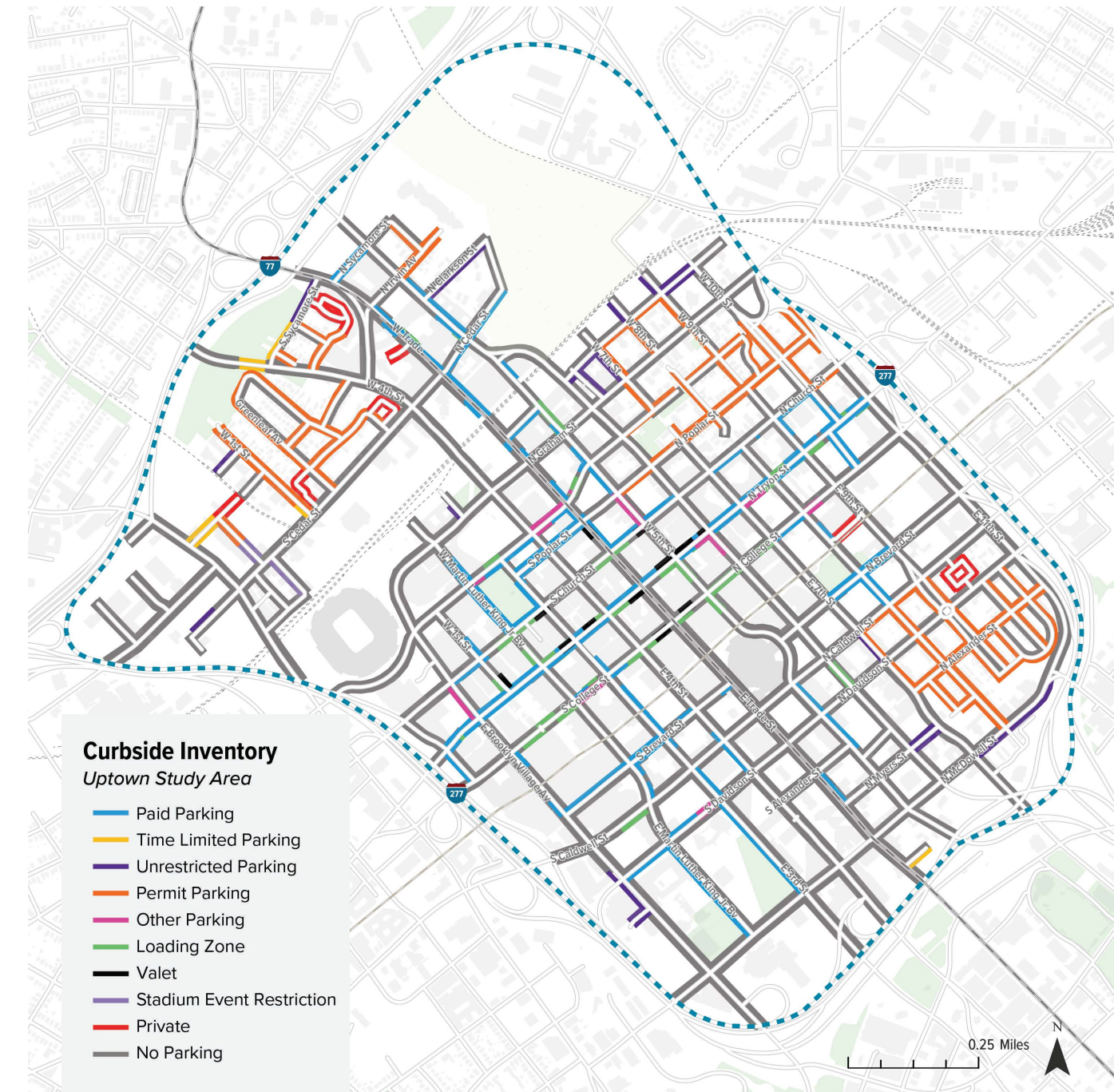
Curb Lane Inventory

Uptown’s curb lanes support businesses, promote economic development, and enhance mobility and access. Curb lanes in Uptown are predominately used as travel lanes (no parking zones) for the movement of vehicles, buses, and bikes, and parking lanes for the storage of vehicles. Throughout Uptown, loading zones for commercial delivery vehicles and passenger vehicles are provided, which limit access to 30 minutes.

Curb uses in Uptown include:

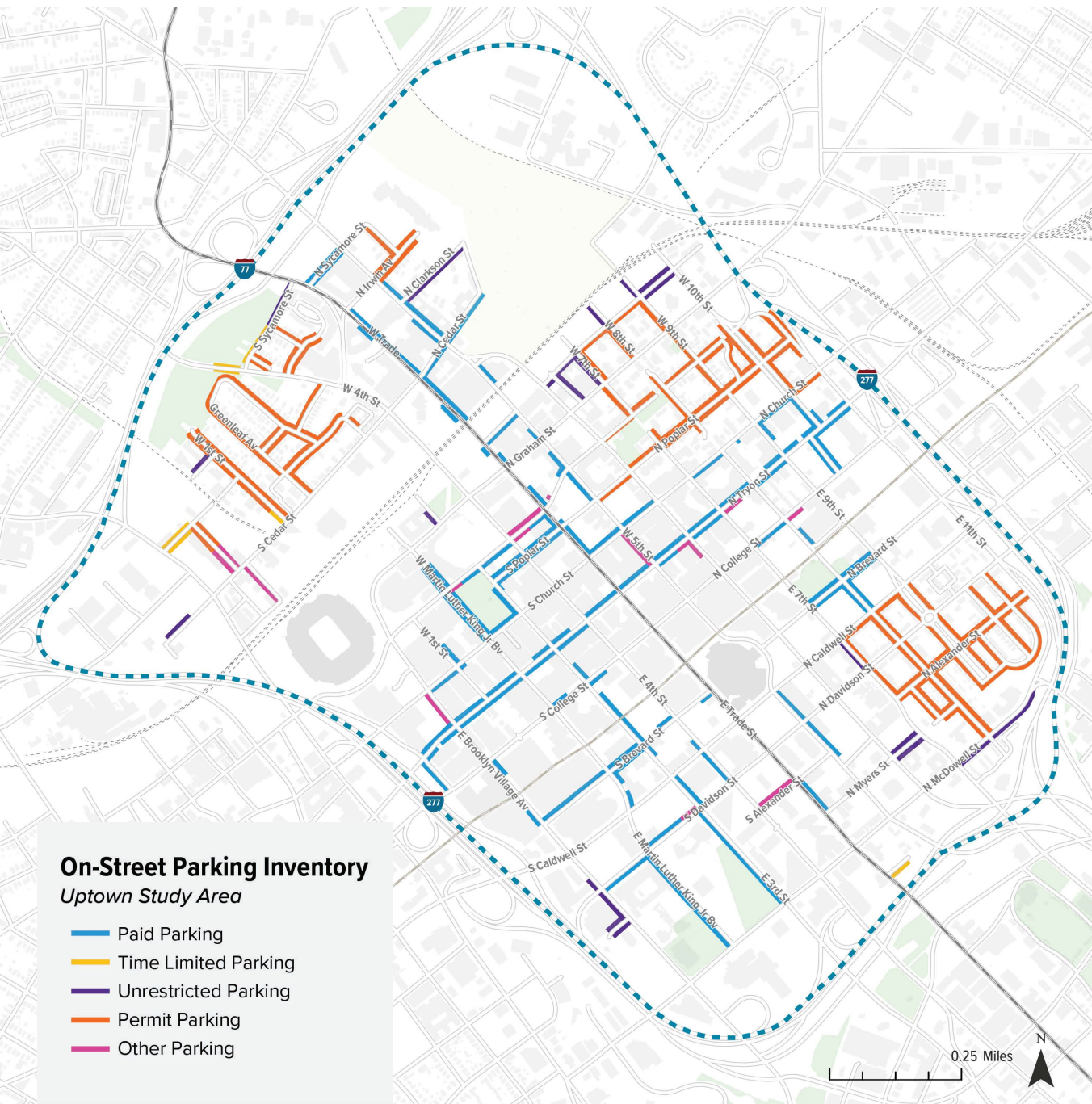
- Paid Parking
- Time Limited Parking
- Unrestricted Parking
- Permit Parking
- Other Parking
- Loading Zones (Includes Commercial, Passenger, and Bus Only Loading)
- Valet
- Stadium Event Restricted
- Private
- No Parking (Includes Bus Only Lanes, Bike Lanes, Vehicular Travel Lanes, and other uses of the curb)

Additional curb uses include food trucks, e-scooter parking, and bicycle parking, with locations throughout Uptown.



Curbside Inventory
Uptown Study Area

- Paid Parking
- Time Limited Parking
- Unrestricted Parking
- Permit Parking
- Other Parking
- Loading Zone
- Valet
- Stadium Event Restriction
- Private
- No Parking



On-Street Parking Inventory
Uptown Study Area

- Paid Parking
- Time Limited Parking
- Unrestricted Parking
- Permit Parking
- Other Parking

On-Street Parking Inventory

Uptown accounts for approximately 75% of the current on-street parking system within the city’s managed parking system with 2,375 on-street spaces (Figure 05). The on-street parking system in Uptown includes paid, time limited, permitted, and unrestricted parking. Peak parking hours for Uptown begin after 6:00PM on weekdays and weekends, which is outside of the managed hours of operation.

Paid on-street parking is available through multi-space meters, mobile app payment, and text-to-pay. These payment systems use a pay-by-plate system, allowing the city’s parking operator to evaluate parking compliance using license plate recognition (LPR) technology. Although metered parking hours of operation currently end at 6:00PM, safety violations are enforced outside of these hours.

Figure 05: On-Street Parking Inventory

Type	Number of Spaces
Paid	930
Time Limited	80
Unrestricted	210
Permitted	1,085
Other	70
Total	2,375

Loading Zone Inventory

Uptown also includes approximately 47 loading zones (Figure 06) to provide additional access for commercial deliveries and pick-up and drop-off for passengers and food and services delivery.

The majority of Uptown does not offer immediate access to a dedicated loading and unloading area, with the estimated coverage area extending the length of one city block. To overcome this challenge within the current system, delivery personnel will use the metered on-street parking system to load and unload, or will temporarily park in travel lanes or no parking areas, impacting safety and increasing congestion. Additionally, adequate pick-up and drop-off zones are an essential component of an effective curb management system.

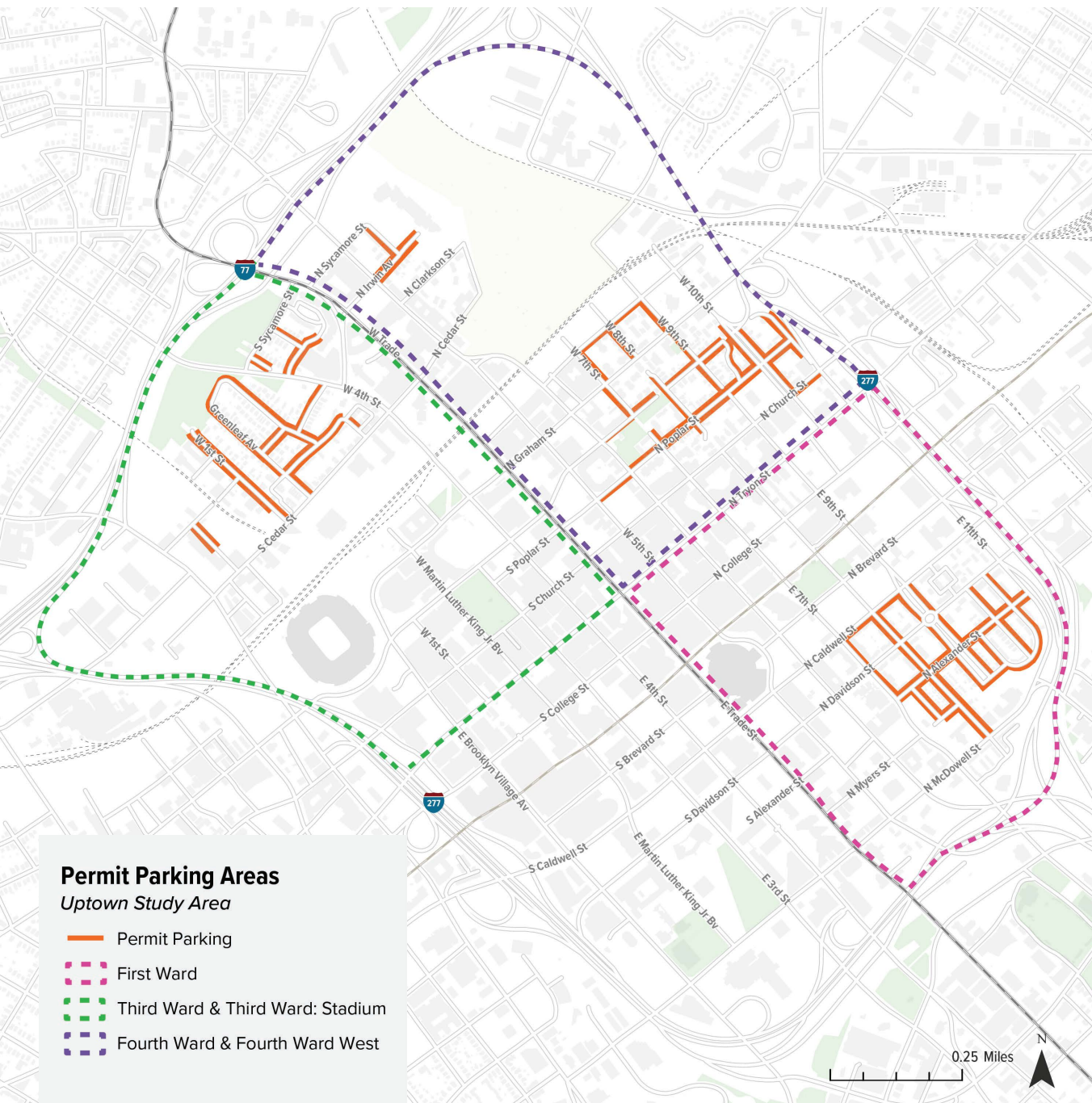
Figure 06: Loading Zone Inventory

Type	Number of Loading Zones
Unspecified	3
30-Minute	24
30-Minute & Taxi Stand	4
Passenger Loading	8
Taxi Stand	8
Total	47



Loading Zone Inventory
Uptown Study Area

- Loading Zone: Unspecified
- Loading Zone: 30-Minute
- Loading Zone: 30-Minute & Taxi Stand
- Loading Zone: Passenger Loading
- Loading Zone: Taxi Stand
- Loading Zone Coverage Area



Residential Permit Parking

In addition to the 1,010 metered and time limited on-street parking spaces in Uptown, the city’s parking program manages a Residential Parking Permit (RPP) program in First Ward, Second Ward, Third Ward, Third Ward: Stadium, Fourth Ward, and Fourth Ward West. CDOT manages RPP zones using virtual residential permits that residents can purchase for \$30 per year plus a \$3.50 processing fee. Once a valid residential permit is issued by the city, each household is eligible for up to two guest passes and unlimited daily temporary permits (Figure 07)

Parking restrictions within each RPP zone are detailed below. For a full list of streets included within each RPP zone and the most up-to-date guidelines, please refer to CharlotteNC.gov/parking:

- First Ward: Monday to Friday, 8:00AM to 5:00PM. Parking during arena events requires digital permit.
- Third Ward: Monday to Friday, 8:00AM to 5:00PM. West 1st Street operates 8:00AM to 4:00PM.
- Third Ward: Stadium: Restrictions only apply during stadium events. Parking during stadium events requires digital permit.

- Fourth Ward: Monday to Wednesday, 8:00AM to 5:00PM, Thursday to Saturday, 5:00PM to 8:00 AM. Two-hour visitor parking is allowed without a permit and temporary permits are required after two hours.
- Fourth Ward West: Permit required at all times. Two-hour visitor parking is allowed without permit and temporary permits are required after two hours.

In Fiscal Year 2023, the Charlotte on-street parking program issued 1,994 parking permits to 853 households. Of the permits issued, 1,211 were residential permits, 275 were guest permits, and 508 were temporary permits (Figure 08).

Currently, RPP zones in Charlotte are initiated by neighborhood petitions or by CDOT. To determine if an RPP zone is needed, CDOT conducts a study to assess on-street parking occupancy in a requested RPP area. This assessment includes the evaluation of parking availability and residents’ ability to adequately access on-street parking near their homes. To establish an RPP zone, at least 75% of property owners within the proposed zone must sign a petition to approve the RPP zone.

Figure 07: Residential Parking Permit Type

Permit Type	Existing
Residential Permit Quantity	Up to six (6) permits per household
Residential Permit Cost	\$30.00 + \$3.50 processing fee
Guest Permit Quantity	Up to two (2)
Guest Permit Cost	No cost
Temporary Permit Quantity	Unlimited daily permits
Temporary Permit Cost	\$3.00 + \$3.50 processing fee

Figure 08: Residential Parking Permits Issued in Fiscal Year 2023

Permit Type	Quantity	Average Per Household
Residential Permits	1,211	1.42
Guest Permits	275	0.32
Temporary Permits	508	0.60
Total	1,994	2.34



SOUTH END STUDY AREA

Overview

South End is a rapidly developing area in Charlotte. Characterized by breweries, restaurants, retail, and residential land uses, on-street parking spaces in the South End neighborhood accommodate parking demand from residents, employees, and visitors. This dynamic creates a high level of competition for curb space. Additionally, the South End area has limited off-street loading zones, which requires additional curb space dedicated to providing adequate access for people and goods.

Currently, the majority of on-street parking within South End is unmanaged, unrestricted parking. Unrestricted parking offers free parking without time limits and allows residents and employees to use on-street parking, if available, to meet long-term parking needs. However, due to the high-demand on parking within South End, unrestricted parking is not a reliable long-term parking option, especially as the area continues to grow.

Additionally, this long-term demand limits the amount of on-street parking spaces that can be used for the short-term parking needs of customers and visitors.

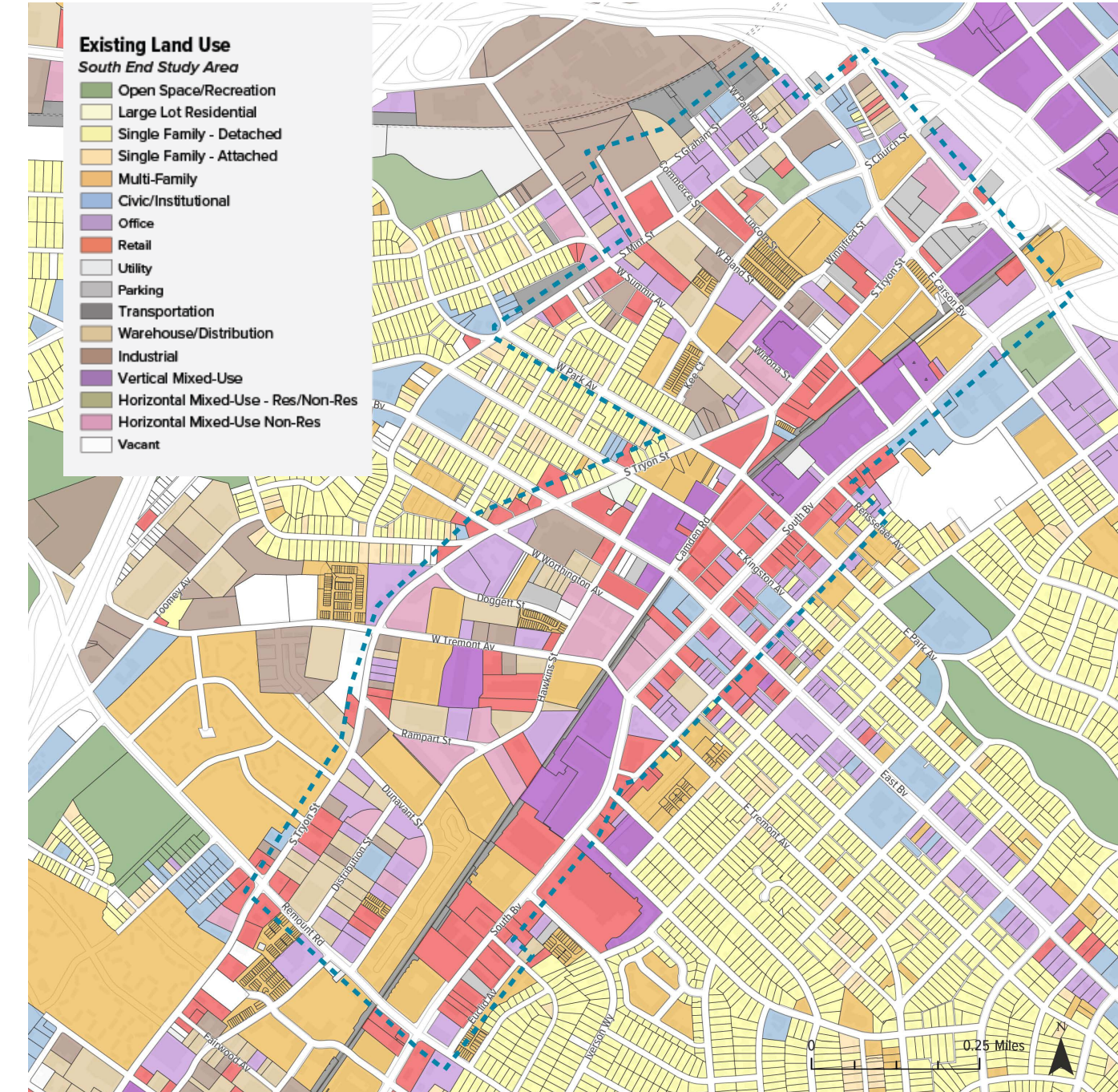
View of South End looking north.

Land Use Context

South End has a mixture of land uses with an increased share of residential and office buildings with ground-level retail.

South End is also an entertainment and dining district, with Camden Road serving as a primary destination for visitors to the area. Peak hours of operation are usually between 6:00PM and 10:00PM, extending beyond the city's on-street parking hours of operation and well into the evening.

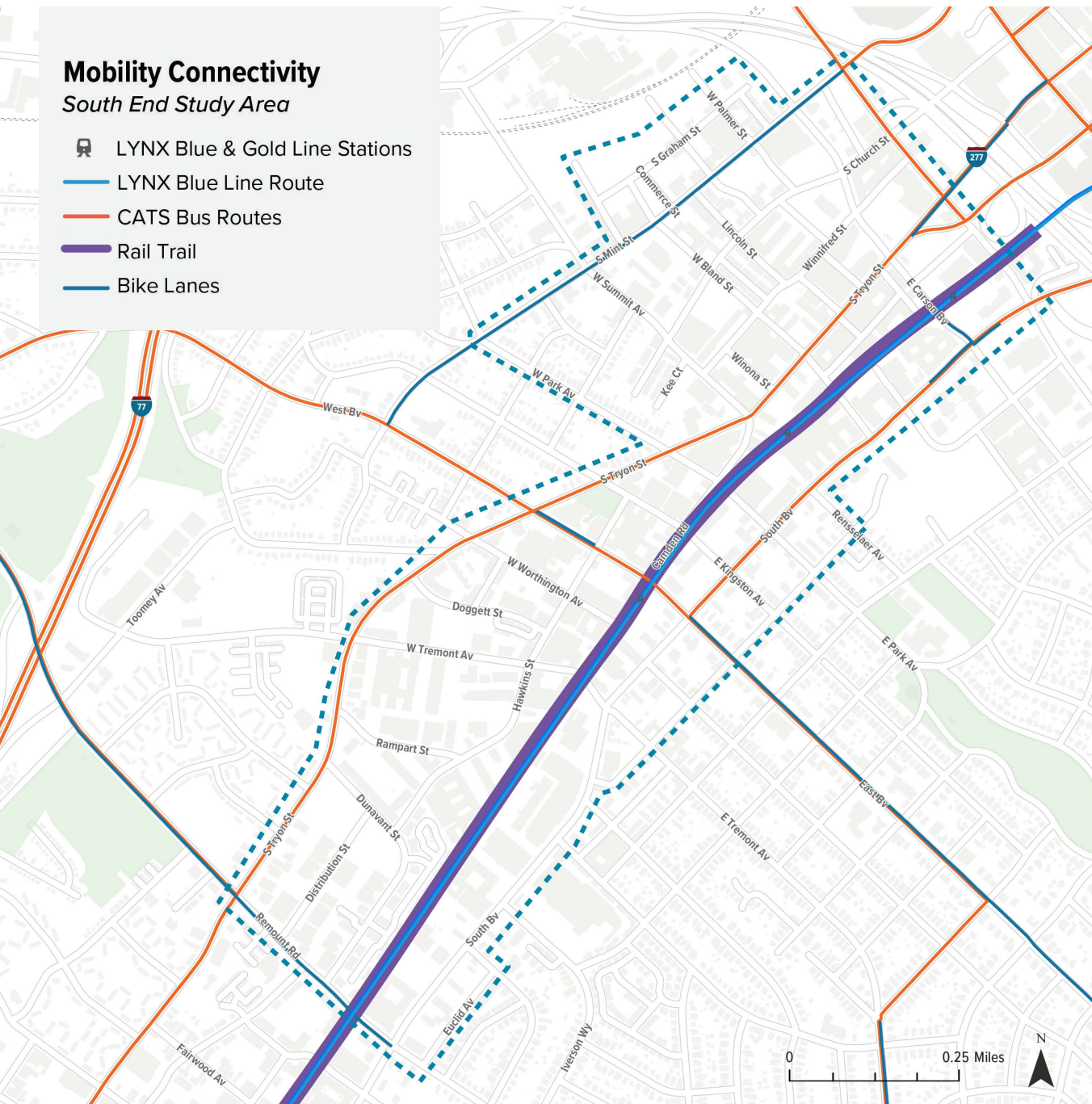
Historically, South End was a neighborhood with a predominant share of industrial land uses. The area has seen significant redevelopment with these industrial land uses being converted to breweries, restaurants, and retail establishments. These adaptive reuse buildings present a unique challenge to parking and mobility in South End as they often do not have a parking supply sufficient to meet the parking demand they generate. Adaptive reuse buildings typically rely on on-street parking to meet their parking demand, increasing the need for parking turnover.



Mobility Connectivity

South End Study Area

-  LYNX Blue & Gold Line Stations
-  LYNX Blue Line Route
-  CATS Bus Routes
-  Rail Trail
-  Bike Lanes



Mobility Context

South End’s roadway network is not a traditional street grid like Uptown. The roadway network in South End is segmented, with north-south roadways being bisected by east-west roadways, resulting in a complicated street network. The major north-south corridors are S Mint Street (two-way), S Tryon Street (two-way), Camden Road (two-way), and South Boulevard (two-way). Major east-west corridors are W Morehead Street (two-way), W Carson Boulevard (two-way), W Bland Street (two-way), W Summit Avenue (two-way), West Boulevard (two-way), and W Tremont Avenue (two-way).

South End has proximate access to the LYNX Blue Line and CATS bus service and is also connected by the Rail Trail, which extends north-south. Additional bike facilities exist along S Mint Street and East Boulevard. Shared mobility offerings in South End include e-bike share and e-scooter share.

Curb Lane Inventory








South End has a mixture of metered, time limited, and unrestricted parking spaces. The study area contains approximately 250 metered parking spaces, which is 20% of the total metered parking available in the city. In addition to on-street parking, curb lanes in the South End district include time limited parking, unmanaged parking, travel lanes, and loading zones.

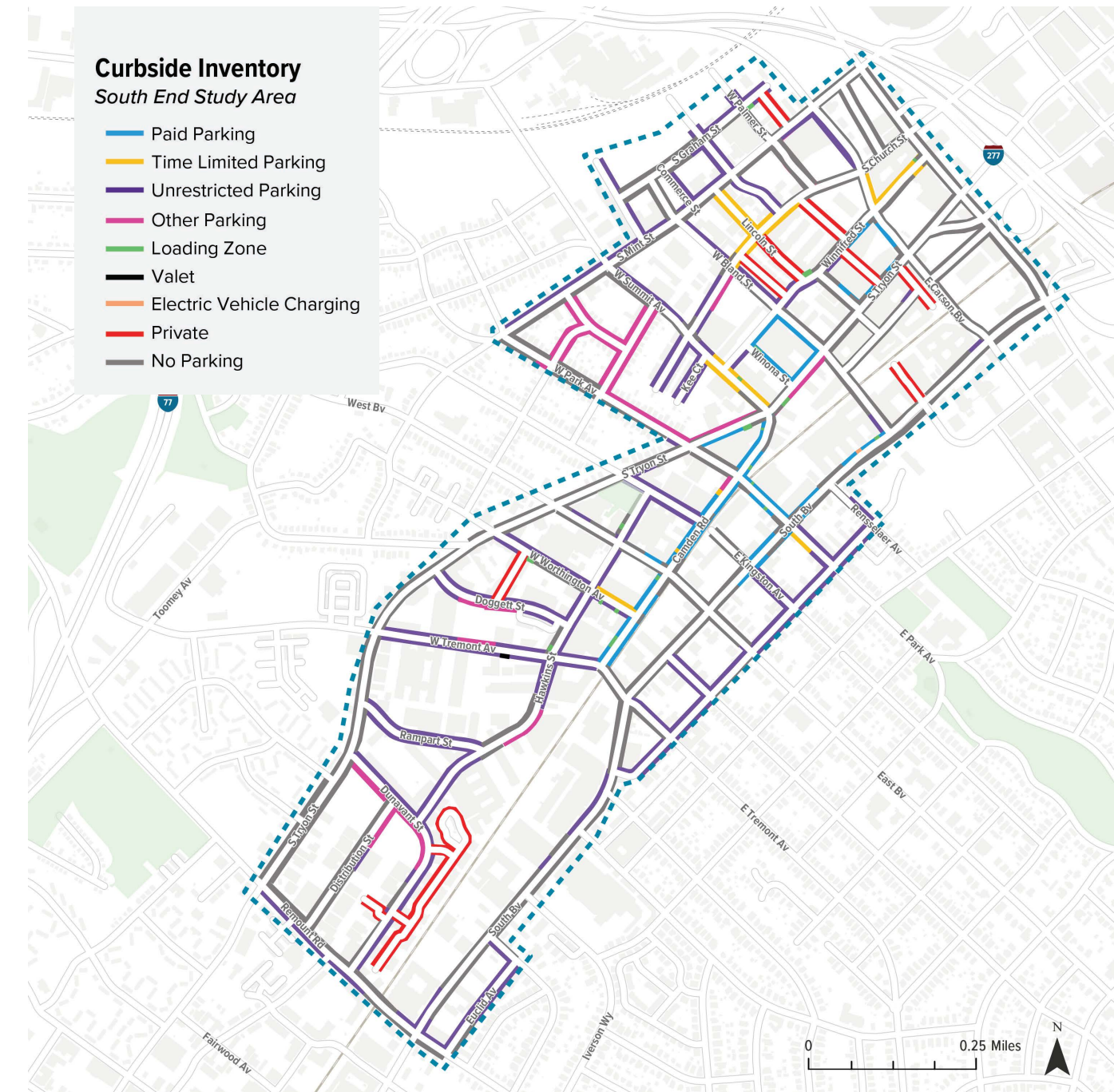
Curb uses in South End include:

- Paid Parking
- Time Limited Parking
- Unrestricted Parking
- Other Parking
- Loading Zones (Includes Commercial, Passenger, and Bus Only Loading)
- Valet
- Electric Vehicle Charging
- Private
- No Parking (Includes Bus Only Lanes, Bike Lanes, Vehicular Travel Lanes, and other uses of the curb)

Curbside Inventory

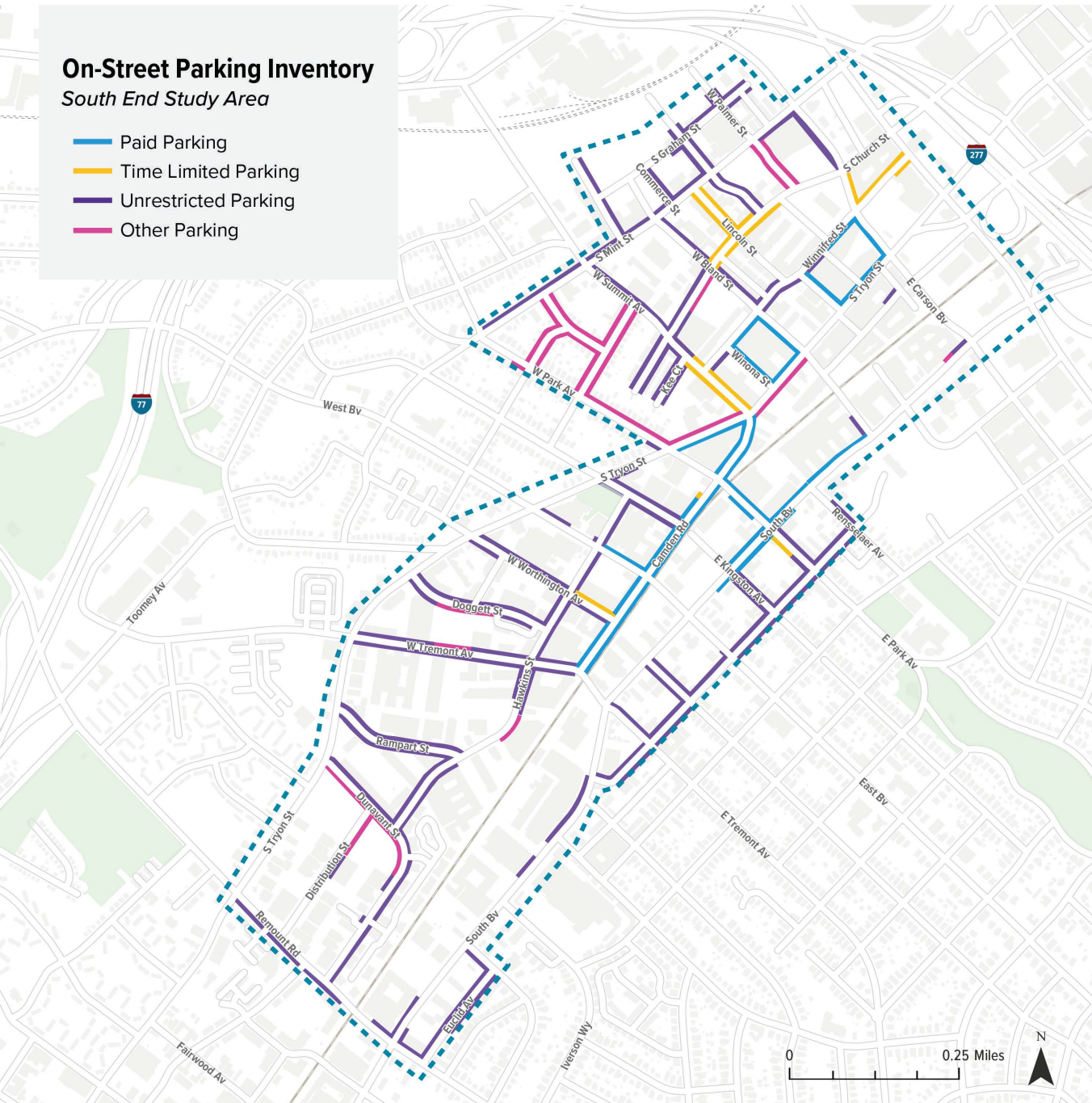
South End Study Area

-  Paid Parking
-  Time Limited Parking
-  Unrestricted Parking
-  Other Parking
-  Loading Zone
-  Valet
-  Electric Vehicle Charging
-  Private
-  No Parking



On-Street Parking Inventory
South End Study Area

- Paid Parking
- Time Limited Parking
- Unrestricted Parking
- Other Parking



On-Street Parking Inventory

The South End district contains a combination of residential, retail, and restaurants, in addition to commercial and industrial existing land uses. Because of the increased development and popularity of South End, the neighborhood has become a hotspot within the city, resulting in increased parking demand. Although parking in South End is in high demand, approximately 86% of the on-street parking spaces available are not metered (Figure 09), resulting in low turnover and availability of on-street parking.

South End's limited metered parking is primarily along Winnifred Street, Tryon Street, Camden Road, and South Boulevard. The metered on-street parking system is managed through mobile payment only zones, which offer text-to-pay, online payments, and mobile app payment options.

Figure 09: On-Street Parking Inventory

Type	Number of Spaces
Paid	250
Time Limited	130
Unrestricted	1,130
Other	250
Total	1,760

Loading Zone Inventory

South End also includes approximately 23 loading zones (Figure 10) to provide additional access for commercial deliveries and pick-up and drop-off for passengers and food and services delivery.

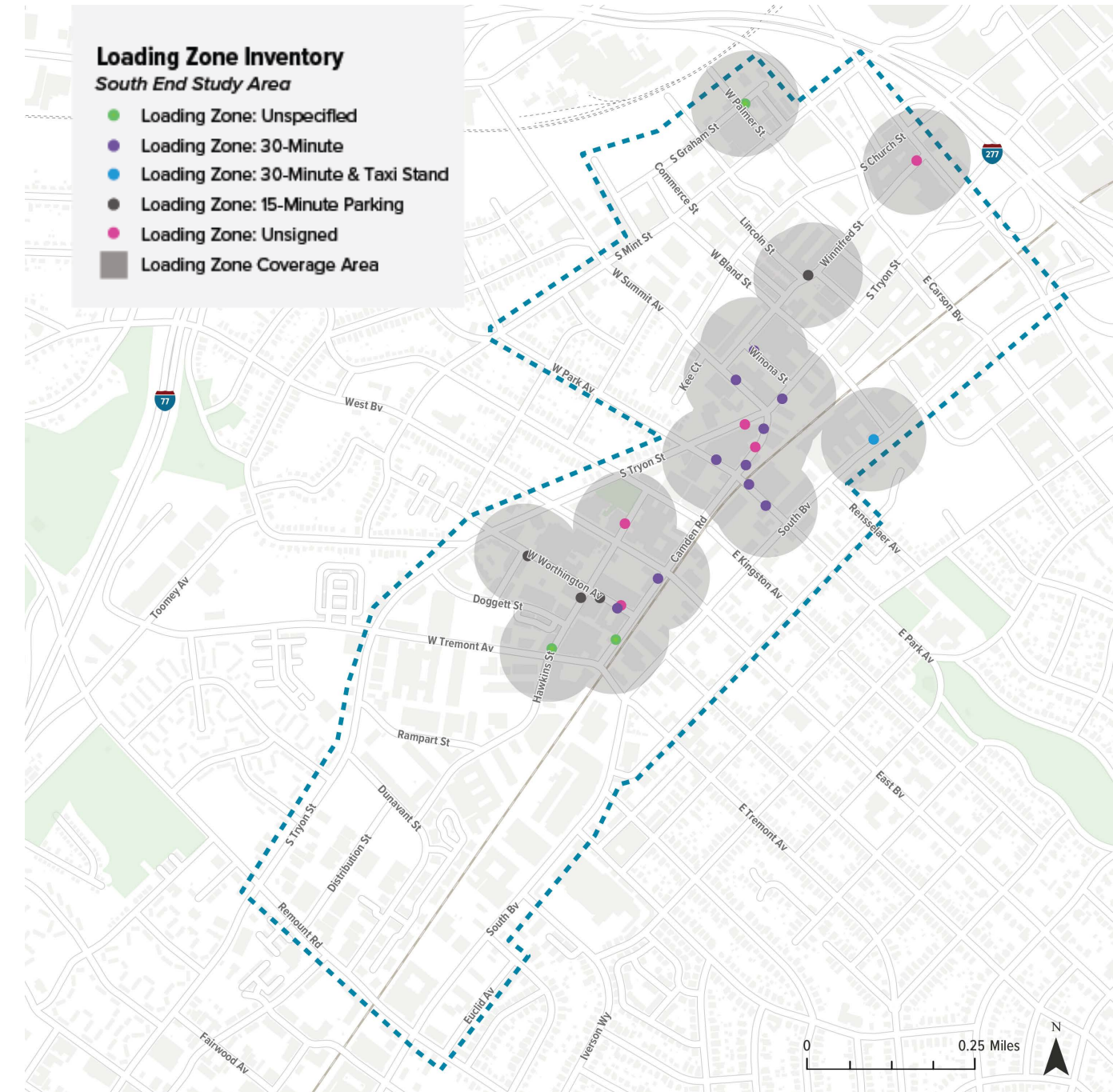
The majority of South End does not offer proximate access to a dedicated loading and unloading area, with the estimated coverage area extending the length of one city block. To overcome this challenge within the current system, delivery personnel will use the metered on-street parking system to load and unload, or will temporarily park in travel lanes or no parking areas, impacting safety and increasing congestion. Additionally, adequate pick-up and drop-off zones are an essential component of an effective curb management system.

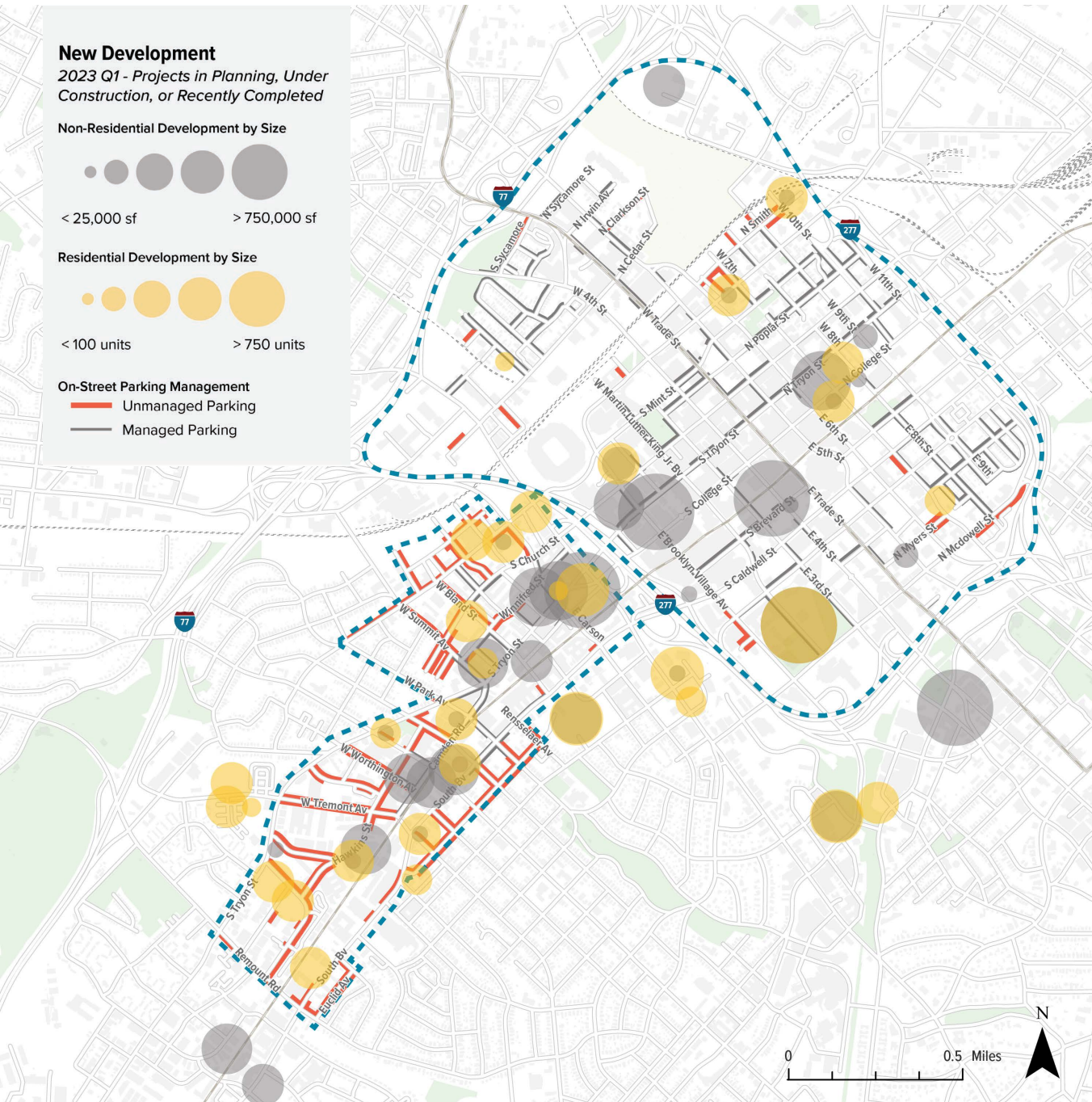
Figure 10: Loading Zone Inventory

Type	Number of Loading Zones
Unspecified	3
15-Minute	4
30-Minute	10
30-Minute & Taxi Stand	1
Unsigned	5
Total	23

Loading Zone Inventory
South End Study Area

- Loading Zone: Unspecified
- Loading Zone: 30-Minute
- Loading Zone: 30-Minute & Taxi Stand
- Loading Zone: 15-Minute Parking
- Loading Zone: Unsigned
- Loading Zone Coverage Area





DEVELOPMENT TRENDS

Uptown and South End are two of Charlotte’s busiest destinations, attracting residents, businesses, and visitors to the many restaurants, breweries, cultural destinations, and event centers.

With Charlotte’s continued growth, future development trends in Uptown and South End will continue to place an increased demand on the curb.

As outlined in Figures 11 and 12, Uptown and South End’s planned development includes office, residential, hotel, and retail development that will require implementation of strategic and dynamic curb management strategies.

With Uptown serving as Charlotte’s central business district, the on-street parking system is primarily managed. In areas where unmanaged parking exists, new development will help guide the implementation of curb management strategies.

While Uptown’s on-street system is primarily managed, South End’s current on-street system is largely unmanaged. In the South End managed system area, 1,510 of the 1,760 on-street parking spaces are not metered. Of those spaces that are not metered, 1,130 are unmanaged, meaning that barring any safety violations, parkers are able to utilize on-street parking as long-term storage of vehicles.

As the South End area continues to grow and develop at a rapid pace, so will the need to encourage different parking behaviors, such as shifting long-term parking to off-street and encouraging on-street parking turnover to increase access for more users.

Additionally, increased parking demand generated by development can place pressure on adjacent, lower-density residential neighborhoods, such as Wilmore and Dilworth, warranting curb management strategies such as residential or neighborhood permit parking programs.

Figure 11: Uptown Planned Development

Development Type	Existing	Planned	Total	Percent Change
Office (SF)	25,900,000	3,377,000	29,277,000	+13%
Residential (Units)	8,790	1,650	10,440	+19%
Hotel (Rooms)	6,404	1,124	7,528	+18%
Retail (SF)	1,197,000	506,000	1,703,000	+42%

Source: Charlotte Center City Partners, Development Report, April 2023

Figure 12: South End Planned Development

Development Type	Existing	Planned	Total	Percent Change
Office (SF)	5,100,000	3,300,000	8,400,000	+65%
Residential (Units)	8,569	6,105	14,674	+71%
Hotel (Rooms)	123	580	703	+472%
Retail (SF)	1,300,000	271,000	1,571,000	+21%

Source: Charlotte Center City Partners, Development Report, April 2023

OCCUPANCY STUDY

Parking along Tryon Street in South End.



Parking occupancy is one of the metrics of curb efficiency. The utilization rate of a curb is an indicator of the type of management strategy needed to ensure a curb can meet users' needs. Curbs with high occupancy rates (>65 to 85%) typically result in drivers circling an area looking for an available parking space.

High parking utilization usually ranges from 65% to 85% and ensures that at least one parking space is available on a block face while maximizing curb utilization. Occupancy approaching or above 85% reflects extremely high occupancy. Occupancy below 65% indicates that a curb lane is being underused, and curb uses other than on-street parking should be prioritized to diversify the curb lane and serve other user groups. When parking occupancy is low, it indicates that on-street parking is not a high-priority need, warranting additional mobility options.

In February 2023, CDOT conducted an on-street parking occupancy study in Uptown and South End during daytime and evening hours on weekdays and Saturday. This occupancy study was conducted prior to the rollout of Saturdays as a paid parking day, which occurred in March 2023.

This study evaluates parking occupancy by block and block face. A block is a measurement of space, typically between streets or at a prescribed distance. A block may start at one intersection of two streets and end at the next intersection of two streets. A block face is one side of a block, typically between two intersections of other streets, excluding alleyways.

When it comes to developing an implementable curb management plan, it's important to evaluate curb uses at the block and block face levels, with an understanding that the composition of blocks determines the function of a corridor.

WHAT IS A BLOCK?

A block is a measurement of space, typically between streets or at a prescribed distance. A block may start at one intersection of two streets and end at the next intersection of two streets. A block face is one side of a block, typically between two intersections of other streets, excluding alleyways.

Occupancy Study

The following section provides detailed information on the occupancy study for both South End and Uptown on weekday daytime and evening, and Saturday daytime and evening. The occupancy study was conducted prior to establishing Saturday as a paid parking day.

Figures 13 and 14 show the average system occupancy during the study day and time. As shown, Uptown's peak occupancy occurred on Saturday evening (85%) and South End's peak occupancy occurred during Saturday daytime (97%).

South End and Uptown both experienced the lowest percent occupancy during the weekday daytime (77% and 63% respectively), which was collected during the hours of system operation.

Figure 13: Uptown Occupancy Study

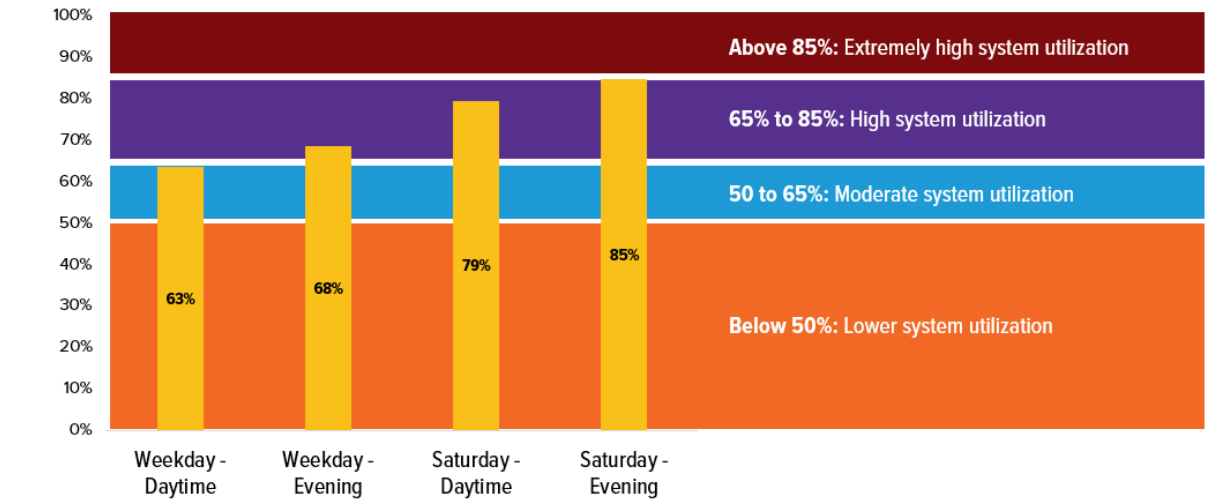
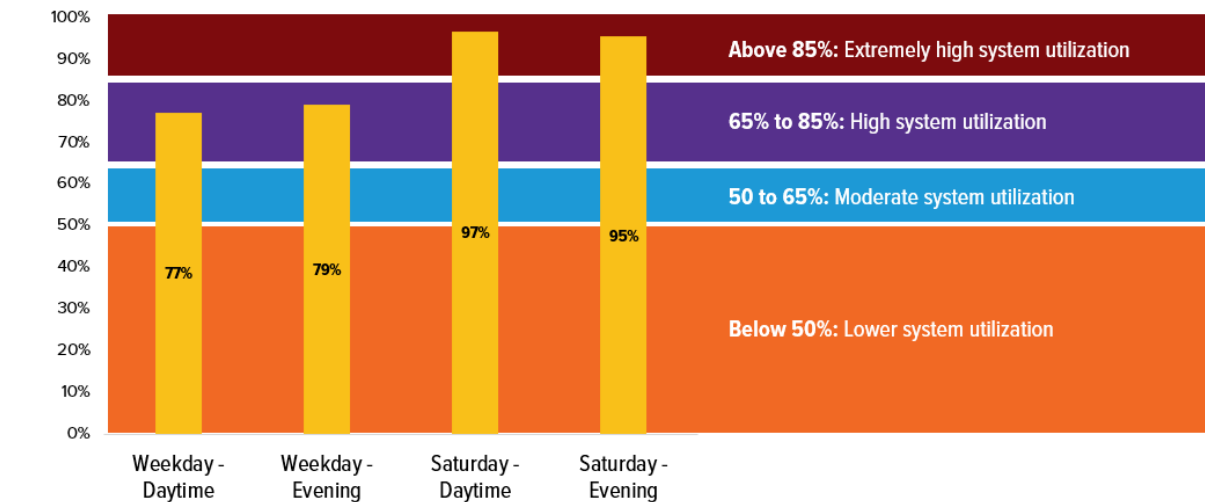
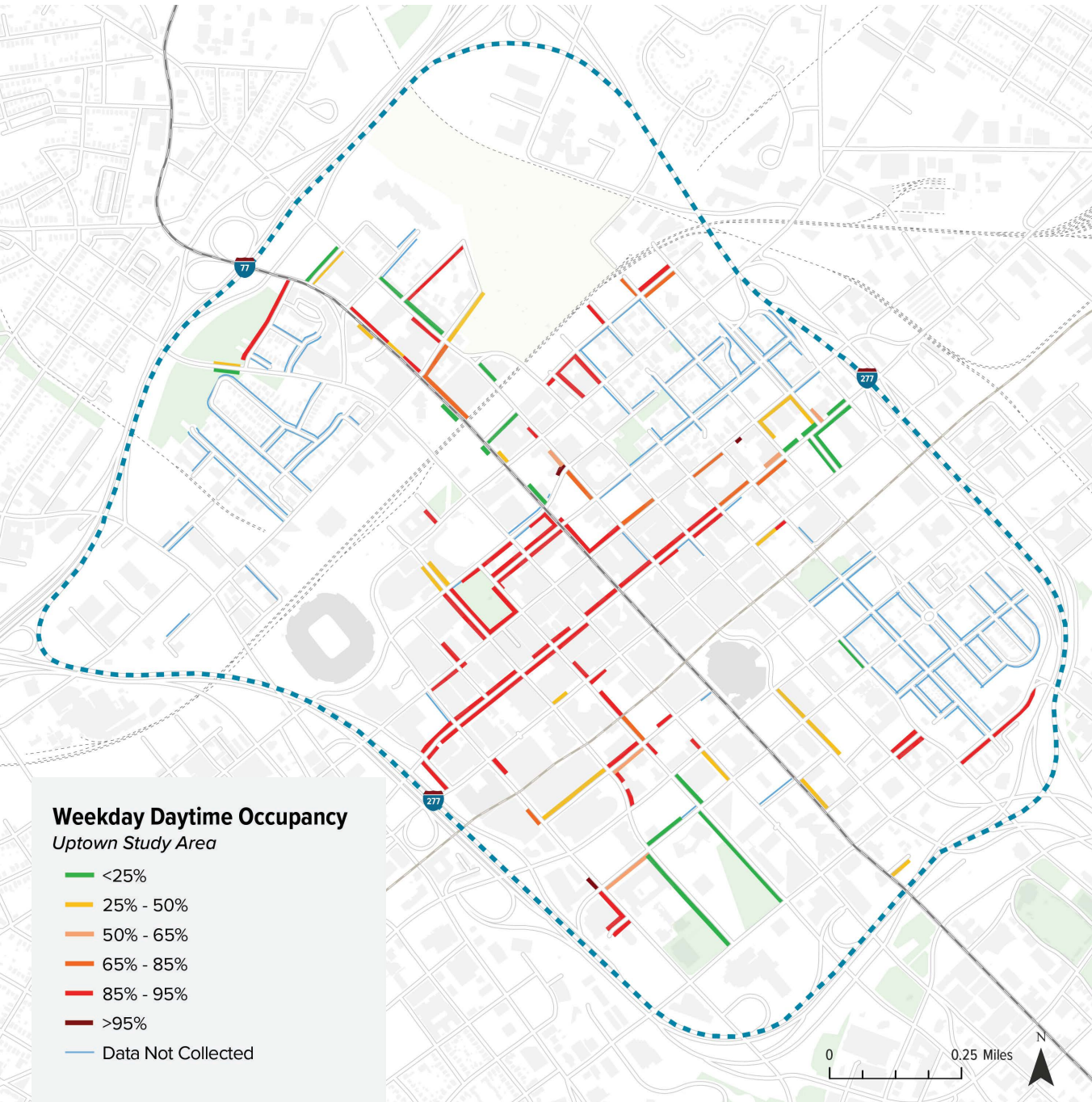


Figure 14: South End Occupancy Study



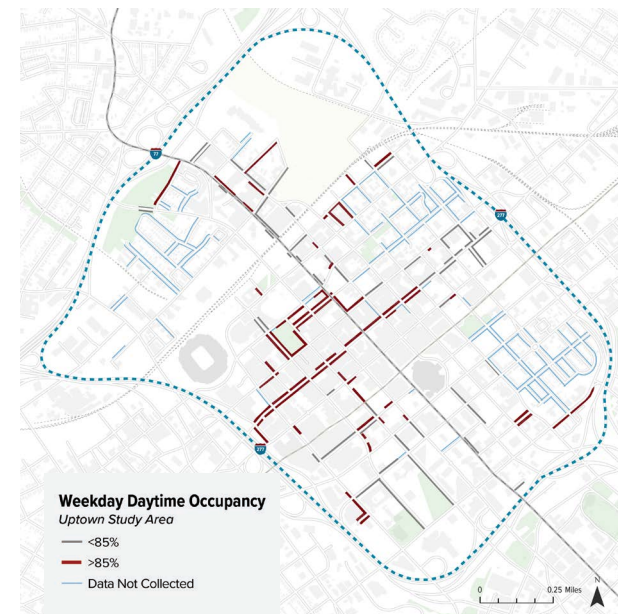


Uptown Weekday Daytime Occupancy

The average on-street occupancy in Uptown on a weekday during the daytime was 63% for all streets. This occupancy data was collected during the on-street parking program’s hours of operation (12:00PM to 3:00PM).

High levels of utilization (over 85%) occurred within the core of Uptown, with significant utilization along Tryon Street and near Romare Beardon Park. Lower levels of utilization occurred surrounding Marshall Park and Montford Point Street.

- **Over 85%:** 57% of all block faces had an occupancy over 85%.
- **Over 65%:** 66% of all block faces had an occupancy over 65%.

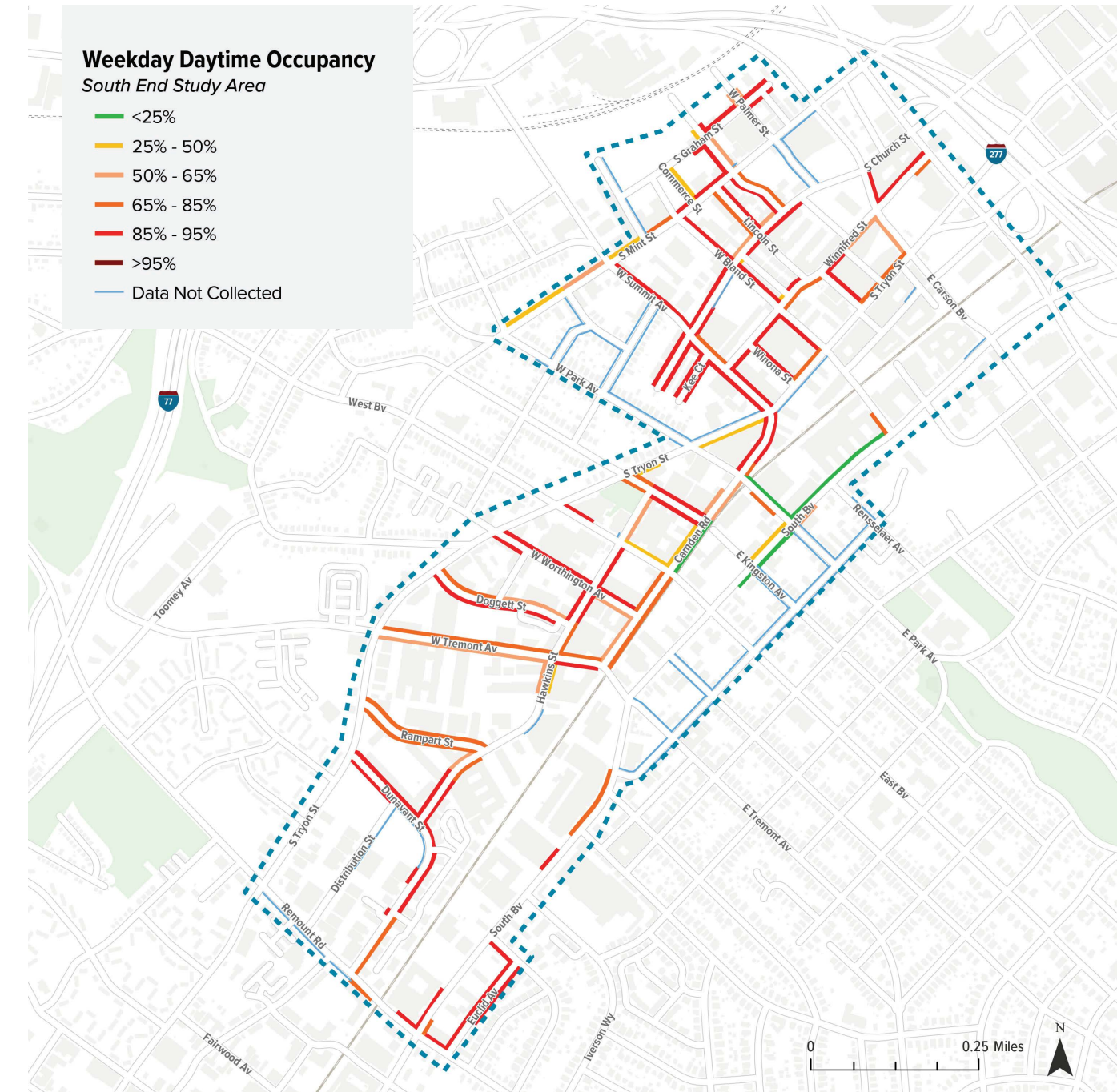
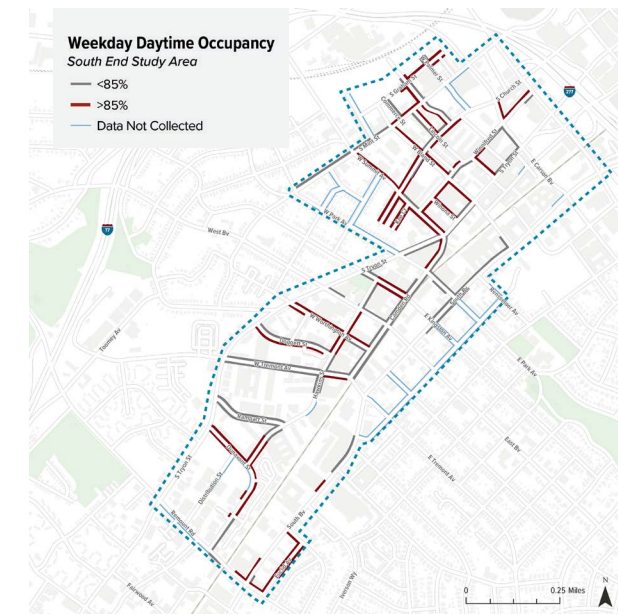


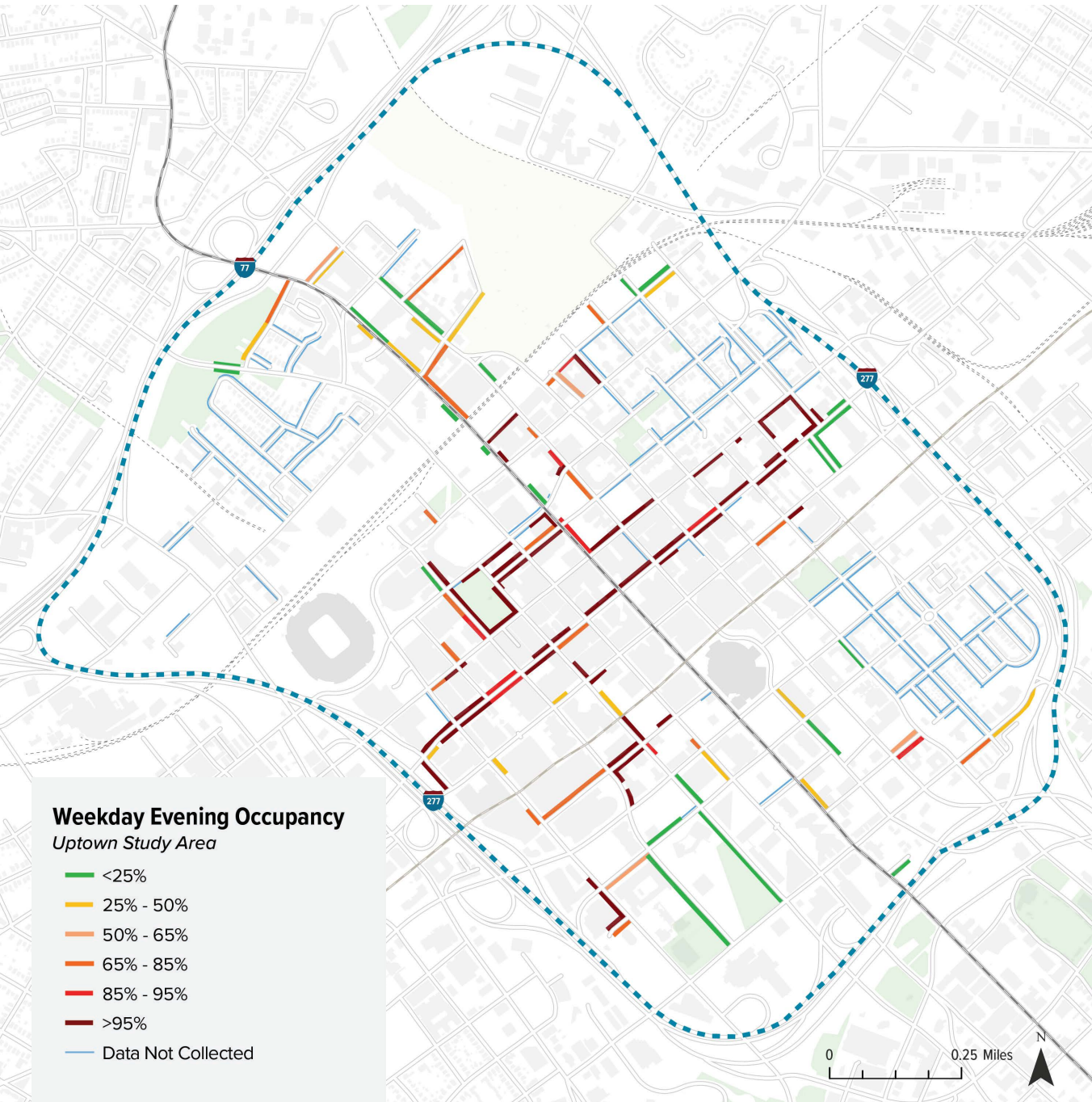
South End Weekday Daytime Occupancy

The average on-street occupancy in South End on a weekday during the daytime was 77%. This occupancy data was collected during the on-street parking program’s hours of operation (12:00PM to 3:00PM).

Majority of block faces within South End had an occupancy between 85% and 95%, with significant demand in the primary mixed-use, retail, and entertainment districts of Camden Road, Tremont Avenue, Summit Avenue, Church Street, and Worthington Avenue.

- **Over 85%:** 47% of all block faces had an occupancy over 85%.
- **Over 65%:** 71% of all block faces had an occupancy over 65%.



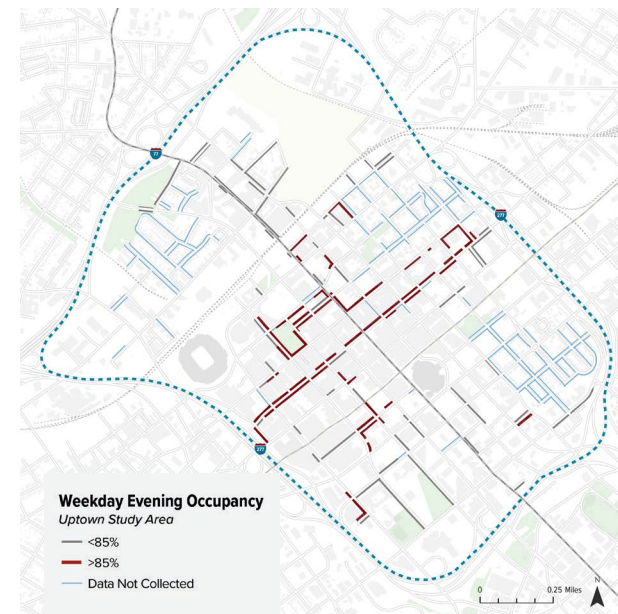


Uptown Weekday Evening Occupancy

The average on-street occupancy in Uptown on a weekday during the evening was 68% for all streets. This occupancy data was collected outside of the on-street parking program’s hours of operation (6:00PM to 9:00PM).

Extremely high levels of utilization (over 95%) occurred within the core of Uptown. Again, occupancy was highest along Tryon Street and near Romare Beardon Park. Lower levels of utilization occurred surrounding Marshall Park and Montford Point Street.

- **Over 85%:** 50% of all block faces had an occupancy over 85%.
- **Over 65%:** 67% of all block faces had an occupancy over 65%.

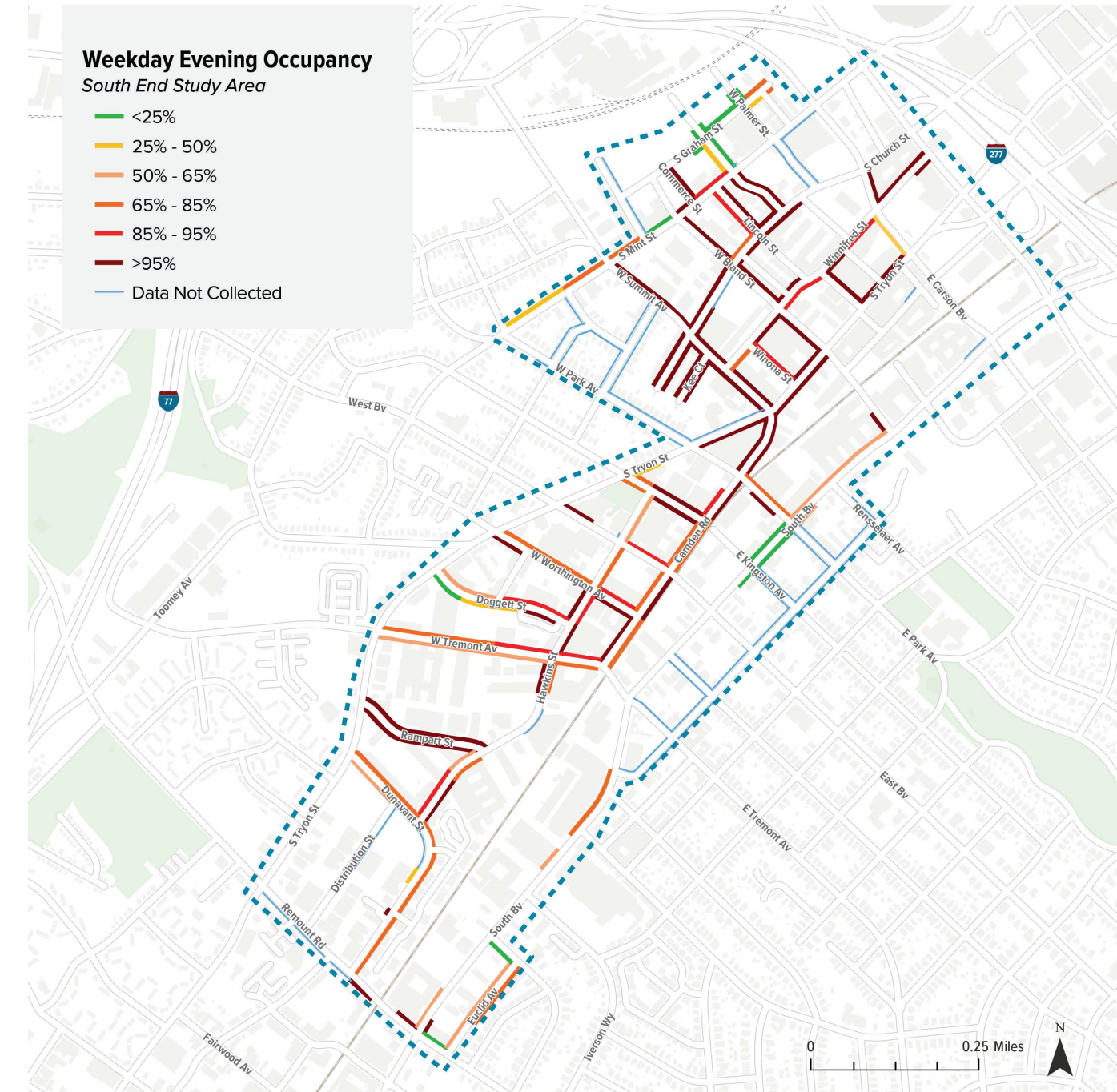
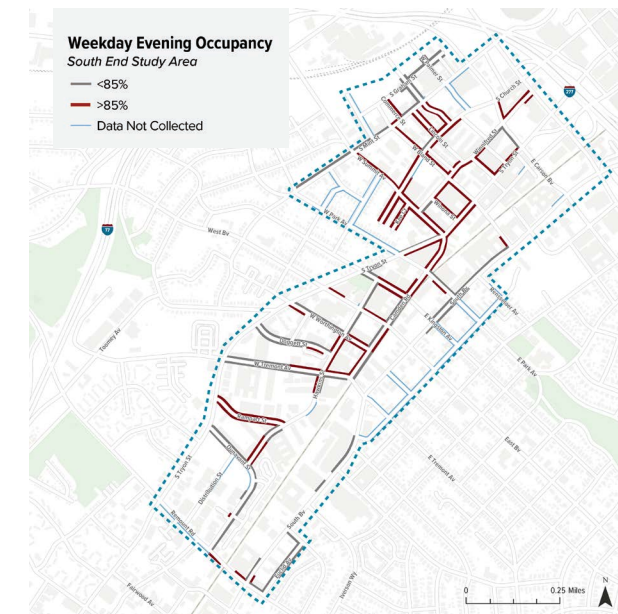


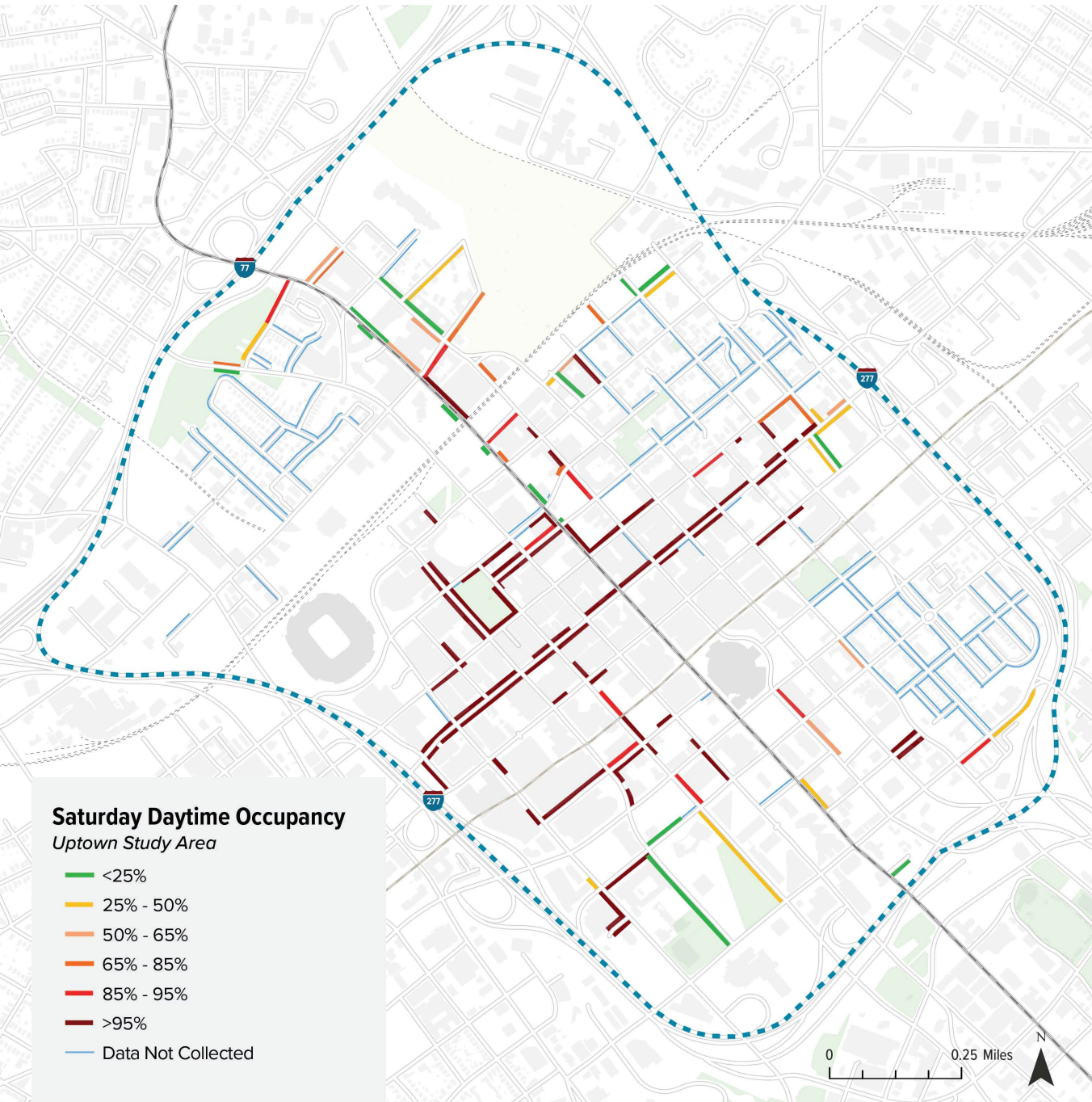
South End Weekday Evening Occupancy

The average on-street occupancy in South End on a weekday during the evening was 79%. This occupancy count was collected outside of the on-street parking program’s hours of operation (6:00PM to 9:00PM).

A significant portion of block faces within South End had an occupancy above 95%, with significant demand in the primary mixed-use and entertainment areas of Summit Avenue, Bland Street, Camden Road, and Church Street.

- **Over 85%:** 53% of all block faces had an occupancy over 85%.
- **Over 65%:** 76% of all block faces had an occupancy over 65%.



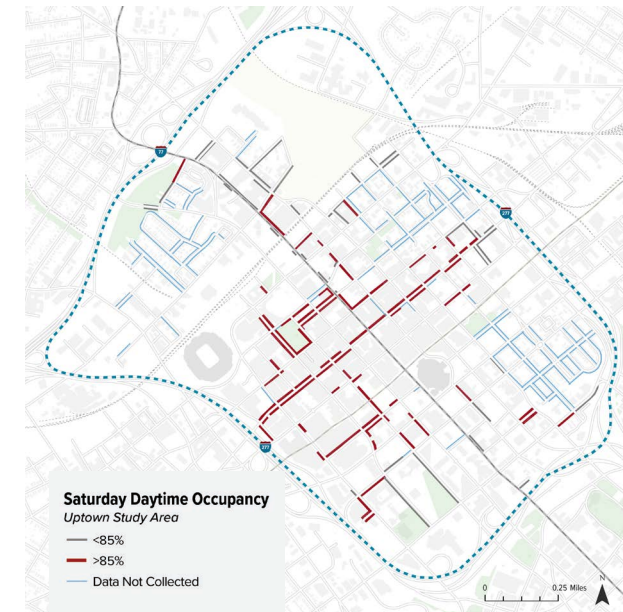


Uptown Saturday Daytime Occupancy

The average on-street occupancy in Uptown on a Saturday during the daytime was 79% for all streets. This occupancy study was conducted during daytime hours and prior to including Saturday as a paid parking day (12:00PM to 3:00PM).

Uptown is a popular destination for residents and visitors, with high demand placed on the curb. Extremely high levels of utilization (over 95%) occurred along Tryon Street, near Romare Beardon Park, and surrounding the Charlotte Convention Center.

- **Over 85%:** 67% of all block faces had an occupancy over 85%.
- **Over 65%:** 73% of all block faces had an occupancy over 65%.

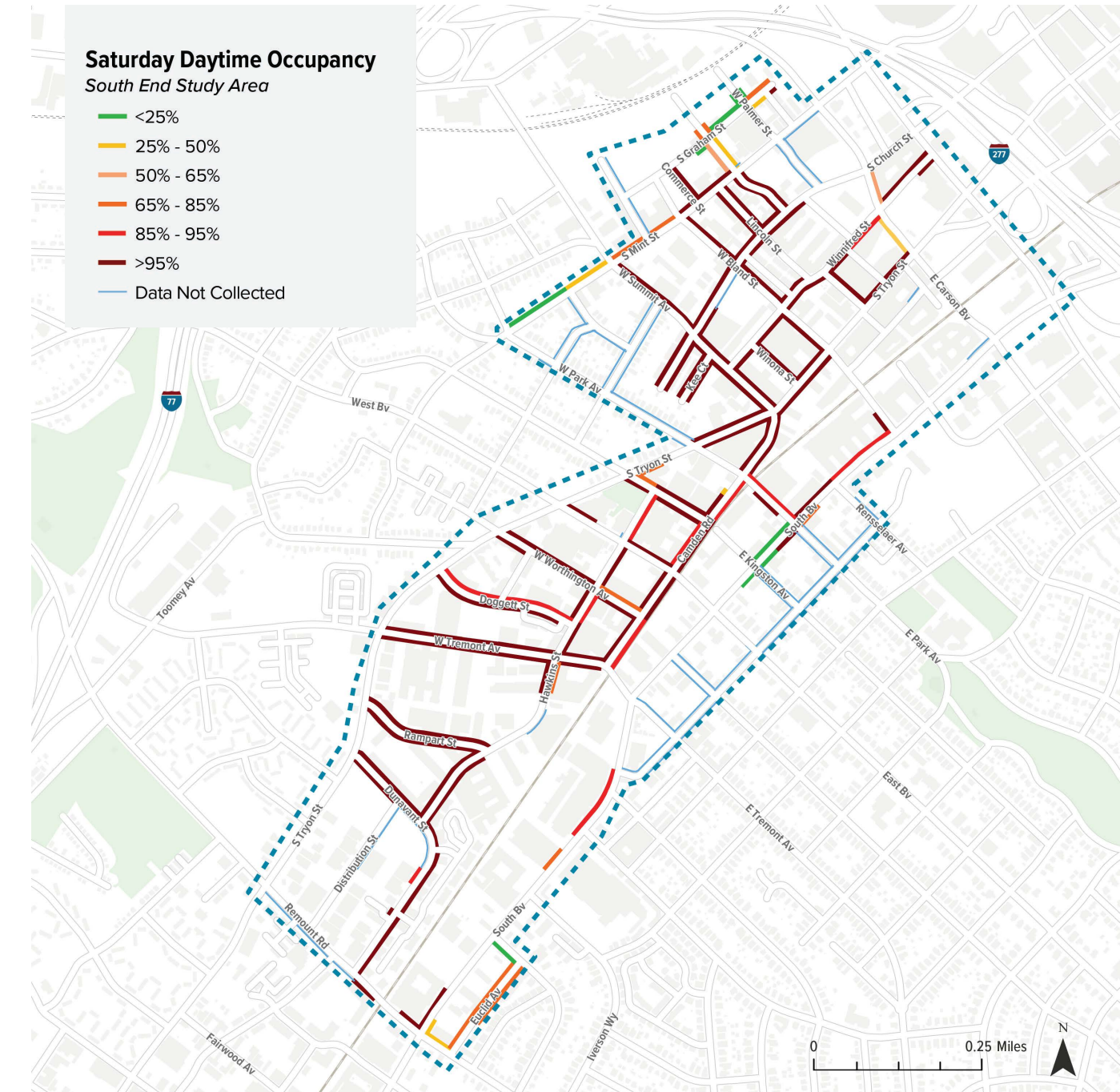
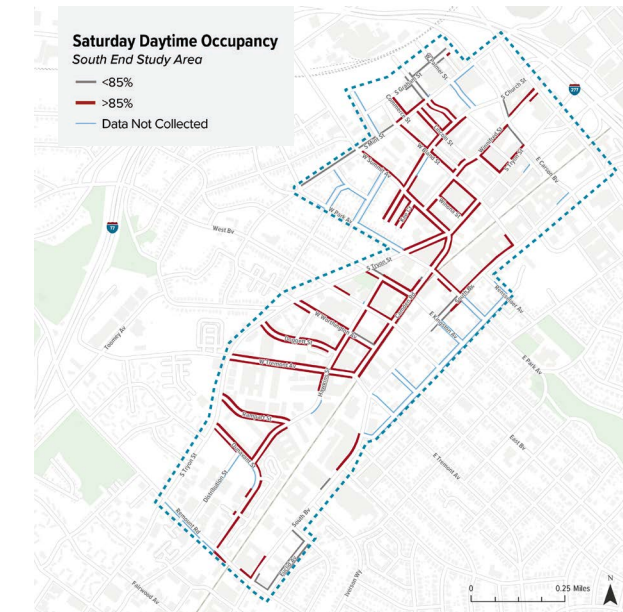


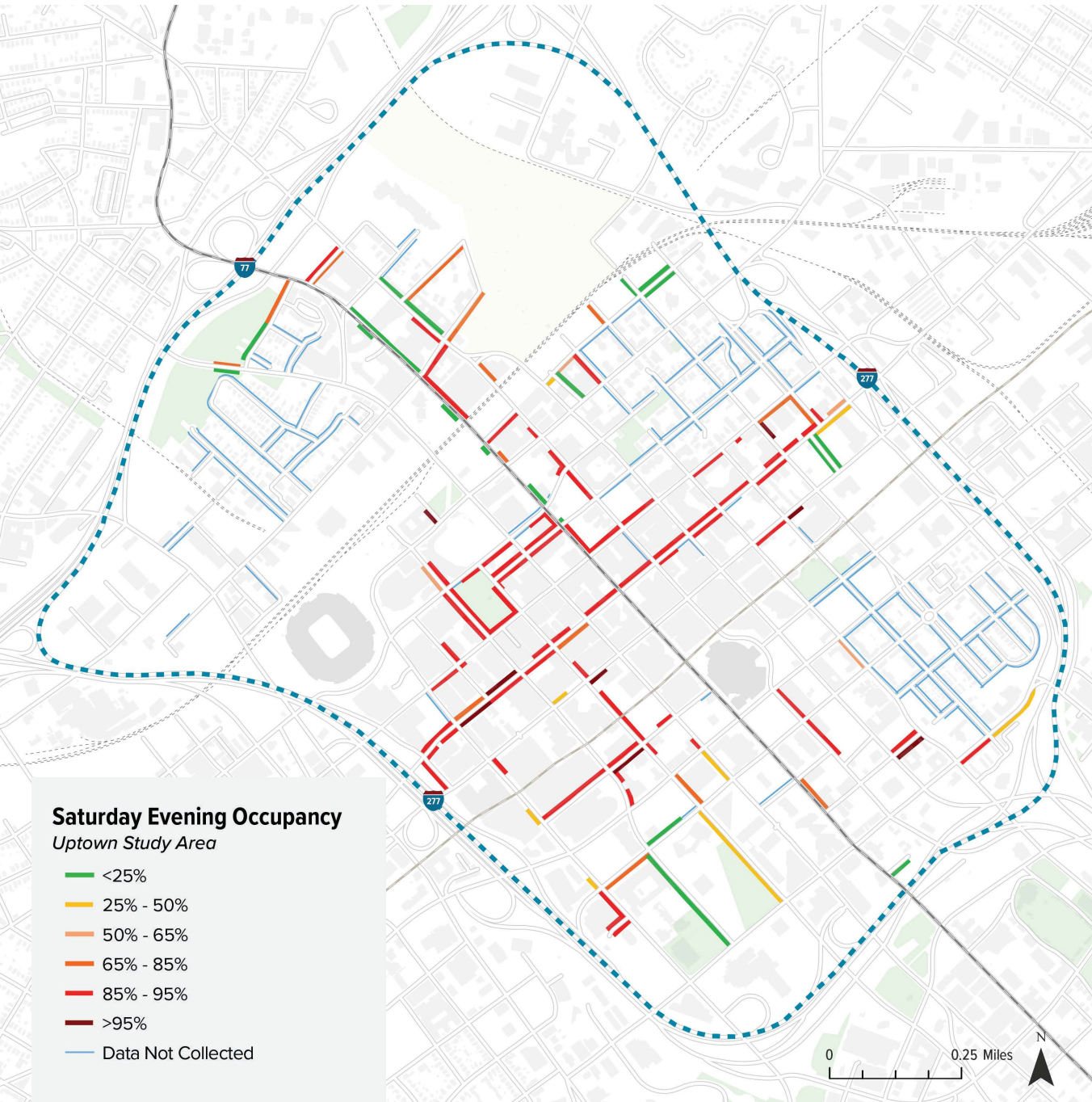
South End Saturday Daytime Occupancy

The average on-street occupancy in South End on a Saturday during the daytime was 97% for all streets. This occupancy study was conducted during daytime hours and prior to including Saturday as a paid parking day (12:00PM to 3:00PM).

South End is a popular destination for entertainment, dining, and retail, which is reflected in the weekend demand on the curb. Almost all of South End's occupancy was above 95%, with additional block faces above 85%.

- **Over 85%:** 76% of all block faces had an occupancy over 85%.
- **Over 65%:** 87% of all block faces had an occupancy over 65%.



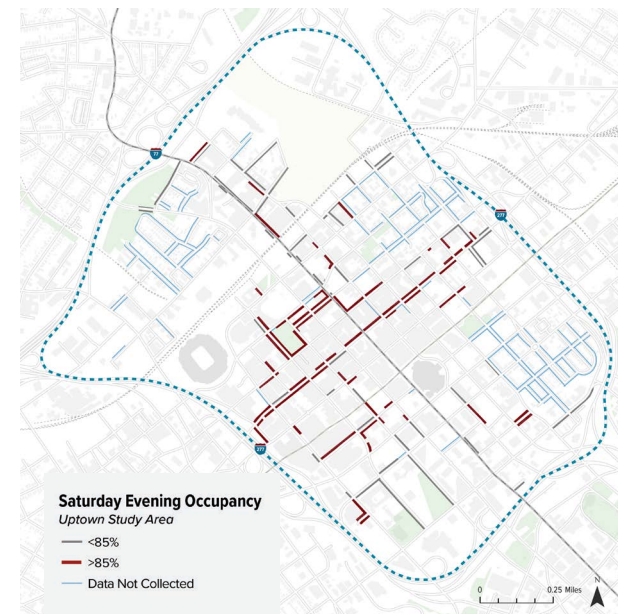


Uptown Saturday Evening Occupancy

The average on-street occupancy in Uptown on a Saturday during the evening was 85% for all streets. This occupancy data was collected outside of the on-street parking program's hours of operation (6:00PM to 9:00PM).

High levels of utilization (over 85%) occurred along Tryon Street, Church Street, near Romare Beardon Park, and surrounding the Charlotte Convention Center.

- **Over 85%:** 57% of all block faces had an occupancy over 85%.
- **Over 65%:** 69% of all block faces had an occupancy over 65%.

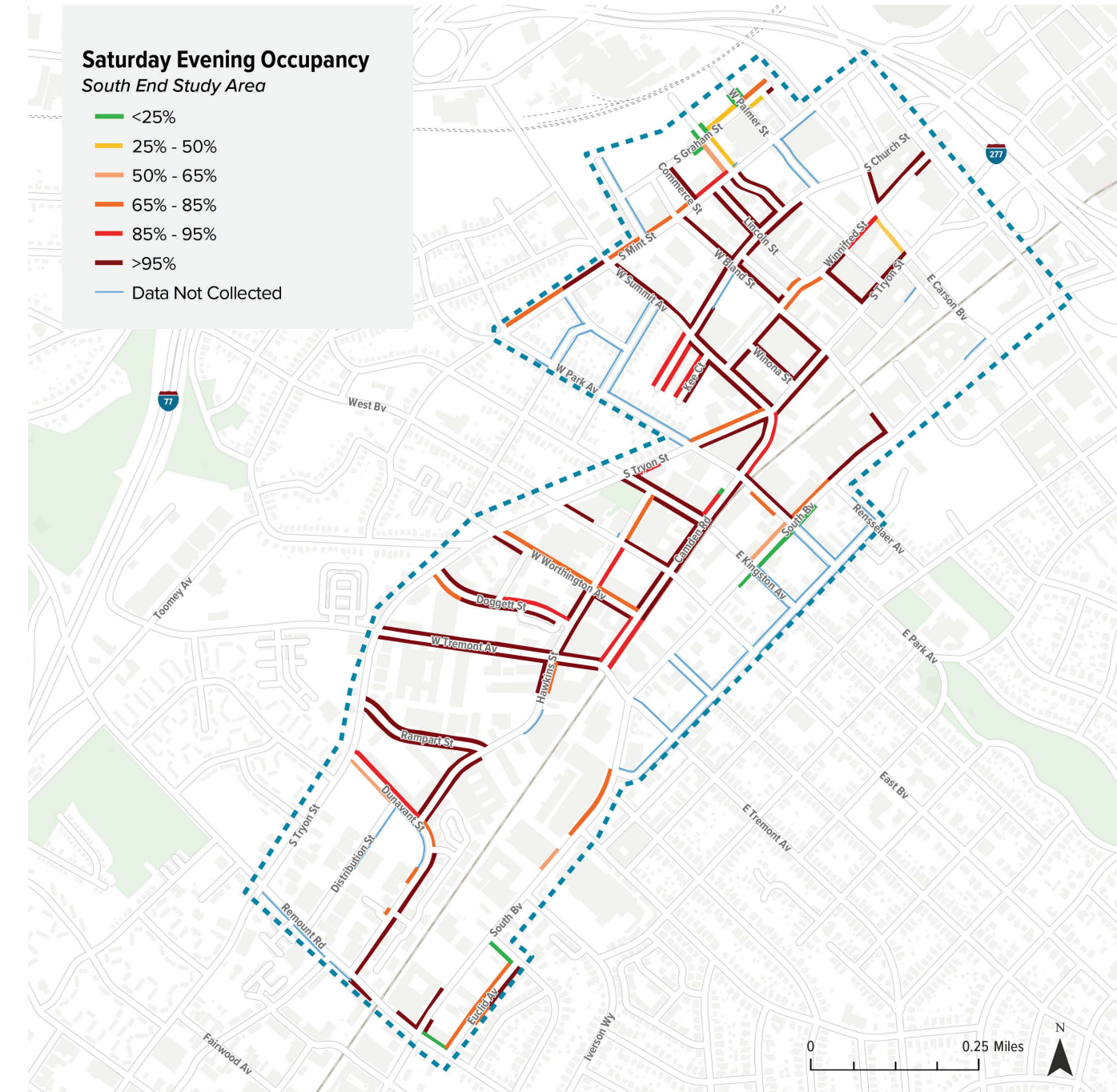
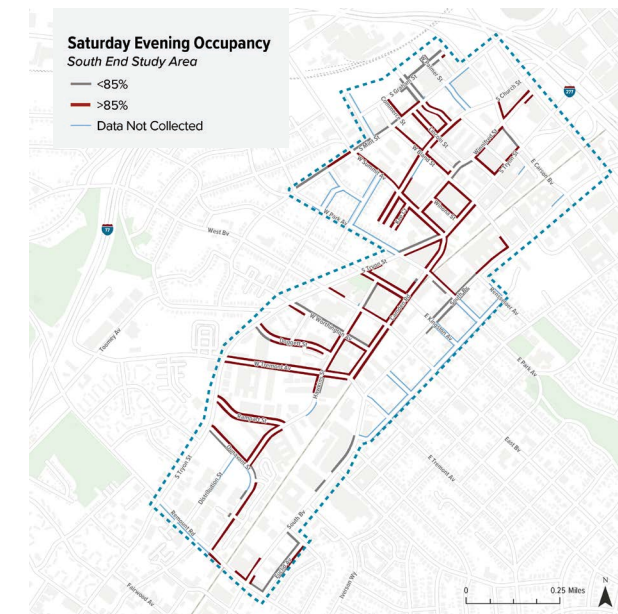


South End Saturday Evening Occupancy

The average on-street occupancy in South End on a Saturday during the evening was 95% for all streets. This occupancy data was collected outside of the on-street parking program's hours of operation (6:00PM to 9:00PM).

Majority of South End's block faces have an occupancy of 85% or higher, making it extremely difficult to find parking.

- **Over 85%:** 70% of all block faces had an occupancy over 85%.
- **Over 65%:** 86% of all block faces had an occupancy over 65%.



BEST PRACTICES

Parking and development along Camden Road in South End.



To evaluate parking and curb management best practices, the City of Charlotte conducted peer city research to gain further understanding on industry standards and effective best practices. The following cities were included in this peer city research:

- Atlanta, GA
- Austin, TX
- Columbus, OH
- Denver, CO
- Houston, TX
- Kansas City, MO
- Miami, FL
- Minneapolis, MN
- Nashville, TN
- Omaha, NE
- Raleigh, NC
- Sacramento, CA

Throughout this process, the project team spoke with each city's parking and mobility practitioner to gain insight into the on-street parking and curbside mobility operations. The Benchmark Study Overview (Figure 15) is a snapshot of each city's system.

Of the twelve cities, the following best practices emerged:

- Eleven cities operate an on-street parking system with more metered spaces than Charlotte, regardless of population.
- All twelve cities operate past 6:00PM, with ten operating until at least 10:00PM.
- Eleven cities operate on Saturdays, with six operating on Sundays.
- Ten cities operate a zone-based or progressive pricing model, indicating a variety in rates based on locations and demand.
- Ten cities have a higher meter cost, with varying progressive and zone models informing cost.
- Nine cities enforce meter operations with a higher citation cost than Charlotte.

A profile of each benchmark study city is located within the Additional Resources section of this document.

CHARLOTTE'S PEER CITIES

Charlotte's peer cities are identified through the Strategic Mobility Plan and a peer city analysis conducted by the City of Charlotte, which uses several variables to determine comparable cities. Additionally, Miami, Raleigh, and Sacramento were included due to the identification of best practices within their on-street parking system.

2 Hour Parking Sign in Charlotte.

BEST PRACTICES

Figure 15: Benchmark Study Overview

City	Population	Metered Spaces	Hours of Operation (*varies by area)	Days of Operation (*varies by area)	Meter Cost (per hour)	Meter Fine	Time Limits	Pricing Method
Charlotte	879,709	1,200	7:00 AM – 6:00 PM	Mon – Sat*	\$1.50	\$25.00	2-hour	Flat
Atlanta ⁺	496,461	2,800	7:00 AM – 10:00 PM*	Mon – Sat*	\$2.00	\$35.00	2-, 3-, & 4-hour	Flat
Austin ^{**}	964,177	8,000	8:00 AM – 12:00 AM*	Mon – Sat*	\$2.00 – \$5.00	\$40.00	None	Progressive
Columbus ⁺	906,528	10,000	8:00 AM – 10:00 PM	Mon – Sat	\$0.50 – \$1.50	\$30.00	30-minute, 3-hour, & None	Progressive
Denver ^{**}	711,463	6,200	8:00 AM – 10:00 PM*	Mon – Sat*	\$2.00	\$35.00	2-, 3-, & 5-hour	Flat
Houston ⁺	2,288,250	10,000	7:00 AM – 12:00 AM*	Mon – Sun*	\$0.50 – \$2.25	\$30.00	2-hour up to 10-hour	Zone Based
Kansas City ⁺	508,394	1,200	12:00 AM – 11:59 PM*	Mon – Sun*	\$1.00 – \$3.75	\$25.00	Varies	Progressive
Miami	439,890	12,020	7:00 AM – 2:00 AM*	Mon – Sun*	\$1.75 – \$3.25	\$36.00	3-hour	Zone Based
Minneapolis ^{**}	425,336	9,500	8:00 AM – 12:00 AM*	Mon – Sun*	\$0.50 – \$6.00	\$45.00	2-hour up to 10-hour	Zone Based
Nashville ^{**}	678,851	1,700	12:00 AM – 11:59 PM*	Mon – Sun*	\$1.75 – \$2.25	\$25.00	2- to 6-hour	Zone Based
Omaha ⁺	487,300	4,500	9:00 AM – 9:00 PM	Mon – Sat	\$0.50 – \$7.00	\$16.00 - \$50.00	None	Progressive
Raleigh	469,124	1,600	8:00 AM – 8:00 PM*	Mon – Fri	\$1.25 – \$1.50	\$20.00	2-hour	Zone Based
Sacramento	525,041	6,300	8:00 AM – 10:00 PM*	Mon – Sun*	\$1.75 – \$3.75	\$62.50	Varies	Progressive

CASE STUDIES

Through peer city research and insights from parking and mobility practitioners, the following five case studies provided additional recommendations for future implementation. As the on-street parking and curb management system in Charlotte continues to evolve, so will the need for innovative solutions.



Progressive Pricing: Austin, TX

The City of Austin implements progressive pricing to manage their parking demand. This program adjusts on-street parking prices by increasing the amount per hour, with a 10-hour maximum time limit. Hours 1-2 are \$2.00 per hour, then each incremental hour after that costs \$0.50 more than the previous hour, with a maximum of \$5.00 per hour.

This progressive structure helps to generate parking turnover and increases parking availability.

Benefits

- Equal access to all parking zones with removal of time limits.
- Reduced risk of receiving a parking citation and no need to return to the vehicle to display a sticker.
- Better real-time parking occupancy data.
- Reduced paper, printing, and waste.



Curbside Access Plans: Denver, CO

The City of Denver develops curbside access plans in response to evolving curbside needs throughout Denver's neighborhoods. These plans are curbside and parking plans that address stakeholder challenges and concerns by exploring alternative curb management strategies.

Additionally, Denver's curbside access plans are used to inform the implementation of the city's new Residential Permit Program.

Benefits

- Responsiveness to changing community needs and priorities as development occurs.
- Small-scale evaluation of neighborhood-specific constraints and opportunities.
- Additional opportunities for community and stakeholder engagement throughout the planning process.



Mobility + Parking: Columbus, OH

The City of Columbus recently created a new Mobility + Parking Division to manage the parking operation and integrate transportation planning and shared mobility within one team.

Upon the recent adoption of their Strategic Parking Plan, the new Mobility + Parking Division is looking for additional ways to integrate Columbus' mobility goals within the parking system.

Cities such as Denver, Austin, Houston, Atlanta, and Kansas City are also continually working to integrate mobility, parking, and curb management planning to better serve their respective cities.

Benefits

- Mobility goals align with strategic operations of the parking and curb management system.
- Curb management planning is aligned in one group, creating a more efficient and robust operation.



Community Permits: Houston, TX

The City of Houston operates a Community Parking Program (CPP), which permits parking for a combination of business and residential use. With high curb demand in certain Houston neighborhoods, the CPP allows residents and employees to park at meters or within time limited zones when displaying a permit.

The parking management tools used in these neighborhoods include 3-hour time limits, designated parking zones for residents, and designated parking zones for employees.

Benefits

- Increased curb access for residents and employees.
- Management that encourages turnover in high-demand neighborhoods.



BEST PRACTICES

Loading Zones: Raleigh, NC

The City of Raleigh recently created Mixed-Use Loading Zones, a new loading zone type which encompasses all types of loading and is mainly utilized around mixed-use developments where multiple curb space uses are typically competing for access.

In addition to Mixed-Use Loading Zones, Raleigh also utilizes Curbside Pickup Zones, which are locations to pick-up or drop-off light goods (typically ordered online or via phone).

Benefits

- Streamlined loading zones provide clarity to the end user regarding restrictions and utilization.
- Providing designated loading space for vehicles other than commercial loading is responsive to current trends in e-commerce and delivery.
- Provides greater access to the curb.

STAKEHOLDER ENGAGEMENT

Parking along Camden Road in South End.

Stakeholder and community engagement is an important step to identify resident, business, and visitor goals and priorities. Throughout this planning process, CDOT has received feedback through stakeholder meetings, an online survey, and an interactive feedback map.

In partnership with Charlotte Center City Partners, CDOT held stakeholder meetings both virtually and in-person with Uptown and South End stakeholder groups. Charlotte Center City Partners works to support and represent the needs of those living and working within Charlotte's Center City, which includes Uptown and South End.

Project information, including materials, project timeline, and goals of the plan, were included on the SPP project website: www.publicinput.com/cltspp.

Also hosted on the project website, the online survey and interactive feedback map provided an opportunity for residents, business owners, property owners, and visitors to share their experience with the on-street parking system.



WHAT IS PARKING TURNOVER?

Parking turnover is the rate of use of a parking space. Unmanaged parking spaces that offer free, non-time limited parking do not incentivize people to manage their parking usage. This results in low parking turnover rates and extended vehicle storage times at the curb.

View of Camden Road and Development in South End.

Engagement Themes

Throughout the engagement process, the following themes emerged and informed the subsequent recommendations within this Strategic Parking Plan:

- Majority of respondents preferred parking option is to park on-street (92%).
- The top requested improvement to the on-street parking system is to see more available spaces (83%). Managing spaces encourages turnover and provides greater access to destinations.
- Over 80% of respondents find it difficult to park in Uptown and South End.
- Most respondents typically use on-street parking in the evening (6:00PM to 12:00AM) (59%).
- When trying to find parking after 6:00PM, more than 80% of respondents find it at least moderately difficult.
- If a user knew that a parking space would always be available, 72% would spend at least \$2.00 per hour for that space.
- When asked about on-street loading zone use, 43% found it moderately difficult and 28% found it very difficult to find an available space.
- Over 70% of respondents reported only needing to utilize a loading zone space for 15 minutes or less.
- When asked about improving the parking experience, respondents suggested that investing in infrastructure for multimodal transportation such as walking, biking, and/or taking transit will reduce the demand on the on-street parking system and make traveling to and from Charlotte communities to Uptown and South End safer and more inviting (103 comments).
- Respondents also suggested that off-street parking is a preferred tool for longer-term parking if the cost is right and users know where to find parking (61 comments) and that parking availability is needed with solutions including additional managed parking spaces, better wayfinding, and clear signage (62 comments).

ONLINE SURVEY

In Fall 2022, CDOT hosted an online survey to gather user-experience and feedback on the Uptown and South End managed parking areas, Residential Parking Permit Program, and loading zones.

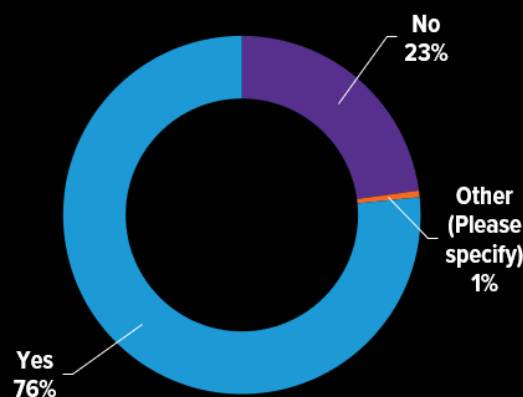
Through over 1,000 responses to the online survey, CDOT gathered feedback and sentiment on how the existing system is operating. Key themes arose through this engagement process and are outlined here.

How would you describe on-street parking availability for the following areas:

	Always Available	Usually Available	Difficult during peak times	Always Difficult
Uptown	2%	9%	46%	42%
South End	2%	10%	43%	46%

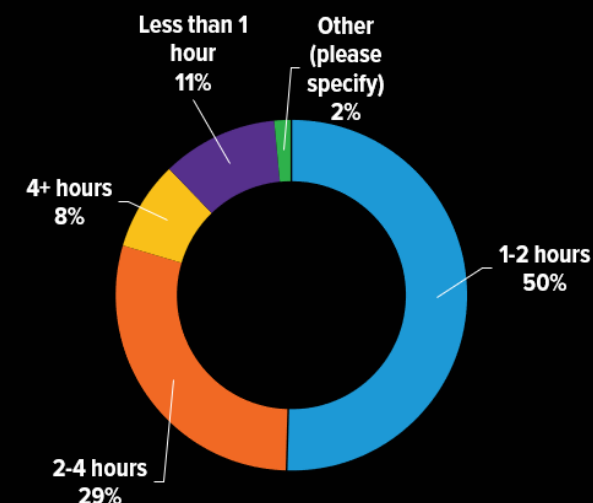
There is significant need to manage the on-street parking system, especially during peak operating times. Almost 90% of respondents stated that it was either difficult during peak times or always difficult to find on-street parking availability in both South End and Uptown. Difficulty finding on-street parking leads to driving behaviors that cause additional traffic congestion, such as cruising for parking. Implementation of successful management strategies will encourage different behavior and provide increased access to the curb.

Have you ever tried to patronize a business and left because you could not find an on-street parking space?



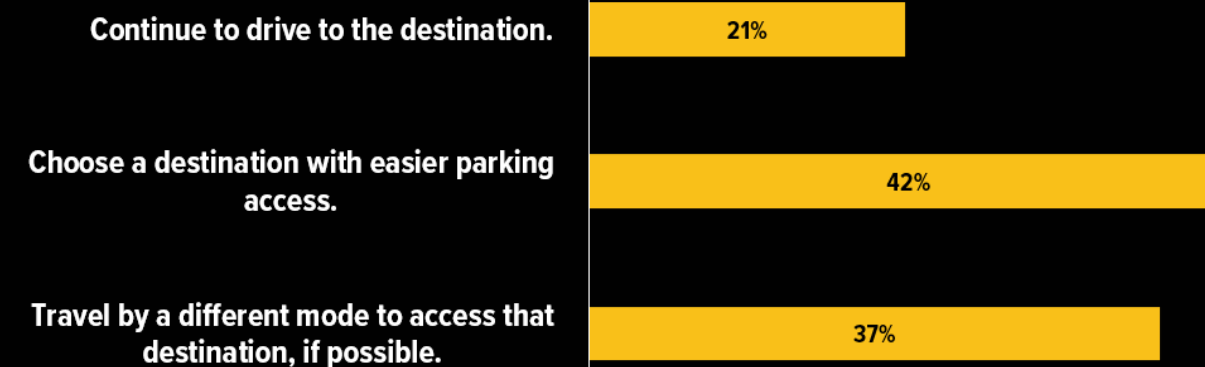
Additionally, over 75% of respondents reported that they have tried to patronize a business and left because they could not find an on-street parking space. Curb access and parking turnover leads to economic prosperity, especially when patrons are provided with multiple ways to access an area.

When using on-street parking, how long is your typical parking session?



Approximately 60% of respondents noted that their typical parking session is up to two hours in length. This rate suggests that on-street parking, when managed up to two hours, serves the majority of parkers using the on-street system. Additional parking sessions over two hours can shift to off-street parking locations to better support the on-street parking turnover and access to the curb.

If I believe that parking is going to be difficult to find when traveling to a particular destination, I am more likely to:



Through CDOT's Biennial Transportation Survey, respondents reported that the ability to find parking is a key factor in determining how to access a destination.

Curb access and space turnover is a critical metric for a successful parking system. A system that is consistently at full capacity is not providing great access. A system that manages demand efficiently encourages users to choose a convenient mode of travel through a curb space that provides access

to cars, bikes, scooters, microtransit, buses, and pedestrians. But if a patron cannot access the curb in an efficient manner, then they will go elsewhere.

The quality of access to the curb far outweighs the quantity of access. More parking spaces does not equal more access. It's the management of those spaces that is key to incentivizing turnover or different utilization.

Interactive Feedback Map

In addition to the Strategic Parking Plan Online Survey, CDOT provided an interactive feedback map where respondents were also asked to provide their feedback on specific areas including accessible and general parking, loading zones, ride share, residential parking by permit, food delivery pickup, electric vehicle parking, and general comments.

Respondents placed 110 pins on the interactive feedback map and included 57 written general comments. Written feedback included the following comments and general themes:

- Greater enforcement in high-traffic areas and areas with significant overflow parking would encourage compliance with parking restrictions and enhance neighborhood livability for residents, businesses, and visitors.

- Residential parking is increasingly more challenging in areas adjacent to South End due to long-term visitor and employee parking. A lack of driveways in nearby residential areas causes increased need for on-street parking and residential permits.
- Circling for parking causes increased traffic congestion and safety conflicts with pedestrians and bicyclists in activity centers. Increased management of curb space can enhance user experience and parking availability.
- South End construction and development creates parking issues in adjacent neighborhoods, such as Dilworth. Residential parking permits are a necessity.
- Need space designated for ride share pick-up and drop-off and loading zones.

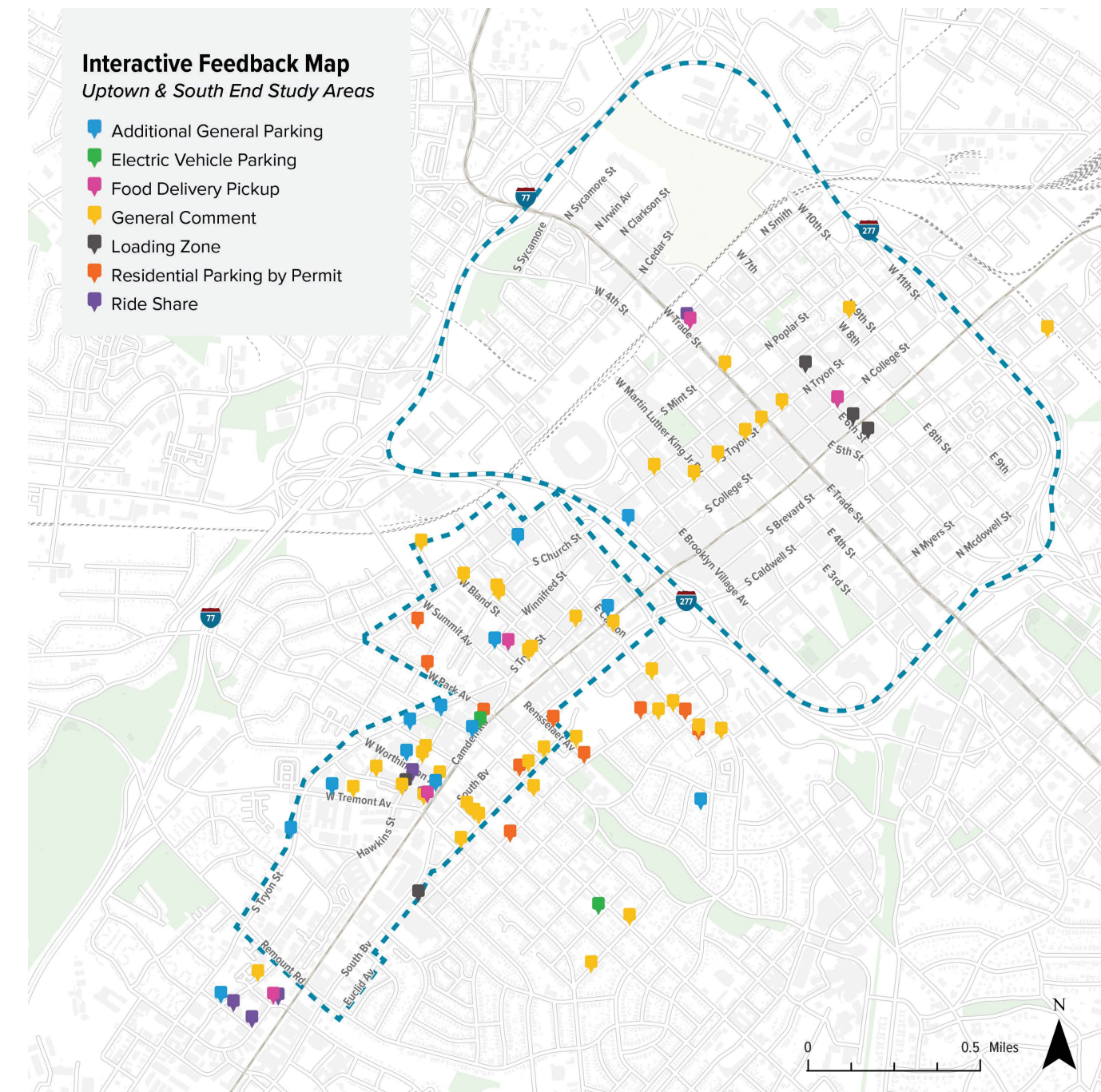
- Need to manage spaces that never turn over.
- It's important to maximize on-street parking along Camden and Hawkins and throughout South End.
- Parking management is needed. On-street parking is being used all day as a light rail park and ride.

The responses included within the Interactive Feedback Map and the Strategic Parking Plan Online Survey have been instrumental in the identification of recommendations for curb management in the City of Charlotte. Please refer to the Additional Resources section of this document for more information on feedback received.

INTERACTIVE FEEDBACK MAP

The Interactive Feedback Map provided survey respondents with the opportunity to identify location-specific needs within the on-street parking system. Through the following 110 pins, respondents provided:

- **General Comments:** 57 pins
- **Additional Parking:** 18 pins
- **Residential Permit:** 13 pins
- **Loading Zones:** 7 pins
- **Ride Share:** 7 pins
- **Food Delivery:** 6 pins
- **Electric Vehicle Parking:** 2 pins



RECOMMENDATIONS

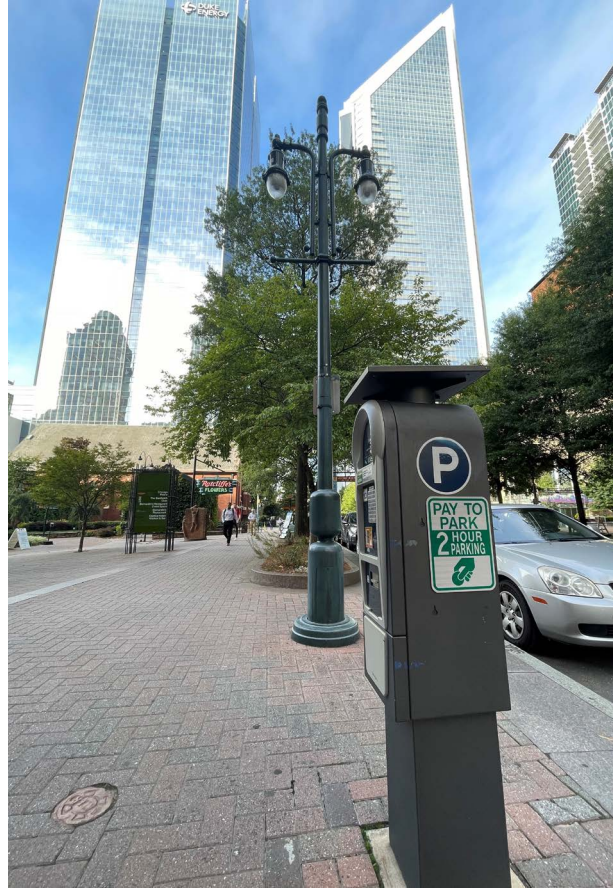
As Charlotte continues to experience rapid growth and development, resulting in increased demand on the curb, the city will need to implement innovative and robust curb management strategies to provide residents, employees, and visitors continued access to the curb.

The recommendations included in this plan are intended to guide the implementation of effective curb management strategies through a management toolbox, including the following primary recommendations:

- **Loading Zones:** Update loading zone typologies to include mixed-use loading and curbside pick-up and drop-off locations and implement additional recommended loading zone locations. Develop a plan to expand the city's loading zone system and improve access for people and goods.
- **Residential Permit Parking (RPP) Program:** Expand access to the RPP Program to manage on-street parking needs in neighborhoods as growth places increased demand on the curb.

Additional recommendations are included as opportunities warranting further consideration for implementation as Charlotte continues to evaluate curb management needs.

- **Hours and Days of Operation:** Expand the parking system within Uptown and South End to operate managed parking from 7:00AM to 10:00PM.
- **System Expansion:** Convert existing unmanaged parking to managed parking, resulting in an additional ~1,220 managed spaces within Uptown (170) and South End (1,050).



SATURDAY PARKING

Based on overwhelming data from peer city research and support from the community, CDOT recommended the expansion of the on-street program to include Saturdays, which became effective through the FY 2023 Adopted Budget. In Spring 2023, CDOT began operating the on-street parking system on Saturdays from 7:00AM to 6:00PM.

STRATEGIC PARKING PLAN RECOMMENDATIONS

Expand Hours of Operation

Recommendation: Expand the parking system within Uptown and South End to operate managed parking from 7:00AM to 10:00PM.

Utilizing observed occupancy data collected in February 2023, the average occupancy rate for Uptown after 6:00PM on a weekday evening and Saturday evening were 68% and 85%, respectively. Similarly, the average occupancy rate for South End after 6:00PM on a weekday evening and Saturday evening were 79% and 95%, respectively.

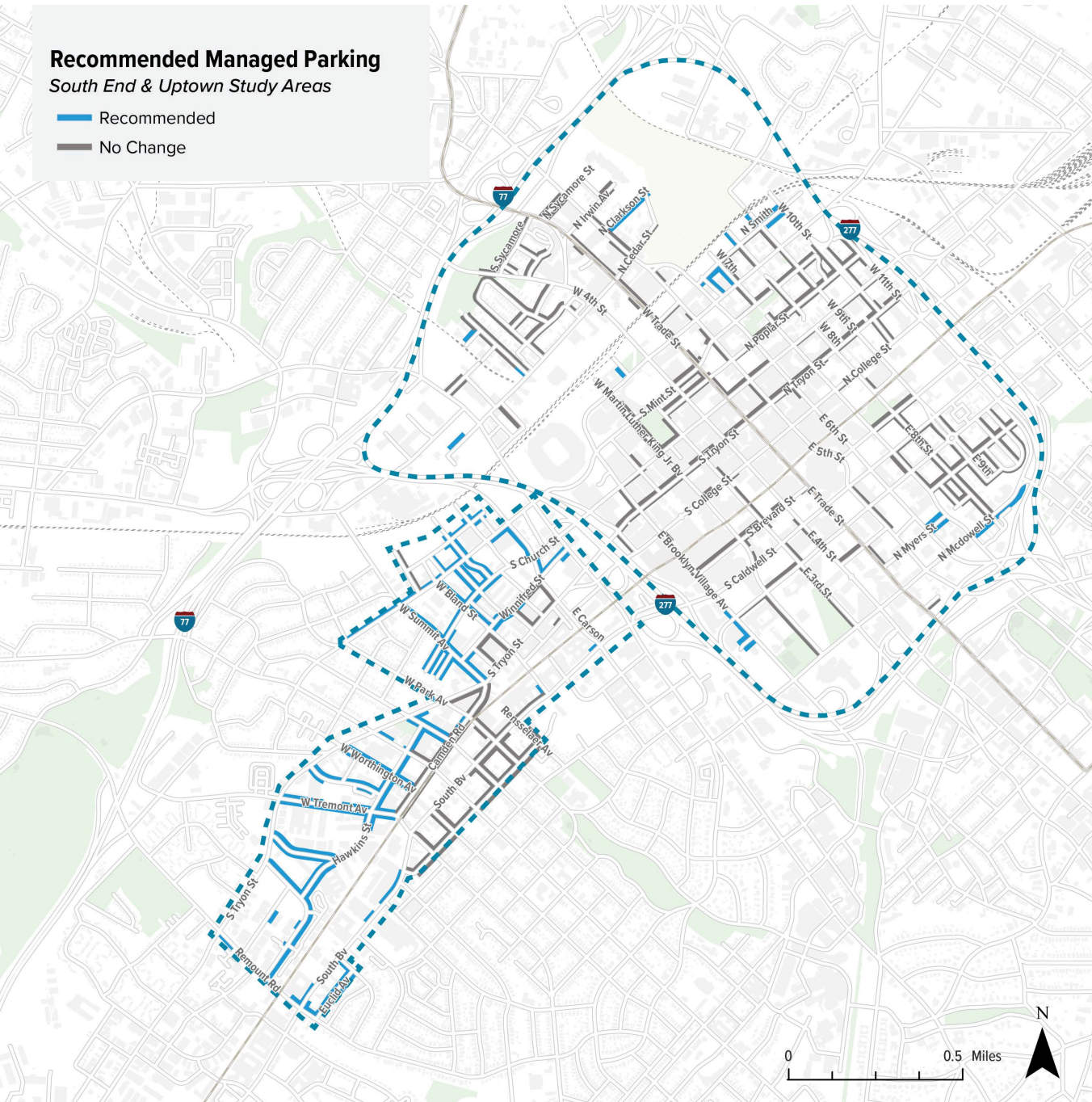
The high demand on Charlotte's curb indicates a need for managed parking during peak periods, including increased hours of operation. Managing the parking system encourages parking turnover and increased access to the curb while encouraging longer-term parking sessions be moved to off-street parking locations.

Additionally, peer city research finds that all twelve peer cities studied operate metered parking until no earlier than 8:00PM, with ten operating until at least 10:00PM. This finding identifies meter operation until no earlier than 10:00PM as an industry standard.

To manage the parking demand generated by land uses in Uptown and South End, CDOT should meter parking until 10:00PM. A metered parking system that ends at 10:00PM includes benefits such as:

- Generating parking turnover throughout the evening,
- Promoting employees to use off-street parking for their long-term parking needs,
- Increasing the availability of short-term parking spaces for customers, and
- Enhancing safety by ensuring people comply with parking regulations.





Implement Managed Parking

Recommendation: Convert existing unmanaged parking to managed parking, resulting in an additional ~1,220 managed spaces within Uptown (170) and South End (1,050).

Recommendation: Assess and implement additional management of on-street spaces upon development or redevelopment.

Observed occupancy and stakeholder feedback indicate a high demand for access to the curb, leading to a need for additional curb management. Through the study of existing conditions and identification of expansion criteria, this study proposes the expansion of 1,220 additional managed spaces.

The Strategic Parking Plan’s identification of potential managed parking locations is determined using the following criteria:

- **Supports Commercial Land Uses:** A curb lane that is adjacent to commercial land uses such as restaurants or retail that require parking turnover,
- **Near a New Development:** A curb lane next to a new development that generates parking demand,
- **Parking Demand is Over 65%:** Parking demand greater than 65% on a block face, or
- **Accommodates Parking Spillover:** A curb lane near land uses that generate parking spillover.

Curb lanes in Uptown and South End that meet one or more of these criteria should be included in the metered parking system. For curb lanes that are not proximate to parking demand generators or are typically used by residents, time limited parking management is recommended.

Supports Commercial Land Uses

Commercial land uses generate high rates of parking demand. Although parking demand generated by land uses can be accommodated using off-street parking, drivers typically prefer using on-street parking that is easy to access and close to a business’ front door. This creates demand for on-street parking by customers that need short-term access and employees that need long-term access. Metered and managed parking controls are needed to generate parking turnover and ensure the curb can serve the needs of businesses adjacent to the curb.

Near a New Development

Curb lanes adjacent to new developments offer the unique opportunity to structure a curb for efficiency. New developments generate parking demand from a source of new curb users. As development densities increase in Charlotte, the demand generated by development will increase the number of users that demand access to the curb. Metered and managed parking are needed in this environment to ensure a single group of users doesn’t monopolize the curb lane. Managing the curb places limits on the time one parker can use the curb and makes the curb available to other users.

Additionally, new developments should serve as a prompt to evaluate management strategies at the curb and develop a curb that serves all users.

Parking Demand is Over 65%

Parking occupancy is one of the metrics of curb efficiency. The utilization rate of a curb is an indicator of the type of management strategy needed to ensure a curb can meet users' needs. Curbs with high occupancy rates (>65 to 85%) typically result in drivers circling an area looking for an available parking space.

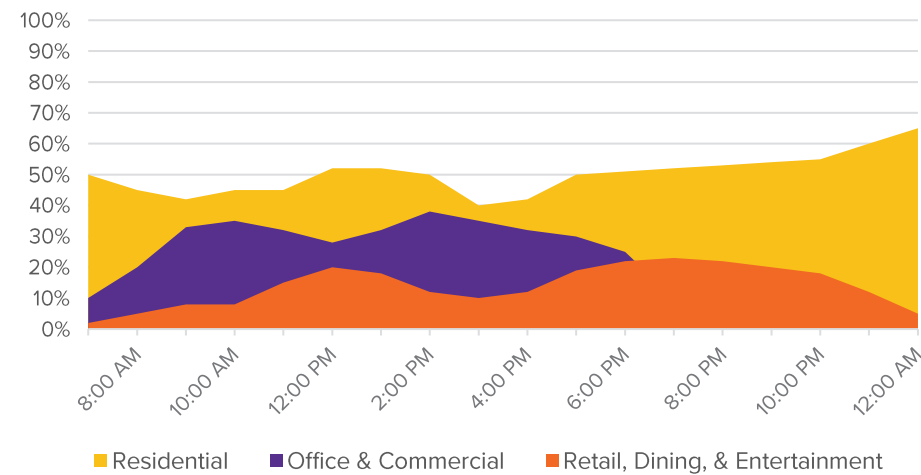
Ideally, parking occupancy should not exceed 85%. This utilization rate ensures that at least one to two parking spaces are available on a block face while maximizing curb utilization. When parking occupancy is low, it indicates that on-street parking is not a high-priority need, warranting alternative curb uses.

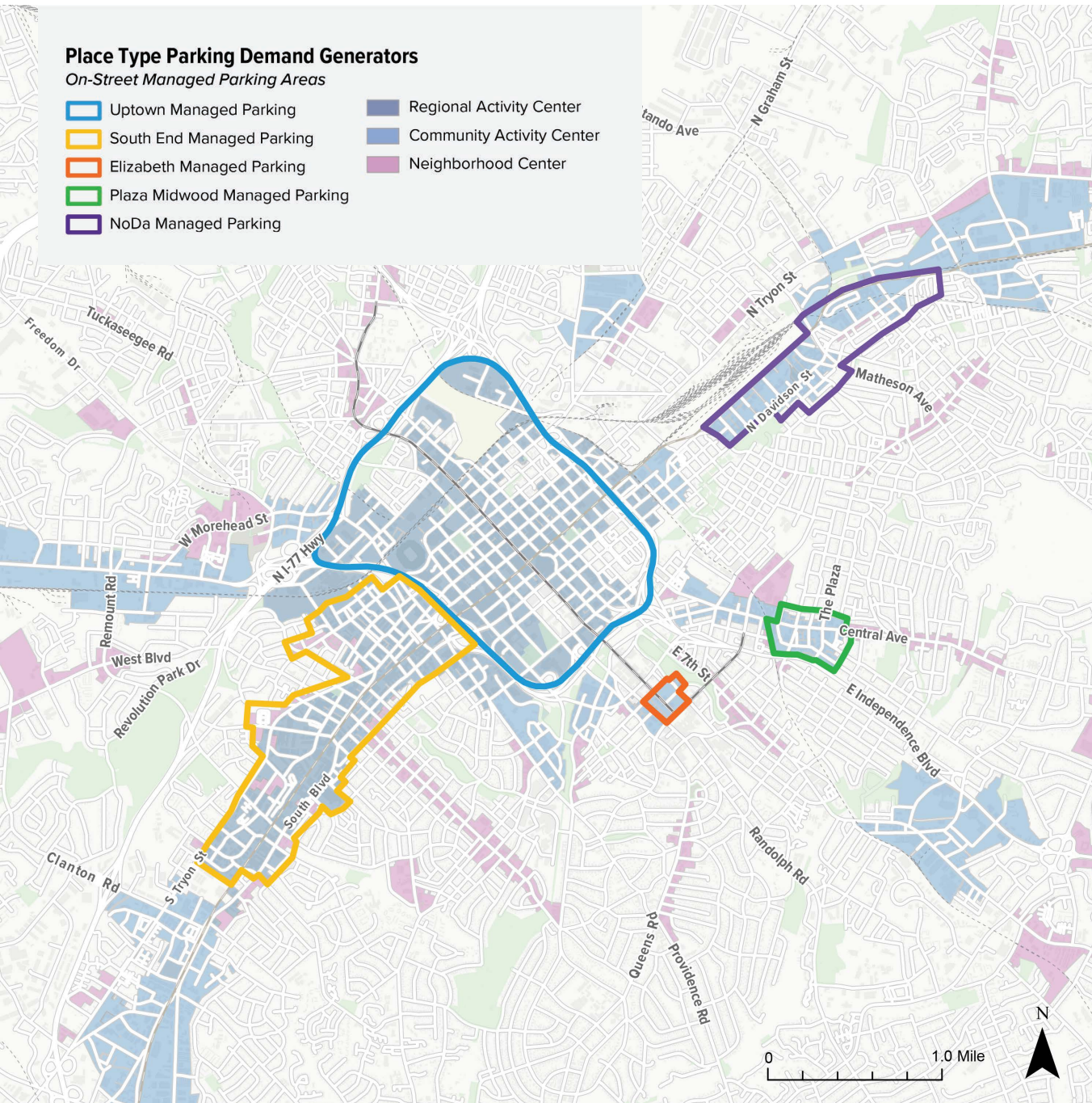
Accommodates Parking Spillover

As municipalities such as Charlotte update development regulations to remove or reduce parking minimums, the importance of effectively managing a limited parking supply is key. By managing and pricing the curb, Charlotte can encourage parkers to use off-street parking to meet their demand for long-term parking and reserve the curb lane for short-term parking users.

Office and residential land uses may generate parking spillover. Unrestricted parking near an office building will likely be used by office employees that park at the beginning of the business day and do not move their vehicles until the end of the day. Similarly, unrestricted parking near a residential building will be used as long-term parking for residents.

Figure 16: Parking Demand by Land Use Type





Update Permit Parking Program

Recommendation: Amend the Charlotte Code of Ordinances to update the required process for Permit Zone application and initiation.

Recommendation: Expand strategies to manage on-street parking needs in neighborhoods as on-site parking is reduced or eliminated, including additional permit parking types.

Recommendation: Implement the recommended programmatic changes for the Residential Permit Parking (RPP) Program (Figure 17).

The City of Charlotte’s On-Street Permit Parking Program includes residential permit parking within Charlotte neighborhoods to ensure that residents have reasonable access to on-street parking near their homes.

Currently, the Parking Permit Program only operates within Uptown. It is recommended that the program expands to include areas adjacent to existing managed parking areas.

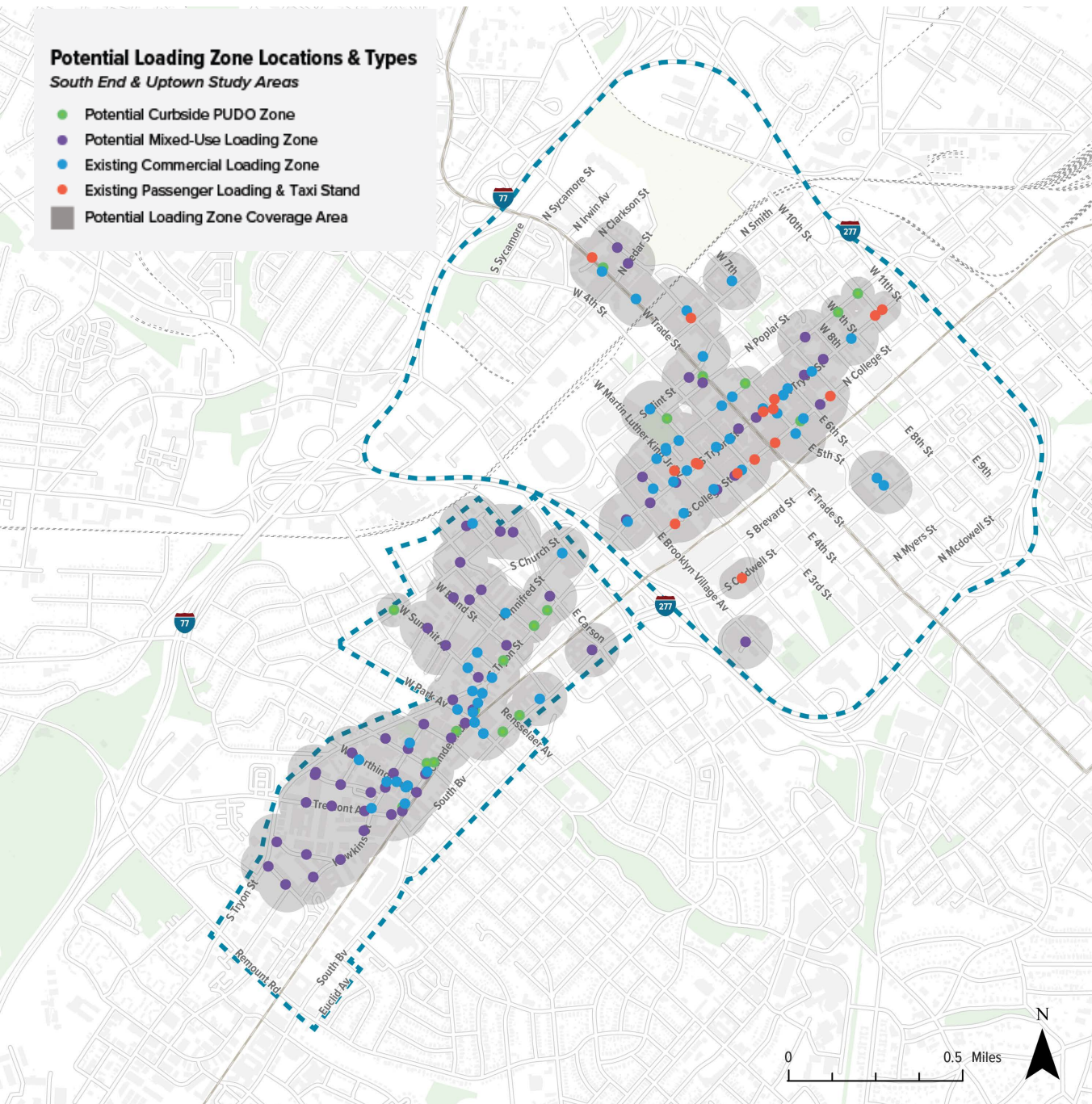
The Place Type Parking Demand Generators map identifies the five managed parking areas and the associated Place Types that generate parking demand. Increased growth and development have placed pressure and spillover parking demand on adjacent residential neighborhoods, specifically in the South End-adjacent neighborhoods of Wilmore and Dilworth.

Updating the City of Charlotte’s permit program to include opportunities for the implementation of permit zones adjacent to our existing managed parking areas will provide additional parking management strategies to encourage greater access at our curb.

An assessment of the existing Parking Permit Program resulted in recommendations to update the process for implementation and the initiation of an RPP (Figure 17).

Figure 17: Permit Parking Program Recommended Changes for Implementation

Category	Existing	Recommended
<i>Residential Permit Quantity</i>	Up to six (6) permits per household	One (1) permit per licensed driver, not to exceed six (6) total permits per household, inclusive of guest permits
<i>Residential Permit Cost</i>	\$30.00 + \$3.50 processing fee	Permit #1: \$35.00 Permit #2: \$40.00 Permit #3: \$45.00 Permit #4: \$50.00 Permit #5: \$55.00 Permit #6: \$60.00 + \$3.50 processing fee for all permits
<i>Guest Permit Quantity</i>	Up to two (2)	Up to two (2), not to exceed six (6) total permits per household, inclusive of residential permits
<i>Guest Permit Cost</i>	No cost	Guest permit cost will be determined based on total permit quantity and will reflect the rate structure of Residential Permits.
<i>Temporary Permit Quantity</i>	Unlimited daily permits	Unlimited daily permits
<i>Temporary Permit Cost</i>	\$3.00 + \$3.50 processing fee	\$3.00 + \$3.50 processing fee



Expand Curbside Access

Recommendation: Update loading zone typologies to include mixed-use and curbside pick-up and drop-off locations and implement identified locations as demand and utilization increases.

Recommendation: Further evaluate opportunities for loading zone program expansion to consider the process for request, implementation, and enforcement.

Recommendation: Amend the Charlotte Code of Ordinances to update loading zone regulations and include curbside loading options.

There are multiple types of access needs along the curb. These needs range from goods and services to people and mobility. As technology continues to drive innovation and mobility, demand on the curb is created through increasing e-commerce delivery, transportation network companies (TNCs) pick-up and drop-off, and food and service delivery pick-up and drop-off.

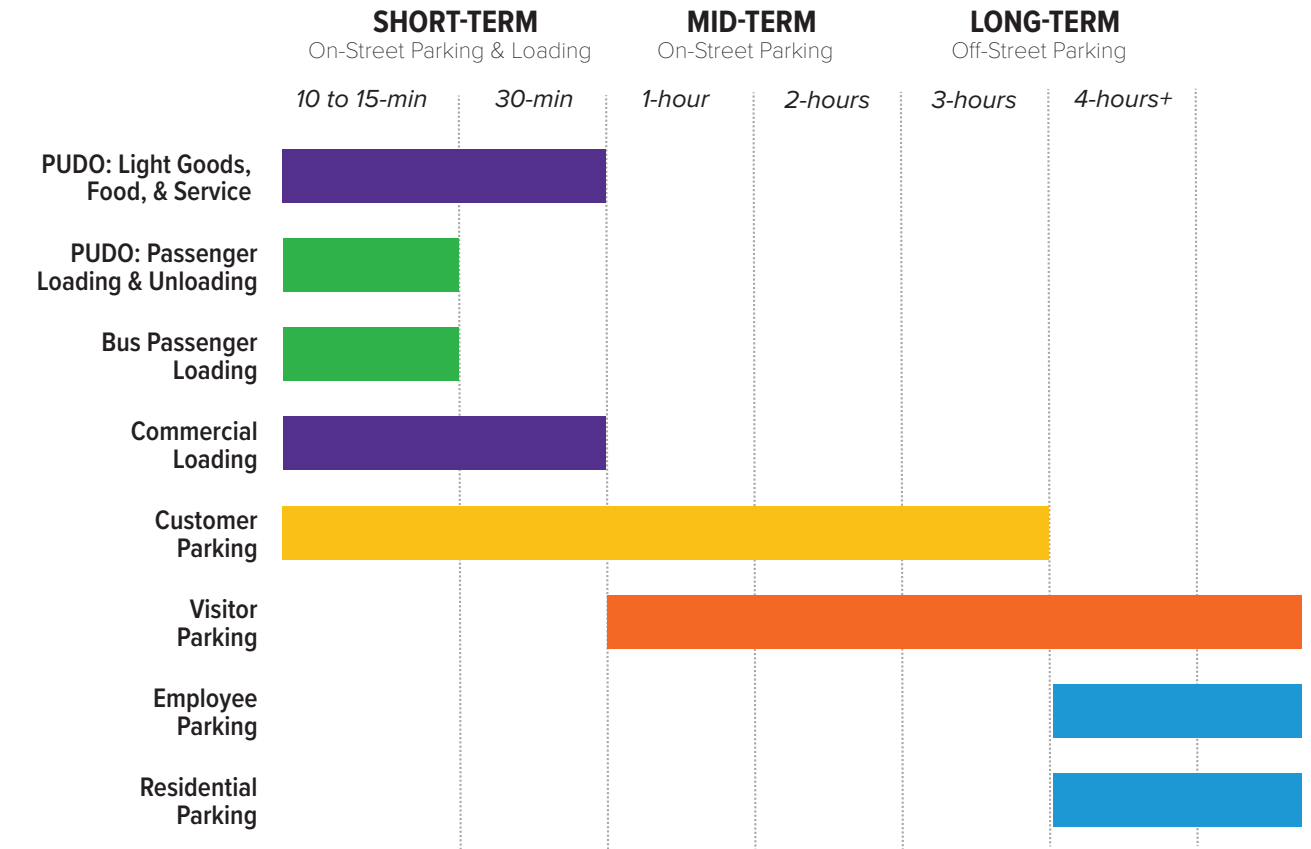
Charlotte’s current loading zone coverage in Uptown and South End is primarily dedicated to commercial loading zones, taxi stands, and designated passenger loading zones. This segmentation of curbside loading creates a higher likelihood of misuse, with short-term pick-up and drop-off occurring in commercial loading zones and commercial loading occurring in travel lanes.

To address the evolving needs at the curb based on parking and loading type, time, and desired location, as shown in Figure 18, Charlotte should begin transitioning commercial loading zones to mixed-use loading zones wherever possible. Mixed-use loading zones, which were recently implemented in the City of Raleigh, provide space for commercial loading, short-term pick-up and drop-off of goods and services, and passenger pick-up and drop-off.

Additionally, Charlotte should formalize curbside pick-up and drop-off (Curbside PUDO) locations that were implemented temporarily in response to the increase in delivery needs due to COVID-19. These curbside zones can serve short-term pick-up and drop-off of people, light goods, and light services.

The recommendations illustrated on the map serve as potential locations for the implementation of a curbside PUDO or mixed-use loading location. This map is intended to serve as an approximation of need and would require further site specific evaluation upon implementation. Furthermore, loading zones are intended to serve multiple uses and implementation would reflect demand and utilization at the block level.

Figure 18: Parking & Loading Type, Time, & Desired Parking Location



ADDITIONAL RECOMMENDATIONS

Per the findings of the Strategic Parking Plan, the following recommendations warrant further consideration for implementation as Charlotte continues to evaluate curb management needs.

These recommendations include near-term, mid-term, and long-term opportunities for the advancement of Charlotte's curbside planning and operations.

Curbside Mobility & Management

Recommendation: Develop a dynamic curb management strategy to manage and create flexible curbside space for different uses, including loading and unloading of people and goods and the storage/parking of all types of vehicle and mobility options.

Recommendation: Integrate multimodal mobility planning with on-street parking and curb management planning to effectively plan for access along Charlotte's curb.

Recommendation: Integrate curb management goals and policies into Charlotte's Urban Street Design Guidelines and Land Development Standards Manual.

Recommendation: Plan for and partner on the implementation of curb management strategies at CATS mobility hubs.

Recommendation: Assess existing curbside and right-of-way programs such as the e-scooter program, bikeshare program, food truck program, valet program, and the street vendor program to align with strategic mobility goals.

Recommendation: Plan to implement curb management strategies upon new development in Uptown and South End.

On-Street Parking Program & System

Recommendation: Expand paid parking on Saturdays within all managed parking areas for consistency with the managed parking system.

Recommendation: Expand hours of operation to 10:00PM within all managed parking areas for consistency with the managed parking system.

Recommendation: Evaluate the on-street parking program to identify needs and be responsive to system growth.

Recommendation: Ensure that the on-street parking operation has adequate staffing, equipment, and resources as necessary to effectively and efficiently manage the parking system.

Recommendation: Update Charlotte's on-street meter citation to \$35.00 to reflect industry best practices.

Recommendation: Conduct a signage inventory and update to streamline and modernize Charlotte's on-street parking, loading, and curbside signage. Implement the guidance of the 11th Edition of the MUTCD on all new or replacement signage.

Recommendation: Evaluate Charlotte's on-street parking citation to consider a separate and increased permit zone citation.

Recommendation: Evaluate Charlotte's on-street metered fee structure to consider increasing the hourly rate to \$2.00/hr. and consider implementation of progressive or zone-based pricing, encouraging greater turnover and access at the curb.

Recommendation: Consider changes to on-street parking time limits to provide greater flexibility in parking and access.

Recommendation: Evaluate the Permit Parking Program for opportunities to expand and include areas surrounding Activity Centers and/or impacted by demand for on-street parking.

Recommendation: Evaluate opportunities for additional parking and curb management within South End, Uptown, NoDa, Plaza Midwood, and Elizabeth, as well as other activity centers and corridors.

Curbside Access & Loading

Recommendation: Assess loading zone hours of operation.

Recommendation: Evaluate implementation opportunities for curbside "flex" zones that change with time of day and day of week peak use.

Recommendation: Evaluate opportunities to manage and permit curbside loading activities, including additional technology solutions.

Recommendation: Update and replace taxi stand and passenger loading zones with curbside pick-up and drop-off zones.

Recommendation: Update the Charlotte Code of Ordinances to require the use of hazard warning lights when utilizing a loading zone.

Technology & Innovation

Recommendation: Evaluate technology options to provide additional support and expertise in the analysis, review, and enforcement of the on-street parking and curbside system.

Recommendation: Utilize technology to manage and incentivize desired uses and access to curb lanes in activity centers.

Recommendation: Coordinate across departments and within CDOT to implement the Open Mobility Foundation's Curb Data Specification and Mobility Data Specification.

Recommendation: Digitize the on-street parking and curbside inventory, including locations and type of on-street signage.

Recommendation: Partner to develop an integrated app that provides users access to multimodal transportation options.

Recommendation: Plan and prepare for new mobility and shared mobility implementation, including the deployment of autonomous and connected technology.

Off-Street Parking

Recommendation: Consider opportunities to assess off-street parking occupancy and utilization and coordinate with parking providers to enhance long-term parking access for employees and visitors.

Recommendation: Partner to develop a wayfinding plan that guides parkers to off-street parking opportunities, freeing additional curb access for short-term uses.

Sustainability

Recommendation: Partner with the City of Charlotte's Sustainability team to develop a citywide electric vehicle charging station (EVCS) policy and/or strategy and evaluate opportunities to collocate EVCS within the managed on-street parking system.

Recommendation: Partner on the development and implementation of e-mobility hubs that create hubs for transit, micromobility, shared-mobility, microtransit, and electric vehicle charging for increased transportation access and choice.

Development & Operations

Recommendation: Assess pavement striping plan to include hatched striping near intersections and driveways to designate no parking zones and update the Charlotte Land Development Standards Manual (CLDSM), as necessary. Striping "No Parking Zones" near intersections can help to improve visibility for pedestrians, bicyclists, and automobiles.

Recommendation: Consider updating the CLDSM to reduce the on-street parking space length requirement, where possible, from 22' to 20', in accordance with industry trends and best practices.

Recommendation: Work with development community to continue to identify solutions for the impact of construction parking surrounding development sites.

Education & Engagement

Recommendation: Develop educational resources that provide guidance on parking and curbside regulations and restrictions.

Recommendation: Partner with stakeholder groups to continue gauging feedback on the effectiveness of the on-street parking and curb management operation.

NEXT STEPS & IMPLEMENTATION

The Strategic Parking Plan outlines the first steps in responding to an increased demand on Charlotte's curb and serves as the foundation for our next steps and goals related to the on-street parking and loading system, curb management strategies, and transportation demand management.

This document serves as a guide to outline the existing conditions of Charlotte's on-street parking system and forms the recommendations for near-term action, including the following recommendations: update the hours of operation, expand the managed parking system, update the parking permit program, and expand curbside loading access.

Charlotte will then work to consider additional recommendations provided within the Strategic Parking Plan with the goal of balancing competing demands for access, including loading and parking needs, with the safe and comfortable movement of people and goods.



This report was prepared by the Charlotte Department of Transportation in association with Kimley-Horn & Associates.

Special thanks to Charlotte Center City Partners for their partnership in stakeholder outreach and engagement.

DISCLAIMER: *The maps and graphics provided within this report are for illustrative purposes only and do not supersede existing rules and regulations. Please refer to the Charlotte Code of Ordinances or contact the Charlotte Department of Transportation for regulatory guidance and information.*

Image & Graphic Sources:

- *Example Main Street Section, Vector Icons, Softscape from the Noun Project (Page 22)*
- *Charlotte Skyline, Shutterstock 1314733124 (Page 26)*
- *South End Aerial Rendering, Lowe's, 2023 (Page 34)*
- *Austin Skyline, Adobe Stock (Page 54)*
- *Denver Skyline, City of Denver Website (Page 54)*
- *Columbus Skyline, Adobe Stock (Page 55)*
- *Houston Skyline, Adobe Stock (Page 55)*
- *Raleigh Skyline, City of Raleigh Website (Page 55)*
- *PUDO Zone Signage Example, District Department of Transportation (Page 77)*

All other images provided by the Charlotte Department of Transportation.





ADDITIONAL RESOURCES

- A. Resource Guide..... 82
- B. Benchmark Study 114
- C. Outreach Summary..... 128

RESOURCE GUIDE

PUBLIC RIGHT-OF-WAY ANATOMY

Typically, roadways have a common anatomy that is comprised of the elements detailed below. The public right-of-way is defined as the area on, below, or above a public roadway, highway, street, public sidewalk, alley, waterway, utility easement in which the municipality has an interest, or the public space between land uses. When evaluating the public right-of-way, it is important to understand which existing elements shape the public experience and what opportunities are available to enhance the public experience by reshaping the public right-of-way.

Center Space

Center space is a critical component of a street because it provides the space for important safety elements like turn lanes and “islands” to allow a pedestrian refuge midway across a street. The center space also provides opportunities for green space and trees, thereby supporting Charlotte’s tree canopy goals, helping calm traffic, and creating a shadier/cooler environment.

Travel Lanes

Travel Lanes provide space for motor vehicle and (in some cases) bicycle travel. The number of travel lanes for arterials will generally range from 2 to 6 lanes.

Bike Facility

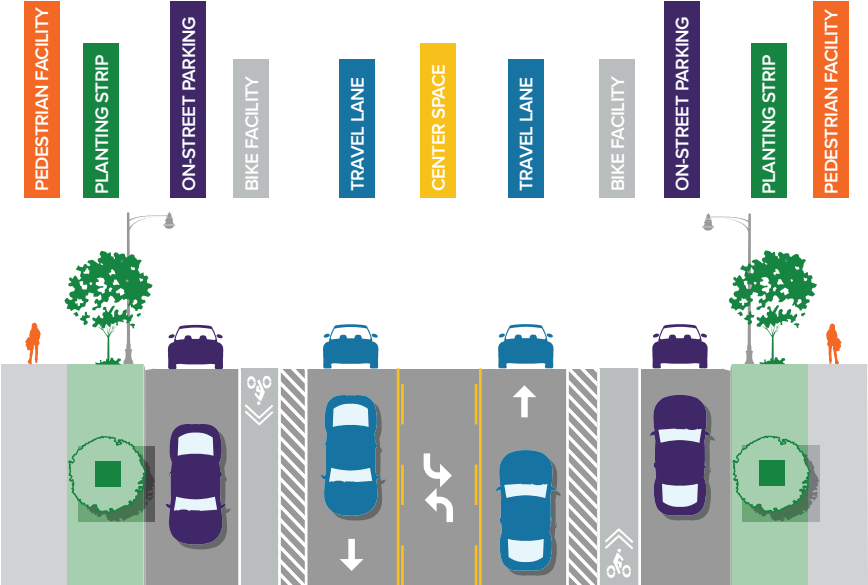
The Charlotte Streets Map incorporates several different categories of bicycle facilities based on adopted policy guidance. Some types of bicycle facilities require more (or less) space than others.

Curb and Gutter

The Streets Map cross-section for most arterial streets includes 2.5’ for curb and gutter. Parkways may or may not include curb and gutter, and more typically include a shoulder.

On-Street Parking

Certain streets, such as main streets and some avenues, will include on-street parking to provide for an additional buffer for pedestrians and to support adjacent land uses.



Planting Strip/Amenity Zone

A planting Strip or a landscaped amenity zone creates a buffer between the pedestrian space and the adjacent roadway and provides space for trees and other street furnishings.

Pedestrian Facility

The two types of pedestrian facilities are sidewalks and shared use paths (shared with bicyclists).

BASIC BUILDING BLOCKS

Cities and towns often configure their urbanized areas in a grid pattern composed of blocks. When it comes to developing an implementable curb management plan, it’s important to evaluate curb uses at the block and block face levels, with an understanding that the composition of blocks determines the function of a corridor.

Block

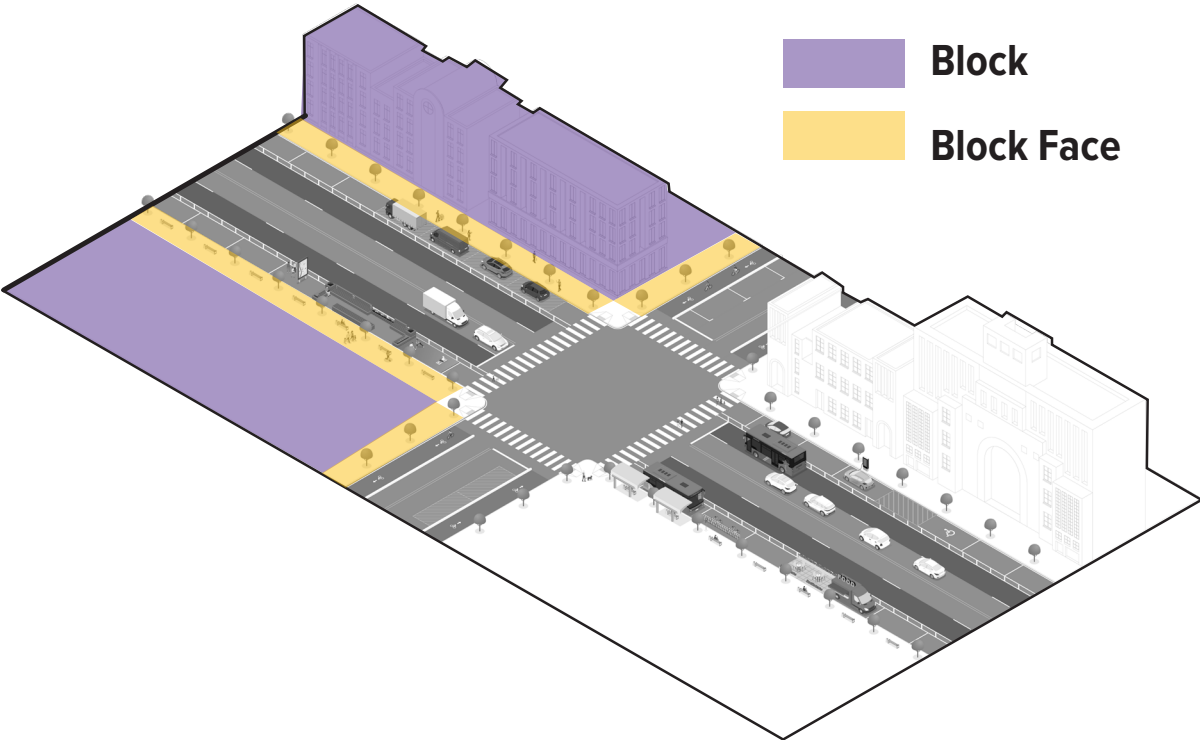
A measurement of space, typically between streets or at a prescribed distance. A block may start at one intersection of two streets and end at the next intersection of two streets. A block may also be considered as the four block faces surrounding a building or group of buildings.

Block Face

One side of a block, typically between two intersections of other streets, excluding alleyways.

To effectively develop a curb management strategy, cities should evaluate the existing conditions of key corridors, determine the priorities reflected by their existing conditions, establish a priority system based on the city’s desired future priorities, and then reconfigure curb lanes to align with the city’s priority system.

This requires a systematic accounting of different curb uses and their respective impacts at the block level. Simply put, an effective and implementable curb management strategy is built from the block up.



UNDERSTANDING ON-STREET PARKING

Unmanaged Parking

Unmanaged parking is free, non-time limited on-street parking that is not enforced by the city.

Unrestricted Parking

Unrestricted parking is free, unmanaged, & unrestricted on-street parking that is not time limited.

Managed Parking

Managed parking is on-street parking that has restrictions on the use of parking spaces. Typically, managed parking is paid, time limited, or both. An additional form of managed parking is permit parking. The primary purpose of managed parking is to generate parking turnover and enhance the availability of on-street parking.

Paid Parking

Paid, or metered parking, requires a parker to pay for a parking session. Paid parking transactions can be conducted through meters, mobile apps, or in-vehicle dashboards.

Time limited Parking

Time limited parking is managed parking that allows parking in a space for a set amount of time. Most time limited parking within Charlotte is 2 hours.

Permit Parking

Permit parking is managed parking with parking restrictions that can include time of day & day of week. The primary permit parking types within Charlotte are residential permit and stadium permit parking.

Other Parking Types

Other types of parking within Charlotte are daytime restricted parking (parking not allowed during certain daytime hours), unrestricted residential area parking, and parking that is currently under construction.

ACCESSIBILITY

Accessibility requirements in the US are governed by the Americans with Disabilities Act (ADA) of 1990. ADA regulation applies to transportation and outlines reasonable public accommodations to people with disabilities. The ADA was amended in 2010 to include additional design guidance standards and governs new construction and alterations starting in 2012.

Generally, the ADA outlines regulations for businesses, states, municipal government, and labor organizations with more than 15 employees. While the 2010 Americans with Disabilities Act (ADA) Standards for Accessible Design do not specifically lay out technical requirements for on-street ADA spaces, the ADA does apply to government entities and managed on-street public parking.

Americans with Disabilities Act (ADA) Transition Plan

The city's ADA Transition Plan, developed in accordance with the requirements of Section 504 of the Rehabilitation Act of 1973 and Title II of the ADA, provides guidance for all city-owned facilities, including public rights-of-way, services, programs, and activities to comply with federal and state accessibility law. The city is committed to providing equal access to its public programs, services, facilities, and activities for all residents, including those with disabilities.

ADA Parking

According to the Public Rights of Way Accessibility Guidelines (PROWAG) design document, one ADA space should be available for every 25 spaces, up to 100 spaces. For a block perimeter with more than 200 spaces, four (4) percent should be dedicated ADA spaces.

Curb Ramps

The PROWAG design document outlines curb ramps can be either perpendicular or parallel, depending on the orientation of the on-street parking space. They must be in line with the direction of traffic and should have landings at the top and the bottom of each ramp. On-street ADA ramps should have a minimum width of 36 inches and a maximum running slope of 8.3 percent. The ADA Accessibility Survey also outlines more information regarding clear space at the "top" of a ramp, flush transitions, gutter slope, cross slope, and other technical requirements.

PARCS Regulation

Parking Access Revenue Control Systems (PARCS) technology, such as multi-space meters, should be designed to meet ADA regulations for digital screens. Based on ADA regulations, multi-space meters installed in an on-street parking system can not exceed a maximum height of 48 inches from the ground to the top of the screen. This height allows persons in wheelchairs to reach the screen while seated.

ON-STREET PARKING MANAGEMENT

Typically, curb lanes are tasked with meeting the needs of multiple user groups. To enhance the curb's ability to accommodate the diverse needs of pedestrians, bicyclists, transit riders, and motorists, it's important to effectively manage the curb. For curb lanes that provide managed on-street parking, a key feature to curb lane efficiency is generating parking turnover.

Parking Turnover

Parking turnover is the rate of use of a parking space. It is calculated as the number of vehicles parked in a space over the course of the day. Unmanaged parking spaces, that offer free, non-time limited parking do not incentivize people to manage their parking usage. This results in low parking turnover rates and extended vehicle storage times at the curb. Alternatively, time limited and metered parking results in high turnover rates. People that pay for parking use the curb lane for the amount of time they have paid for, and then leave the parking space, making it available for additional users. Parking time limits also promote parking turnover by setting the maximum amount of time for a single parking session. On-street parking maximum time limits and payment pricing methodology help to shape parking behavior, leading to increased efficiency at the curb.

$$\text{Parking Turnover} = (\text{Count of Vehicles} \div \text{Time Period}) \div \text{Space Count}$$

The parking turnover rate takes into consideration the number of spaces within a block face and gives the ability to understand parking demand over a period of time.

Occupancy Thresholds

Parking occupancy is one of the metrics of curb efficiency. The utilization rate of a curb is an indicator of the type of management strategy needed to ensure a curb can meet users' needs. Curbs with high occupancy rates (>65 to 85%) typically result in drivers circling an area looking for an available parking space.

Ideally, parking occupancy should not exceed 85%. This utilization rate ensures that at least one to two parking spaces are available on a block face while maximizing curb utilization. When parking occupancy is low, it indicates that on-street parking is not a high-priority need, warranting alternative curb uses.

- Below 50%: Consistent on-street occupancies below 50% indicate lower parking utilization and will require less management.

- Between 50 and 65%: Consistent on-street occupancies between 50% and 65% suggest that parking is relatively available but still utilized. Moderate management is necessary to encourage turnover.
- Above 65%: Consistent on-street occupancies greater than 65% reflect high-utilization. This leads to greater difficulty for users to find parking and suggests inefficient management. Higher levels of parking management are needed at this level.

PAYMENT PRICING METHODS

How do payment pricing methods impact curb efficiency?

Like all tools, when shaping parking behavior, it's important to use the right tool. Payment pricing methods offer different strategies to shape parking behavior, and the results of each method can differ. The most common payment pricing methods include Flat Rates, Dynamic Pricing, Zone-Based Pricing, and Tiered Pricing.

Flat Rates

Flat Rates are rates that do not change based on parking demand, duration, or location. This pricing strategy is prevalent in older metered parking systems, primarily because of the limited capabilities of older meter technology. Flat Rate pricing charges people for the parking session but is typically combined with maximum parking limits to generate parking turnover.

Dynamic Pricing

[Case Study: San Francisco, CA \(page 98\)](#)

Dynamic Pricing, also known as demand-based pricing, is a pricing method that allows parking rates to change based on the time and location of increased parking demand. Prices are higher in areas during times when parking demand is high and lower in areas where or at times when parking demand is low.

Dynamic pricing intends to disperse parking demand and ensure one to two parking spaces are available on each block face. People who are sensitive to price and are willing to walk further to their destination will park in low-demand areas where rates are lower, whereas people who are not sensitive to price or are unwilling to walk longer distances pay a higher price for premium parking spaces. Dynamic pricing is also combined with maximum time limits to generate parking turnover.

Zone-Based Pricing

[Case Study: Seattle, WA \(page 99\)](#)

Zone-Based Pricing is a pricing method that charges higher rates in different zones throughout a city. Zone-Based Pricing is a form of Dynamic Pricing; however, parking rates are uniformly applied within a zone.

Parking rates in downtowns and high-demand areas are typically higher than in areas with lower parking demand. Zone-based pricing can also use a dynamic pricing component to adjust parking prices by time of day. Rather than seeking to disperse parking from high-demand to low-demand block faces, zone-based pricing serves as a form of congestion pricing that charges drivers for parking in certain areas during the morning, mid-day, and evening time periods. Zone-based pricing is also combined with maximum time limits to generate parking turnover.

Tiered Pricing

[Case Study: Austin, TX \(page 100\)](#)

Tiered Pricing is a pricing method that generates parking turnover by increasing the hourly rate for parking as the duration of a parking session increases. Simply put, in a tiered pricing model, the longer you stay, the more you pay. Under this pricing method, a parker is allowed to park at the curb for an extended period of time, however, each additional hour of parking costs more than the previous hour. Parking turnover is generated by price rather than maximum time limits, although parking programs using this method have longer maximum time limits (typically 5-hour to 10-hour maximum limits).

PAYMENT SYSTEMS

In a managed curb environment, ensuring parkers have multiple options to comply with parking rules and regulations is a critical part of fostering order and efficiency. To create a culture of parking compliance, it's important to educate parkers on designated places to park, update signage to ensure it is easy to understand and reflects the current uses of the curb, and provide multiple payment options for paid parking.

One key component to managing a paid parking environment is determining how parking compliance is verified. The menu of parking payment mechanisms available are:

- PARCS Equipment
- Pay-by-Space
- Pay-by-Plate
- Pay-by-App
- Text-to-Pay
- In-vehicle Dashboard

PARCS Equipment

Parking Access Revenue Control Systems (PARCS) equipment is a tool to manage permits, on- or off-street parking, and simplify enforcement. PARCS equipment can connect hardware and software tools to create an

effectively managed parking environment. With the use of PARCS equipment, real-time data is available to help cities understand how parking systems perform and develop strategies to address any challenges.

There are two main types of PARCS equipment for on-street parking needs:

Single-Space Meters

Single-space meters are on-street parking hardware solutions that manage a single parking space. Oftentimes, single-space meters only accept coins. More advanced single-space meters can accept credit cards in addition to coins and connect to a back-office management system. Back-office systems are important because they are able to communicate real-time performance information and generate reports for greater insight into the system's operations. Some single-space meters are deployed on dual-head meters to decrease the infrastructure required for metering.

Multi-Space Meters

Multi-space meters are on-street hardware solutions that manage multiple spaces (approximately 10 - 20 spaces) using one (1) parking meter. Multi-space meters can typically accept coins, credit cards, and in some cases, bill notes. Multi-space meters that accept bills are known as bill note acceptors (BNAs). The

parking industry is moving away from BNAs in lieu of lower operational costs and higher efficiency credit card-only meters. Multi-space meters are typically connected to back office systems to provide real-time data. Multi-space meters can either be used for pay-by-space or pay-by-plate systems.

Pay-by-Space

[Additional Information \(page 109\)](#)

Pay-by-space requires parkers to pay for parking at a particular space. The space number is used to verify that a paid parking session is occurring at a particular location. Pay-by-space environments can interact with single-space meters, multi-space meters, or mobile apps. In pay-by-space environments with single-space meters, a parking session is tied to a particular meter number. Parkers can use coins or credit/debit cards to pay for parking at the meter and the single-space meter designates the amount of time available at the meter.

Pay-by-Plate

[Additional Information \(page 108\)](#)

Pay-by-Plate requires parkers to pay for parking using their license plate as their parking credential. Once a parking session begins in a pay-by-plate environment, the license plate is designated as authorized to park within a given parking zone. Pay-by-plate environments can interact with multi-space meters and mobile apps.

Parkers can use coins or credit/debit cards to pay for parking at a multi-space meter but must ensure that their parking transaction uses the correct plate number. Pay-by-plate systems are enforced using license plate recognition technology.

Pay-by-App

[Case Study: Atlanta, GA \(page 101\)](#)

Pay-by-app has emerged as a preferred contactless payment technology for on-street and off-street parking. In a mobile app system, parkers can observe the mobile zone on signage from their vehicle, begin their parking session from their phone, ensure that their license plate information is accurate, and select between different account options. As pay-by-app technology continues to become the preferred payment option, cities have begun offering multiple app choices in an open

platform environment. Offering multiple app options allows customers to interact with a parking system without having to download a new app when they visit a city.

Text-to-Pay

[Case Study: Virginia Beach, VA \(page 102\)](#)

Text-to-pay is a form of contactless payments that allows a parker to pay for a parking session via their phone. In a text-to-pay environment, a parker can text a number that generates a link to begin a parking session. The parker enters in their vehicle and payment information to initiate the session. Using text-to-pay, parkers receive an alert before the end of their session and can extend their session up to the maximum time limit. This offers similar benefits to paying via a mobile app, but doesn't require the parker to download an app to their phone.

In-Vehicle Dashboard

[Additional Information \(page 110\)](#)

An emerging form of parking session payment is payment through a vehicle's dashboard. Vehicles equipped with an infotainment center can make a payment through an in-vehicle app. This form of payment connects the vehicle to the parking session and can provide multiple unique identifiers for a session. Some unique data that can be obtained via in-vehicle dashboard payments include a vehicle's identification number (VIN), a vehicle make and model, and vehicle origin and destination information. As parking technology and parking pricing advances, in-vehicle dashboard payments help to enable congestion pricing which charges drivers for the amount of vehicle miles traveled and sets pricing based on the vehicle type.

System Comparison

	PARCS Equipment	Pay-by-Space	Pay-by-Plate	Pay-by-App	Text-2-Pay	In-vehicle Dashboard
Efficiency	Low	Low	High	High	Moderate	High
Accuracy	Moderate	Low	Moderate	High	High	High
Ease of Use	Moderate	Moderate	Moderate	High	Moderate	Moderate
Compliance Rate	Low	Moderate	High	High	High	Moderate

REVENUE MANAGEMENT

On-street parking systems can serve as a catalytic force for economic development. Cities are often challenged to evaluate how generated revenues from on-street parking systems are being used. Traditionally, parking revenues have been housed in a city’s General Fund.

However, modern parking systems have begun to use parking revenues as a funding source for neighborhood improvement. The practice of reinvesting parking revenues into the neighborhoods where the revenue is generated helps to increase customers’ willingness to pay and residents’ approval of the on-street parking system.

Mobility Nexus

Using parking revenue to enhance the mobility system is a unique benefit of a municipal parking program. Cities have the ability to generate substantial amounts of revenue to support economic development, achieve mobility goals, and advance sustainability. When deciding how to use parking revenues, it’s essential to identify a nexus between the metered parking system and the expected impact of strategic

investments. The concept of a mobility nexus is to ensure that revenue generated by the mobility system is invested back into the mobility system rather than being used for non-mobility-related goals. The connection prioritizes investments in transit, active transportation, and parking improvements over non-mobility investments such as stadiums or development subsidies.

Virtuous Cycle

[Additional Information \(page 111\)](#)

The Virtuous Cycle of Parking was coined by Donald Shoup in his industry-alerting publication *The High Cost of Free Parking*. This cycle calls for the reinvestment of parking revenues into neighborhood improvements which ultimately leads to additional revenue generation. The three (3) steps of the Virtuous Cycle of Parking are:

1. A portion of meter revenue pays for public improvements.
2. Public improvements attract more visitors
3. Visitors pay for curb parking, and more revenue is available for more public improvements.

Parking Enterprise Fund

[Additional Information \(page 112\)](#)

A Parking Enterprise Fund is an account, separated from a city’s General Fund, that is used to house revenues generated from a city’s municipal parking program.

The purpose of a Parking Enterprise Fund is to create a self-supporting parking enterprise system, allowing for separate accounting for the operation of municipal parking facilities throughout the city. Separation of municipal parking activities provides a mechanism to separately plan, budget, track, and record parking revenues and expenses. Additionally, separated municipal parking funds allow more efficient tracking of projects and operations that are being funded through the Parking Enterprise Fund or those undergoing the city’s development process.

Parking Benefit Districts

[Additional Information \(page 103\)](#)

Parking Benefit Districts (PBDs) are defined geographic areas, typically in downtown areas or along commercial corridors in which a portion of the revenue generated from on-street parking facilities within the district is returned to the district in the form of neighborhood improvements or services.

PERMIT PARKING PROGRAMS

Managed parking can be used to provide parking for a limited user group. As demand for the curb increases, it is critical to ensure that people can access parking near their homes and employment centers. Permit parking can serve as an alternative to providing off-street parking in surface lots and parking structures.

To develop a permit parking system it’s important to have a clear understanding of the potential users of the permit zone, the challenges to providing parking for all user groups, and the times in which limits on parking access should be enacted. There are three predominate forms of permit parking:

- Residential Permit Parking
- Community Parking Programs
- Employee Permit Zones

Residential Permit Parking

[Case Study: Columbus, OH \(page 104\)](#)

Residential Permit Parking (RPP) seeks to ensure that residents have reasonable on-street parking access near their homes. To accomplish this objective, access to on-street parking spaces in residential areas can be restricted to residents and residential visitors. RPP areas are typically created based on the request of residents. However, with the removal of parking minimums, cities have begun to proactively evaluate the need for additional RPP zones.

Community Parking Programs

[Case Study: Savannah, GA \(page 105\)](#)

Community Parking Programs (CPPs) allow residents living in metered zones to be exempt from meter payments by obtaining a permit to park within their designated zone. Residents with a CPP permit must adhere to the permit restrictions and only park in their designated zone. The purpose of a CPP is to ensure residents have access to on-street parking in a metered zone.

Employee Permit Zones

[Case Study: West New York, NJ \(page 106\)](#)

Employee Permit Zones (EPZs) are parking areas in which there is an exception to on-street parking requirements for employees of nearby businesses, institutions, and commercial zones. EPZs are designed to relieve the burden of finding parking, particularly within high-density and activity areas. The goal of EPZs is to increase commercial activity and lower the barrier to doing business in an area.

Program Comparison

	RPP	CPP
Resident and Residential Visitor Parking Permitted in Metered Zones	No	Yes
Annual Permit Cost is Inexpensive	Yes	Yes
Short-term Residential Visitors Park for Free with a Temporary Permit	Yes	Yes
Applies to Residential Areas without Off-Street Parking	Yes	Yes

Affordable Permit Parking Program

The City of Austin, in partnership with the Downtown Austin Alliance, created an [Affordable Parking Program](https://www.austintexas.gov/page/affordable-parking-program) (https://www.austintexas.gov/page/affordable-parking-program). This program provides a marketplace on the City of Austin website for private garages that offer a monthly parking rate between \$35.00 and \$50.00 per month.

The marketplace provides a connection between the public access needs and private garages with occupancy. The private garages utilize the marketplace and connect directly with the end-user, so the City of Austin and the Downtown Austin Alliance are not handling transactions. Currently 25 garages participate with over 600 participants in the program.

LOADING ZONES

Loading zones are used to designate strategic short-term stopping zones within the curb and flex zone space for truck and commercial vehicles. Loading zones are placed adjacent to high-volume and high-need businesses in order to ensure proximate and frictionless loading experiences. Commercial areas with competing demands and calls for additional loading zones require strategically placed zones to ensure all commercial businesses have the ability to use the designated locations.

Curbside Pick-up/Drop-off

Pick-up/drop-off (PUDO) is a general term for locations that allow the pick-up and drop-off of goods and people. PUDOs can be used for food delivery, passenger drop-offs, rideshare, school zones during school hours, and valet parking. PUDO locations are typically time limited to 10 minutes and parking is not allowed. Because PUDOs are considered loading zones, they are typically associated with higher fines than parking meter violations.

Mixed-Use Loading

Mixed-use loading zones, which were recently implemented in the City of Raleigh, provide space for commercial loading, short-term pick-up and drop-off of goods and services, and passenger pick-up and drop-off.

Passenger Loading

Passenger loading zones are used specifically for people rather than for goods. Passenger loading zones can be designated with dedicated signage to allow for the safe drop-off of people. Further, passenger loading areas are not exclusive to any one type of use and are generally available for cars, taxis, TNCs, vans, and other personal or commercial vehicles. Passenger loading zones do not include public vehicles such as transit.

Transit Loading

Transit loading zones are specifically designated passenger loading zones for public transportation vehicles. For example, public transit buses, charter buses, and hotel service vehicles require transit loading zones and do not utilize other passenger loading zones. Because of their programmed schedule and cadence, public transportation vehicles require dedicated areas in order to provide effective service.

Flex Zones

[Case Study: Seattle, WA \(page 107\)](#)

Flex zones are areas in which the curb space can be used for different demands depending on the time of day. They can also be modified depending on the type of land uses surrounding the flex space. For example, curb space can be designated for commercial loading from 7:00 AM - 10:30 AM and reserved for paid parking at all other times. This configuration allows commercial zones to efficiently use the curb space within a designated window while allowing for revenue generation during other times.

Reserved Loading

One loading zone reservation method is through a reserved loading zone system and works similar to a parking session pay-by-app deployment. Commercial vehicles would have the ability to reserve a space ahead of a scheduled delivery to ensure the space is available.

RFID/Hang Tag

Radio frequency identification (RFID) technology and hang tags can be used for ensuring known commercial vehicles are able to use designated loading zones. RFIDs work by communicating with chip technology to connect with installed sensors. RFIDs and hang tags require heavier infrastructure and cost and vehicles must register ahead of time to access the curb.

Free-Flow

Free-flow loading utilizes application programming interface (API) software to communicate loading zone availability. For example, parking technology company Populus provides maps of loading zones and indicates their availability depending on registered vehicles. Vehicles must contribute monthly or quarterly payments to have access to the loading zone availability information. The trade off is the ability to efficiently understand where loading zones are available throughout a city.

Camera/Sensor

In Omaha, NE, the city partnered with parking technology company, Automotus, in the 2022 Commercial Curb Challenge to reduce congestion in their commercial areas. Omaha deployed a “pay-by-the-minute” and per vehicle fee approach and utilized camera technology to understand the amount of time commercial vehicles required. The camera utilized license plates to generate invoices and collect revenue.

STREET ACTIVATION

Our streets are great places for community activity and can be a valuable tool for supporting the social life of our city. The city works to support placemaking and street activation opportunities on our streets and in our activity centers. Street activation is a proven method for increasing foot traffic and boosting small business revenue in an otherwise busy corridor. Ultimately, the goal of street activation is to increase the economic vitality and overall vibrancy of an area while maintaining essential roadway functionality, such as safe movements of pedestrians, and to prioritize the curb space effectively.

Placemaking Hub

The city's Placemaking Hub is a one-stop-shop for public realm enhancement tools, from sidewalk dining, to bicycle parking, to street activation, and signal cabinet wraps. It consolidates the tools available across city departments to provide communities and neighborhoods with direct access to the specific processes, procedures, and permitting necessary to enhance their streets and public spaces with a range of public realm tools to enhance places that matter to residents.

Main Streets

Our main streets serve as centers of civic, social, and commercial activity, and are designed to prioritize the highest level of pedestrian comfort and support mixed-use activity. Main streets are low speed two-lane streets with on-street parking, and wide sidewalks for pedestrians and outdoor street activity.

The Charlotte Streets Map identifies and maps our existing main streets and defines the intended design and cross-section with additional development standards to support street activity specified in the Unified Development Ordinance (UDO). Through future community area and activity center planning, new main streets will be identified to support emerging mixed-use centers and districts.

Parklets

Parklets are a small public park serving as an extension of the sidewalk over an on-street parking space. Parklets offer a way to reclaim a small amount of public space to contribute to an active, accessible, and vibrant urban environment. Parklets may provide amenities like bicycle parking, green space, or places to stop, sit, and rest while enjoying the activity of the street. The city launched a successful Parklets pilot program in 2015, which has become a permanent fixture in the Placemaking Hub.

Sidewalk Dining

The City of Charlotte permits and encourages sidewalk dining to bring life and vitality to the public realm. Sidewalk dining must be directly adjacent to the retail food establishment and have a barrier system separating the dining area from the pedestrian passageway and remaining right-of-way outside of the dining area.

MICROMOBILITY & SHARED MOBILITY

Bikes and scooters create unique demands upon the curb lane. Dedicating space for bikeshare, bike and/ or scooter corrals, and other micromobility needs can help to activate the curb lane and close mobility gaps associated with first and last-mile connectivity.

In an effort to increase active transportation and a rise in transportation technology, a number of shared mobility options have also emerged as viable solutions. Shared mobility options offer the ability to utilize alternative modes without the hassle and cost of ownership.

When allocating space for bike and scooter parking, it's important to evaluate the placement and visibility of parking infrastructure as well as bicyclist and pedestrian safety.

Shared mobility options continue to evolve but generally have become available for many types of transportation methods including:

- Bikeshare
- Micromobility
- Rideshare and Transportation Network Companies (TNC)

Bikeshare

Bikeshare refers to bicycles, both manual and technology-enabled, available for rent by the mile, hour, or day. Bikeshare programs typically require coordination with city transportation leaders in order to ensure appropriate placement, rules, enforcement, and boundaries. Further, bikes can be available both in bike docks along flexible curb spaces or dockless throughout the bikeshare area.

Micromobility

Encompasses relatively small and low-speed mobility options that are typically either human or electric powered, including scooters, electric-assist bicycles, and skateboards. Most micromobility options fit and function well within bicycle facilities and are used for shorter trips. Constructing and improving bicycle infrastructure is not only important for bicycles, but also provides opportunities for emerging micromobility options.

Rideshare and Transportation Network Companies (TNC)

One of the leading market disruptors in recent years has been TNCs, such as Uber and Lyft, which have grown rapidly since launching in the 2000s. These services provide an alternative to driving single-occupancy vehicles, taking transit, biking, or walking to and from destinations. TNCs have drastically changed the mobility landscape and how we plan our transportation

systems. The top Uber destinations in Charlotte include Charlotte Douglas International Airport, music/entertainment venues, restaurants/bars/breweries, sports stadiums, Uptown hotels, and light rail stations.

Two-Way Separated Bike Lane

Dedicated bike facilities that are designed for bi-directional use and typically occur on only one side of the street. These facilities are physically separated from motor vehicles and are commonly referred to as cycle tracks. Two-way separated bike lanes are a preferred facility on one-way streets with limited access points (to provide two-way bicycle access) and in other configurations where two-way bicycle travel is desired on one side of a street and shared use paths are not feasible.

One-Way Separated Bike Lane

Dedicated bike facilities that are located on-street or behind the curb, are physically separated from motor vehicles, and typically occur on both sides of the street. This facility can include several configurations, based on the specific characteristics of the street and on the adjacent context. Separated bike lanes are a preferred facility where high pedestrian volumes are present and on corridors where significant bicycle volumes are expected.

Shared Use Path

A non-motorized, bi-directional path that is designed for both pedestrians and bicyclists, located parallel to a roadway, behind the curb, and between the street and private development. Shared use paths are a preferred facility type along higher-speed streets with longer block lengths and infrequent driveways.

Buffered Bike Lane

Dedicated on-street bike facilities that include additional buffered space between bikes and motor vehicles, and typically occur on both sides of the street. Buffered bike lanes are a preferred facility when traffic speeds and volumes are too high for a standard bike lane to be comfortable, and a separated bike lane is not feasible due to block and driveway spacing. Additional space is needed to place a buffered bike lane adjacent to on-street parking to account for the door zone of parked motor vehicles.

Standard Bike Lane

Dedicated bike facilities that designate an exclusive space for bicyclists through the use of pavement markings and signage along the street. There is no additional buffer between bicyclists and motor vehicles. Standard bike lanes should only be used when space is extremely constrained, or when traffic volumes and speeds are low. Additional space is needed to place a standard bike lane adjacent to on-street parking to account for the door zone of parked motor vehicles.

Bicycle Boulevard

Bicycle boulevards are low-volume, low-speed streets designed to prioritize bicyclist travel. Also known as “neighborhood greenways,” “quiet streets,” etc. Bicycle boulevards can be found as part of a larger bikeway corridor (when the bikeway must traverse through a neighborhood), an Urban Trail connection, or function as a standalone bikeway to connect neighborhoods to destinations.

Bike Parking

Bike parking is typically available within the curb space and designate a specific space for bike storage. Without ample bike parking, bikes may be tied to parking meters, hand railings, and other fixed objects in the curb space, which decreases the efficiency of other curb uses. Bike corrals are a type of bike parking facility that allows for multiple bike storage spaces and can be configured with the city’s logo and colors to enhance its appearance.





DYNAMIC PRICING CASE STUDY: SAN FRANCISCO, CA

Overview: The classic example of demand-responsive pricing was conducted by the San Francisco Municipal Transportation Agency (SFMTA) during the SFpark pilot program. This program adjusted parking prices at on-street parking and off-street parking locations to generate parking turnover and increase parking availability. SFpark’s goal was to have at least one parking space available per block. This pilot found that by adjusting prices at the curb, SFpark could decrease congestion by 30% and lower vehicle emissions.

Challenges: San Francisco estimated that approximately 30% of its city traffic is caused by drivers circling while looking for a space. Some drivers double park their cars because there are no available spaces. Drivers focused on finding parking create a hazard for pedestrians and bicyclists, slow down public transit, get in the way of emergency vehicles, and needlessly pollute the air.

- Benefits:**
- SFpark helps people plan ahead by allowing them to make informed decisions about driving, taking transit, walking, or biking, and when the best time and best way to visit busy areas are.
 - Encourages drivers to park in underused areas and garages, reducing demand in overused areas.
 - Ensures drivers easily find an open space near their destination and provide a steady flow of customers for business owners.
 - Easier payment and extended time limits help drivers avoid tickets.

- Considerations:**
- Parking sensors detect when a parking space is available and allow drivers to check parking availability and rates online, by text message, at digital occupancy signage, or by smartphone before heading to their destination.
 - Parking time limits have been extended, and SFpark meters accept coins, credit cards, and SFMTA parking cards to increase drivers’ ease of payment.
 - Parking rates are adjusted once a month based on demand. In areas with extremely high demand, rates will increase until at least one space is available most of the time. And in areas with low demand rates, decrease until most empty spaces fill or until the rate bottoms out at \$0.25 per hour.

ZONE-BASED PRICING CASE STUDY: SEATTLE, WA

Overview: The Seattle Department of Transportation (SDOT) implements zone-based pricing to manage its parking demand. This program adjusts on-street parking prices to generate parking turnover and increase parking availability. SDOT aims to have one to two spots available on every block face throughout the day. Using a data-driven approach, SDOT determines the lowest hourly rate to meet these demand requirements to improve access to nearby blocks/ neighborhood districts. Rates can change based on the time of day and season.

Challenges: Because parking is a limited resource, often in high demand, SDOT is challenged with balancing competing needs between curb users including transit riders, customers, residents, and shared vehicles. On-street parking management must facilitate livable neighborhoods and support business district vitality. Drivers circling for parking are often distracted, which decreases travel times and increases congestion, resulting in decreased reliability of transit sharing the right-of-way and increased emissions.

- Benefits:**
- Reduces congestion, improves transit reliability, and saves time.
 - Decreases greenhouse gas emissions.
 - Improves safety for pedestrians and bicyclists.
 - Improves neighborhood vitality and access.

- Considerations:**
- Collect and analyze data to decrease rates in areas and at times of day when there are fewer cars parked and increase rates when blocks are overly full. Parking time limits have been extended, and SFpark meters accept coins, credit cards, and SFMTA parking cards to increase drivers’ ease of payment.
 - Make tri-annual paid rate adjustments to adequately capture growing congestion throughout areas of the city.
 - Evaluate expanding paid parking to improve access to nearby blocks or other neighborhood business districts that are experiencing high demand at the curb.



TIERED PRICING CASE STUDY: AUSTIN, TX

Overview: The City of Austin Transportation Department implements tiered pricing to manage their parking demand. This program adjusts on-street parking prices by increasing the amount per hour, with a 10-hour maximum time limit. Hours 1-2 are \$2.00 per hour, then each incremental hour after that costs \$0.50 more than the previous hour, with a maximum of \$5.00 per hour. This tiered structure helps to generate parking turnover and increases parking availability.

Challenges:

Before the tiered pricing structure, drivers paid a flat \$2.00 per hour at the parking pay stations. There was no incentive to park in an off-street garage for pro-longed or commuter parking. This blocked new customers from using the spot and decreased parking turnover. The price to park on street all day was equal, if not lower, than a garage.

Additionally, the 3-hour time maximum did not accommodate for unexpected factors that could extend a parking session beyond the time limit. Traditionally, unpaid parking citations can lead to disproportionate consequences, ranging from affected credit scores to eventual loss of property.

Benefits:

- Equal access to all parking zones with removal of time limits.
- Reduced risk of receiving a parking citation and no need to return to the vehicle to display a sticker.
- Better real-time parking occupancy data.
- Reduced paper, printing, and waste.

Considerations:

- Incrementally increase the cost per hour for on-street parking, for a maximum of \$5.00 per hour.
- Increase the parking time limit from 3 hours to 10 hours.
- Implement license plate recognition technology to remove the need of displaying stickers/ tickets.

PAY-BY-APP CASE STUDY: ATLANTA, GA

Overview: The City of Atlanta began offering multiple mobile apps in 2019. Atlanta’s open mobile app system includes Flowbird, ParkMobile, Passport, PayByPhone, and SpotAngels parking apps. Offering multiple mobile app solutions can help to promote innovation amongst app providers and allows customers to select the application that best serves their needs. Typically, an open platform system is compared to businesses accepting multiple bank card options such as Visa, MasterCard, Discover, and American Express.

Challenges:

One concern associated with mobile app payments is the requirement that parkers have a bank account to interact with the parking system. Ensuring equitable access to the curb lane includes the responsibility of providing payment opportunities for the unbanked. This typically requires meter infrastructure that accepts coins. Although maintaining these legacy forms of payment can come at a significant cost to parking operations, it is important to provide parking and curb lane systems that can serve the needs of all residents.

Benefits:

- Open mobile app environments offer users the ability to select their preferred parking app.
- Allows customers to select from common app solutions such as ParkMobile, PayByPhone, Passport, SpotAngels, and Flowbird.
- Increases customer convenience by allowing customers to extend a parking session remotely.
- Improves the parking experience for customers while increasing parking compliance and decreasing citation issuance.

Considerations:

- Provide rider signage displaying multiple app solutions and zone numbers.
- Ensure all applications use the same parking zone numbers.
- Identify a system aggregator to oversee all mobile app solutions and push pricing updates through the aggregator.



TEXT-TO-PAY CASE STUDY: VIRGINIA BEACH, VA

Overview: The City of Virginia Beach uses text-to-pay as its primary form of payment for on-street parking. In addition to meter and mobile app payment options, text-to-pay enhances their system’s ability to accommodate parking demand for their user base. Each summer, Virginia Beach experiences an increase in visitors and tourists. Providing a text-to-pay option allows tourists to interact with the city’s parking system without downloading the city’s mobile app.

Challenges:

Similar to mobile app payments, text-to-pay requires parkers to have a bank account to interact with the system. This requirement can create a challenge for unbanked people. Alternatively, text-to-pay offers a secure platform that doesn’t require users to have a smartphone or create a mobile app account. The text-to-pay process is easy to navigate. However, text-to-pay requires multiple steps, and users must enter their vehicle information at the beginning of each parking session. Because users have to enter their vehicle information, this can lead to entry errors and erroneous citations.

Benefits:

- Allows customers to park using a contactless payment system without having to download a parking app.
- Customers receive notifications before the expiration of a session and can extend their parking session remotely.
- Text-to-Pay allows for parking validations and the bulk purchase of parking sessions for customers.
- Customers are not charged credit card transaction fees for the initiation of parking sessions or extensions.

Considerations:

- Serves as a contactless payment solution.
- Requires an internet connection and customers must re-enter their vehicle information each session.
- Text-to-Pay zone numbers should align with mobile zone numbers to minimize confusion.

PARKING BENEFIT DISTRICTS CASE STUDY: HOUSTON, TX

Overview:

The City of Houston’s on-street parking program, ParkHouston, manages and maintains a PBD along the Washington Avenue Corridor. Formally approved in 2014, the Washington Avenue Corridor generates approximately \$90,000 each year in gross meter revenues. The Washington Avenue Corridor PBD has invested in bike infrastructure along the corridor.

Recently, ParkHouston increased the hourly parking rates within the PBD from \$2.00 per hour to \$2.50 per hour after 6:00 PM. Additionally, parkers in the district can pay a flat rate after 6:00 PM, which was increased from \$7.00 to \$10.00.

The success of the Washington Avenue Corridor PBD has led to the creation of an additional PBD in Houston’s Midtown area. The Washington Avenue Corridor PBD contributes 60% of the net revenue generated within the district to neighborhood investments.

Purpose of a PBD:

The purpose of a Parking Benefit District is to use revenue generated by parking to fund improvements in the area where the revenue is generated. The ideal outcome of a Parking Benefit District is to create a “virtuous cycle” in which parking revenue helps to improve an area, attracting customers and visitors, which then generates additional parking revenue. The potential allocations from the neighborhood improvement fund focus on improvements that promote walking, bicycling, and the use of public transit to create a safe environment for all users.

Steps to Creating a PBD:

1. Establish a Parking Enterprise Fund for all parking revenues generated by the city’s on-street parking system and track revenues by sub-area.
2. Designate the specific area that will constitute the PBD.
3. Adopt an ordinance stipulating what percentage of the net revenue will be allocated to the PBD for neighborhood improvements.
4. Create an advisory committee to develop a project list based on community needs and public meetings.
5. Deploy paid parking in the PBD area.
6. Adopt a defined list of PBD revenue expenditures.
7. Develop a coordinated communications plan for the PBD, planned improvements, and neighborhood benefits.
8. Review PBD performance after 18 months of implementation and adjust the revenue split as needed.
9. Conduct ongoing evaluation of the PBD performance.



PERMIT PARKING PROGRAM CASE STUDY: COLUMBUS, OH

Overview: Columbus offers permits for residents, resident guests, businesses, institutions (churches, schools, etc.), and property owners (owners who own one or multiple residential properties in a permit parking zone but do not reside within the permit parking zone). Each zone has specific permit eligibility criteria, maximum issuance per address, and a range of costs, such as \$25 per year for residential and institutional permits and \$100 to \$700 annually for business permits.

Establishing, Modifying, or Changing RPP Zones: In Columbus, permit parking zones can be established by the appropriate area commission, civic association, business district, special improvement district, or Parking Services personnel. Parking Services meets with the appropriate party and initiates a parking study.

- Implementation Criteria:**
1. Land use makeup
 2. On-street parking occupancy rates greater than 80%
 3. Single-family homes and multifamily developments with four (4) units or less are eligible for one (1) annual permit per licensed driver, not to exceed two (2) permits per address.

Type	Permit Quantity/Cost	Visitor Permit Quantity/Cost	Daily Passes	Fine
Residential	2 permits / \$25.00 each	1 permit / \$25.00	300 (\$3.00/pass)	\$50.00
Business	10 permits / \$100.00 to \$700.00/year	N/A	N/A	\$50.00
Institutional	50 permits / unknown	N/A	N/A	\$50.00

COMMUNITY PARKING PROGRAM CASE STUDY: SAVANNAH, GA

Overview: The City of Savannah began offering CPPs in 2017. There are six (6) zones within the residential parking program, located south of the Savannah River. Residential decals allow residents to park in metered locations for free. Residents in Savannah can request a permit through the Mobility and Parking Service Department. Permit decals cost \$175 per decal per year. Guest parking is permitted for one (1) week within a 30-day period.

Challenges: One concern associated with residential parking programs is the ability to access proximate parking spaces within metered parking zones. Because metered parking zones are typically adjacent to businesses, transit facilities, and large institutions, residents living near these land uses may find it difficult to find available on-street parking that meets their long-term parking needs.

- Benefits:**
- Residents have reasonable access to on-street parking near their homes.
 - Block faces with commercial store fronts are not occupied by resident’s vehicles.
 - Revenue is generated by non-residents and block faces in Savannah continue to generate parking turnover.

- Considerations:**
- Residents may not be willing to register their vehicle.
 - Additional staffing is needed to effectively manage a Community Parking Program.
 - Revenue generated within Community Parking Program zones could be reinvested into the neighborhoods where the revenue is raised.

- Permit Restrictions:**
- No Parking in 15- or 30-minute meter / time zones
 - Illegal parking is prohibited
 - No Parking in front of commercial establishments
 - No Parking on specified high-volume streets
 - No Parking beyond your Residential Zone
 - Residents are not allowed to park for free in city garages



EMPLOYEE PERMIT ZONES CASE STUDY: WEST NEW YORK, NJ

Overview: The West New York Parking Utility offers parking permits for businesses, employees, and professionals to utilize on-street parking during their working hours. The permit costs \$30 for a six (6) month period or \$60 per year. The permit can be used for a maximum of 10 hours within a 24-hour period and must be used between the hours of 5:00 AM to 12:00 AM (midnight).

Challenges:

While employee permit zones do provide a cost-effective parking option for employees that need to use on-street parking for a business purpose, it does not take into consideration income or ability to pay. Other considerations when evaluating if EPZs are suitable for a particular location are:

- What are the business reasons an employee may need access to on-street parking?
- Are there other parking locations the employee could be using?
- What areas should be considered for EPZ to ensure on-street parking remains available?
- Should a fee waiver be available for low-income employees?

Parking Decals:

The town of West New York utilizes parking decals to verify an employee's parking credentials. Parking decals are easy to see and usually permit holders are instructed to display them on the lower right side of the inside windshield (passenger side).

While parking decals can quickly be verified, they require manual verification by parking enforcement personnel. LPR is often not used for parking credential enforcement. Additionally, parking decals must be mailed or picked up in person, which further increases the burden to receive the parking permit.

Permit Policies:

- Parking permit does not include public garages
- Required to comply with street sweeping, public safety, and handicapped parking zones
- Permit cannot be transferred to another vehicle

FLEX ZONES CASE STUDY: SEATTLE, WA

Overview: While flex zones may look like any other parking or loading zones, flex zones allow modification of the curb space depending on the land uses around it. In Seattle WA, city leaders designated priorities for the curb space depending on three main zones: residential, commercial & mixed-use, and industrial.

Challenges:

Traditional curb management techniques use static curb space allocation and designated the curb for a specific use. As the characteristics, priorities, and demands of an area change, it may be difficult or unpopular to change the curb space without dedicated resources.

Flex Zone Functions:

- Mobility: Moves people and goods
- Access for People: People arrive at their destination or transfer between different ways of getting around
- Access for Goods: Space used for the delivery of goods and services
- Activation: Offers vibrant social spaces
- Greening: Enhances aesthetic and environmental health
- Storage: Provides storage for vehicles or equipment

	Residential	Commercial & Mixed Use	Industrial
1	Support for Modal Plan Priorities	Support for Modal Plan Priorities	Support for Modal Plan Priorities
2	Access for People	Access for Commerce	Access for Commerce
3	Access for Commerce	Access for People	Access for People
4	Greening	Activation	Storage
5	Storage	Greening	Activation
6	Activation	Storage	Greening

ADDITIONAL INFORMATION: PAY-BY-PLATE

Overview: Pay-by-Plate requires parkers to pay for parking using their license plate as their parking credential. Once a parking session begins in a pay-by-plate environment, the license plate is designated as authorized to park within a given parking zone. Pay-by-plate environments can interact with multi-space meters and mobile apps. Parkers can use coins or credit/debit cards to pay for parking at a multi-space meter but must ensure that their parking transaction uses the correct plate number. Pay-by-plate systems are enforced using license plate recognition technology.

Challenges:

- Requires parkers to enter their license plate number correctly. Inaccurate license plate information can lead to the issuance of erroneous citations.
- Using a license plate number as the parking credential can raise concerns about privacy. It's important to note that license plate information is not considered to be a form of personally identifiable information (PII).

Benefits:

- Allows for multiple forms of payment such as coins, credit cards, and digital payments.
- Can be used with multi-space meters or mobile applications.
- Provides real-time reporting of system occupancy and generates reports on parking behavior.
- Parking session extensions can be added remotely when paired with mobile payments or text-to-pay.
- A pay-by-plate system prevents “piggy-backing” across parking sessions and does not allow parkers to “space hop” within the same enforcement zone, resulting in higher turnover rates and parking compliance.

Considerations:

- Pay-by-plate systems typically use license plate recognition (LPR) technology as the method of payment verification.
- Pay-by-plate systems decrease the likelihood of erroneous citations when combined with a three-step enforcement verification process.

ADDITIONAL INFORMATION: PAY-BY-SPACE

Overview: Pay-by-space requires parkers to pay for parking at a particular space. The space number is used to verify that a paid parking session is occurring at a particular location. Pay-by-space environments can interact with single-space meters, multi-space meters, or mobile apps. In pay-by-space environments with single-space meters, a parking session is tied to a particular meter number. Parkers can use coins or credit/debit cards to pay for parking at the meter and the single-space meter designates the amount of time available at the meter.

Challenges:

- Requires parkers to remember the space number they parked in and enter the space number into the multi-space meter.
- May require a pay-and-display system in which the receipt for the parking session is placed on the vehicle dashboard.
- Pay-by-space systems allow for “piggy-backing” in single-space meter environments, in which a parker can see how much time is remaining from a previous parking session. This leads to decreased revenue generation.
- Allows “space hopping” in which a parker may move their car to another space and extend their parking session past the maximum parking limit.

Benefits:

- Allows for multiple forms of payment such as coins, credit cards, and digital payments.
- Can be used with either single-space or multi-space meters or mobile applications.
- Provides real-time reporting of system occupancy and generates reports on parking behavior and system overview.
- Parking session extensions can be added remotely when paired with mobile payments or text-to-pay.

Considerations:

- Typically, enforcement officers walk on foot throughout their enforcement route to check timestamps on displayed receipts. This leads to higher enforcement costs.
- Pay-and-display systems can lead to erroneous citations if the parking receipt is not displayed properly.

ADDITIONAL INFORMATION: IN-VEHICLE DASHBOARD

Overview: An emerging form of parking session payment is payment through a vehicle’s dashboard. Vehicles equipped with an infotainment center can make a payment through an in-vehicle app. This form of payment connects the vehicle to the parking session and can provide multiple unique identifiers for a session. Some unique data that can be obtained via in-vehicle dashboard payments include a vehicle’s identification number (VIN), a vehicle make and model, and vehicle origin and destination information. As parking technology and parking pricing advances, in-vehicle dashboard payments help to enable congestion pricing which charges drivers for the amount of vehicle miles traveled and sets pricing based on the vehicle type.

Challenges:

In-vehicle dashboard payments are being made available for newer vehicles equipped with infotainment centers. This platform is typically integrated with payment applications to allow users to make payments for various items without entering their credit card information directly. A limiting factor to the viability of this solution is the age of the existing vehicle fleet. As vehicles continue to modernize and integrate additional technology solutions, this payment option will likely increase in use.

Benefits:

- Allows customers to park using a contactless payment system without having to leave their vehicle.
- Multiple vendors are exploring opportunities to integrate in-vehicle payment options into new vehicles.
- Ability to integrate in-vehicle payments with on-street parking, off-street parking, tolls, and local merchants.
- Improves the viability of interacting with connected and autonomous vehicles as the technology evolves.

Considerations:

- Infotainment Systems: Vehicles equipped with infotainment systems are integrated with payment applications.
- App Integration: Payment applications are made available via a vehicle’s dashboard.
- Seamless Transactions: Vehicles are alerted to the start of a parking session and prompt the driver to confirm their desired duration.

ADDITIONAL INFORMATION: VIRTUOUS CYCLE

Overview: The Virtuous Cycle of Parking was coined by Donald Shoup in his industry-alerting publication *The High Cost of Free Parking*. This cycle calls for the reinvestment of parking revenues into neighborhood improvements which ultimately leads to additional revenue generation. The three (3) steps of the Virtuous Cycle of Parking are:

1. A portion of meter revenue pays for public improvements.
2. Public improvements attract more visitors
3. Visitors pay for curb parking, and more revenue is available for more public improvements.

Challenges:

- Reinvesting parking revenues for neighborhood improvements decreases the amount of revenue being placed in a city’s General Fund.
- Neighborhood organizations must be educated on types of reinvestment strategies and the realities of parking as a limited funding source.

Benefits:

- Generates support for metered parking by creating a consistent funding source for neighborhood improvements.
- Demonstrates the city is willing to invest in infrastructure improvements when funding is available.
- Keeps municipalities accountable for tracking meter revenue and identifying investment strategies.

Considerations:

- Creates a clear and identifiable use of parking revenues.
- Facilitates the expansion of a city’s metered and managed parking system by increasing residents’ willingness to pay for parking.
- Helps to support economic development by generating parking turnover, funding neighborhood improvements, and connecting paid parking with an enhanced user experience.

ADDITIONAL INFORMATION: PARKING ENTERPRISE FUND

Overview: A Parking Enterprise Fund is an account, separated from a city's General Fund, that is used to house revenues generated from a city's municipal parking program. The purpose of a Parking Enterprise Fund is to create a self-supporting parking enterprise system, allowing for separate accounting for the operation of municipal parking facilities throughout the city. Separation of municipal parking activities provides a mechanism to separately plan, budget, track, and record parking revenues and expenses. Additionally, separated municipal parking funds allow more efficient tracking of projects and operations that are being funded through the Parking Enterprise Fund or those undergoing the city's development process.

Challenges:

- Requires parking programs to be self-sustaining, and limits parking subsidies from the General Fund.
- Decreases revenues to a city's General Fund.
- Revenue generation is based on user parking demand, which is beyond the control of the parking operation.
- Requires additional administrative costs and oversight from the parking operation.

Benefits:

- Parking operations can directly influence the revenue generated from the parking system.
- Increases the predictability of funding for operational and capital costs.
- Generated parking revenue can be tied directly to the use of funds to show the value of metered and managed parking.
- Facilitates the tracking of parking revenues and expenditures to improve system audits.

Considerations:

- A full accounting of projected revenues and future expenses should be included in the decision making process when evaluating the implementation of a Parking Enterprise Fund.
- Parking systems should demonstrate a track record of being a profitable/revenue positive system.



BENCHMARK STUDY

To evaluate parking and curb management best practices, the City of Charlotte conducted peer city research to gain further understanding on industry standards and effective best practices. The following cities were included in this peer city research:

- Atlanta, GA
- Austin, TX
- Columbus, OH
- Denver, CO
- Houston, TX
- Kansas City, MO
- Miami, FL
- Minneapolis, MN
- Nashville, TN
- Omaha, NE
- Raleigh, NC
- Sacramento, CA

Throughout this process, the project team spoke with each city’s parking and mobility practitioner to gain insight into the on-street parking and curbside mobility operations. Of the twelve cities, the following best practices emerged:

- Eleven cities operate an on-street parking system with more metered spaces than Charlotte, regardless of population.
- All twelve cities operate past 6:00PM, with ten operating until at least 10:00PM.
- Eleven cities operate on Saturdays, with six operating on Sundays.

- Ten cities operate a zone-based or progressive pricing model, indicating a variety in rates based on locations and demand.
- Ten cities have a higher meter cost, with varying progressive and zone models informing cost.
- Nine cities enforce meter operations with a higher citation cost than Charlotte.

Benchmark Study Overview

City	Population	Metered Spaces	Hours of Operation <i>(*varies by area)</i>	Days of Operation <i>(*varies by area)</i>	Meter Cost <i>(per hour)</i>	Meter Fine	Time Limits	Pricing Method
<i>Charlotte</i>	879,709	1,200	7:00 AM – 6:00 PM	Mon – Sat*	\$1.50	\$25.00	2-hour	Flat
<i>Atlanta</i> ⁺	496,461	2,800	7:00 AM – 10:00 PM*	Mon – Sat*	\$2.00	\$35.00	2-, 3-, & 4-hour	Flat
<i>Austin</i> ^{**}	964,177	8,000	8:00 AM – 12:00 AM*	Mon – Sat*	\$2.00 – \$5.00	\$40.00	None	Progressive
<i>Columbus</i> ⁺	906,528	10,000	8:00 AM – 10:00 PM	Mon – Sat	\$0.50 – \$1.50	\$30.00	30-minute, 3-hour, & None	Progressive
<i>Denver</i> ^{**}	711,463	6,200	8:00 AM – 10:00 PM*	Mon – Sat*	\$2.00	\$35.00	2-, 3-, & 5-hour	Flat
<i>Houston</i> ⁺	2,288,250	10,000	7:00 AM – 12:00 AM*	Mon – Sun*	\$0.50 – \$2.25	\$30.00	2-hour up to 10-hour	Zone Based
<i>Kansas City</i> ⁺	508,394	1,200	12:00 AM – 11:59 PM*	Mon – Sun*	\$1.00 – \$3.75	\$25.00	Varies	Progressive
<i>Miami</i>	439,890	12,020	7:00 AM – 2:00 AM*	Mon – Sun*	\$1.75 – \$3.25	\$36.00	3-hour	Zone Based
<i>Minneapolis</i> ^{**}	425,336	9,500	8:00 AM – 12:00 AM*	Mon – Sun*	\$0.50 – \$6.00	\$45.00	2-hour up to 10-hour	Zone Based
<i>Nashville</i> ^{**}	678,851	1,700	12:00 AM – 11:59 PM*	Mon – Sun*	\$1.75 – \$2.25	\$25.00	2- to 6-hour	Zone Based
<i>Omaha</i> ⁺	487,300	4,500	9:00 AM – 9:00 PM	Mon – Sat	\$0.50 – \$7.00	\$16.00 - \$50.00	None	Progressive
<i>Raleigh</i>	469,124	1,600	8:00 AM – 8:00 PM*	Mon – Fri	\$1.25 – \$1.50	\$20.00	2-hour	Zone Based
<i>Sacramento</i>	525,041	6,300	8:00 AM – 10:00 PM*	Mon – Sun*	\$1.75 – \$3.75	\$62.50	Varies	Progressive

* Strategic Mobility Plan Peer City
 + Charlotte Peer City



ATLANTA

Population: 496,461 Metered Spaces: 2,800

Hours of Operation	Meter Cost	Meter Fine	Time Limit	Meter System
7:00 AM – 10:00 PM (varies) Monday – Saturday (varies)	\$2.00/hr.	\$35.00	2-hour, 3-hour, and 4-hour limits	Multi-space meters

System Profile: ATLPlus is part of the City of Atlanta Department of Transportation Public Parking Management Program and is responsible for the maintenance of parking meters, regulatory signage, customer service, parking meter collections, on-street parking and right-of-way regulation enforcement, and parking citation processing. ATLPlus manages parking throughout 16.5 miles of downtown Atlanta with hours that vary from 7:00 AM – 10:00 PM, Monday through Saturday.

System Funding: The City of Atlanta contracts with SP+ for parking management services. Based on their contract, the City of Atlanta and SP+ have an 80%/20% revenue share model in favor of the city after operating expenses are covered. Revenues generated from the city’s parking program are housed in the city’s General Fund.

Pricing & Payment System: The City of Atlanta has a flat/uniform rate; all parking rates are the same throughout the city at \$2.00 per hour. Atlanta accepts payments through a multitude of apps including Passport, ParkMobile, PayByPhone, SpotAngels, and Flowbird. Passport manages the overall parking platform which aggregates all transactions and data collected to provide a centralized location for all parking analytics.



Source: City of Atlanta, 2023

PARKING ENFORCEMENT ZONES

Atlanta operates parking zones throughout the city that vary based on the land use of each area. These include the Business/Government Zone, Mixed Use Zone, School/University Zone, and Entertainment, Restaurant, and Hospital Zone.

Each zone has different time limits, days of operation, and hours of operation that reflect the need of the area.



AUSTIN

Population: 964,177 Metered Spaces: 8,000

Hours of Operation	Meter Cost	Meter Fine	Time Limit	Meter System
8:00 AM – 12:00 AM (varies) Monday – Saturday (varies)	\$2.00 - \$5.00/hr.	\$40.00	No maximum	Multi-space meters

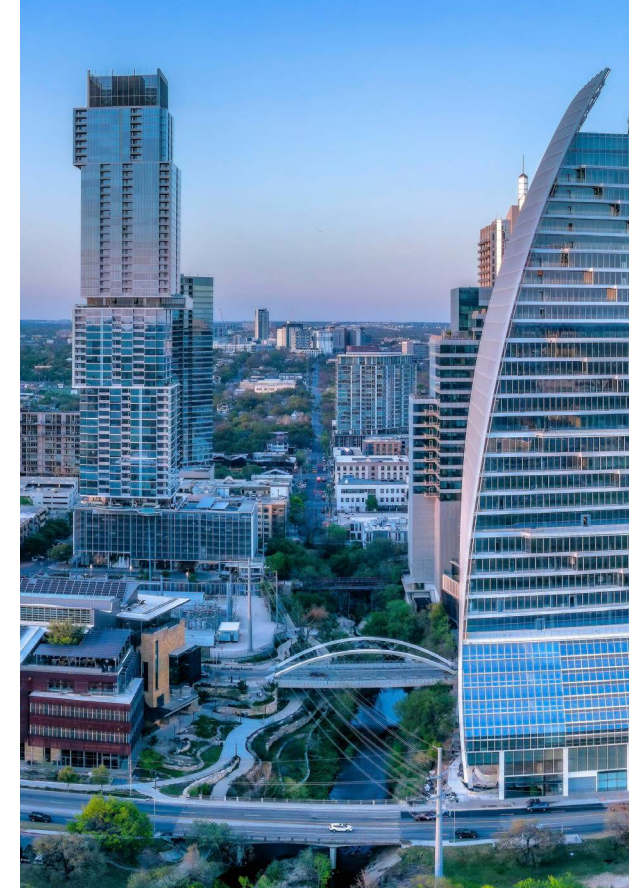
System Profile: The Parking Enterprise Division of the Austin Transportation Department (ATD) manages on-street parking, parking meters, parking and valet enforcement, and specialized zones such as commercial delivery, residential parking permits, car-share parking, and more. ATD does not manage private off-street parking lots or garages.

System Funding: The City of Austin funds ATD and expects approximately \$5.5 million for parking, traffic, and other fines and \$2.3 million from transactions. ATD’s budget estimates \$17.8 million for its Parking Management Fund for FY 22-23. Parking fines go to general fund, and parking sessions and permitting go to enterprise fund.

Pricing & Payment System: The City of Austin operates a progressive pricing structure. The base rate for the first hour is \$2.00. After the third hour, the rate is \$3.00 with a \$0.50 hourly increase up to \$5.00 for hours seven to ten.

Additional Information: ATD’s progressive pricing structure and elimination of maximum time limits was a result of Austin prioritizing equity in the parking system. The model encourages parkers to pay for the time needed to park without maximum restrictions, incentivizing parking payment and reducing the number of citations written.

The average parking session as of 2023 was 2 hours and 15 minutes. Parkers utilizing a paid parking space can stay in that space indefinitely, but hourly price increases will occur up to ten hours. At ten hours, that rate is comparable to off-street parking rates.



Source: Adobe Stock, 2023

PARKING PERMIT PROGRAM

Austin operates a Residential Parking Permit Program which includes 7 districts and 42 zone variations. No more than two visitor hangtags can be purchased per residence, with a maximum total of 6 permits, residential or visitor, allowed per year. Permits increase in price with each additional permit, ranging from \$20.00 to \$70.00 per permit per year.



COLUMBUS

Population: 906,528 Metered Spaces: 10,000

Hours of Operation	Meter Cost	Meter Fine	Time Limit	Meter System
8:00 AM – 10:00 PM Monday – Saturday	\$0.50 - \$1.50/hr.	\$30.00	30-minute, 3-hour, and no maximum time limits	Multi-space meters

System Profile: Mobility + Parking Services is a newly created division of the Department of Public Service. The division is responsible for the administration, enforcement, operations, and management of on-street public parking and City-owned parking facilities in the City of Columbus, as well as the integration of shared mobility and transportation planning. The division sets policies and manages parking and access programs.

System Funding: Mobility + Parking Services is funded through a newly created Mobility Enterprise Fund. Created in 2022, the fund has total resources of \$15.5 million and total operating expenses of \$15.2 million. Off-street parking revenues are estimated at nearly \$2 million, while on-street parking revenues are estimated at \$6.5 million. Parking violation revenue accounts for \$5.2 million. Significant fund expenses are tied to personnel costs (\$4.9 million) and professional services (\$8.8 million) including but not limited to meter amortization, enforcement equipment, permitting, and technology contracts and services.

Pricing & Payment System: Columbus currently operates a dynamic pricing model, with average on-street occupancy evaluated twice per year. Current parking rates range from \$0.50 to \$1.50 per hour. Time limits also vary and include no maximum limits, 3-hour limits, and 30-minute limits. In specific neighborhoods, such as East Franklinton, the full-day rate for parking is \$12.00. On N High St., which runs through the Ohio State University district, parking is \$1.00 per hour and encourages turnover for business use and discourages all day student parking.



Source: Adobe Stock, 2023

MOBILITY + PARKING PLANNING

The City of Columbus recently created a new Mobility + Parking Division to manage the parking operation and integrate transportation planning and shared mobility within one team.

Upon the recent adoption of their Strategic Parking Plan, the new Mobility + Parking Division is looking for additional ways to integrate Columbus' mobility goals within the parking system.



DENVER

Population: 711,463 Metered Spaces: 6,200

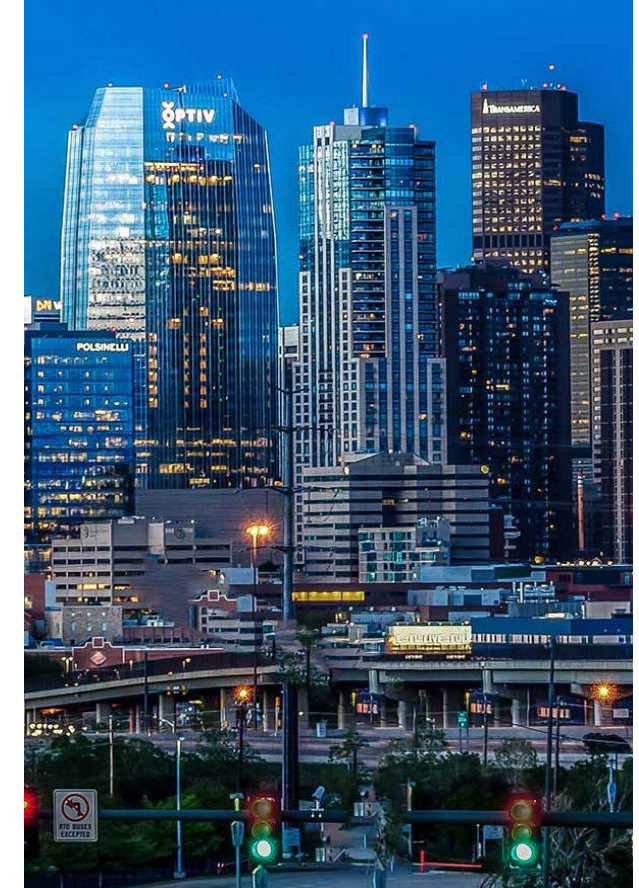
Hours of Operation	Meter Cost	Meter Fine	Time Limit	Meter System
8:00 AM – 10:00 PM (varies) Monday – Saturday (varies)	\$2.00/hr.	\$35.00	2-hour, 3-hour, and 5-hour limits	Single-space Meters, PayByPhone

System Profile: The Denver parking program manages all on-street and public off-street parking, permits, planning to accommodate changing neighborhood landscapes, and enforcement. The Park Smart Denver program consists of 4,500 smart meters, 7 surface lots, and 3 city-owned parking garages. Starting in 2022, on-street parking costs increased from \$1.00 to \$2.00 per hour.

System Funding: Parking management and operations are part of the City of Denver's general fund. The total estimated revenue is approximately \$9.5 million, primarily from transactions and enforcement.

Pricing & Payment System: The City of Denver has a flat/uniform rate for majority of the city; most parking rates are the same at \$2.00 per hour. Denver accepts payments through a PayByPhone app, through Smart Meters which accept credit and debit cards, or coins.

Park Smart Denver also manages 500 metered spaces within the Cherry Creek North district, a neighborhood of Denver. These spaces are \$1.00 per hour for up to three hours and are managed Monday to Saturday.



Source: City and County of Denver, 2023

CURBSIDE ACTION PLANS

Denver publishes Curbside Access Plans (CAP) to address changing conditions and the needs of diverse user groups. CAPs are comprehensive, neighborhood (or area) curbside and parking plans that address resident, business, and property owner parking challenges and concerns, explore alternative curbside management strategies, and identify recommendations.



HOUSTON

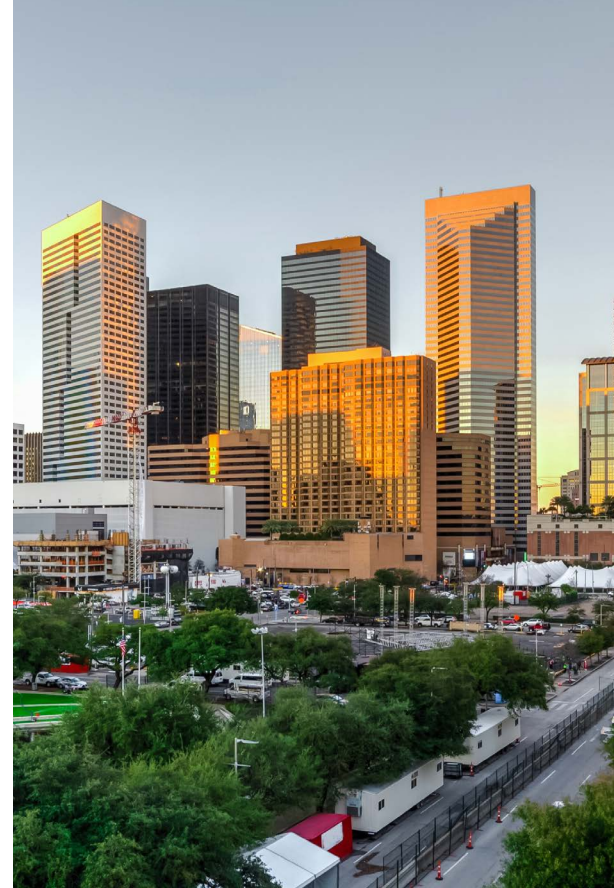
Population: 2,288,250 Metered Spaces: 10,000

Hours of Operation	Meter Cost	Meter Fine	Time Limit	Meter System
7:00 AM – 12:00 AM (varies) Monday – Sunday (varies)	\$0.50 - 2.25/hr	\$30.00	2-hour to 10-hour limits	Multi-space meters

System Profile: The City of Houston manages and operates ParkHouston, including approximately 80 employees, 1,000 multi-space T2 meters, and 4 Community Parking Program zones. It manages the on-street parking spaces and enforces all parking violations. The system primarily operates between the hours of 7:00 AM and 6:00 PM, Monday through Saturday, but does have corridors of on-street parking that are managed until as late as 12:00AM Monday through Sunday. These areas are primarily entertainment districts with significant restaurant and nightlife attracting increased demand well into the evening.

System Funding: Parking operations are funded by the ParkHouston Special Revenue Fund from Administration and Regulatory Affairs. The fund is responsible for managing on-street parking enforcement, which includes the collection and recording of parking permits and meters in the Washington Avenue Parking Benefit District. Revenue comes from meter transactions, parking citations, and vehicle boots.

Pricing & Payment System: Parking rates vary by zones in the city. More popular zones in the city are priced at \$2.00 per hour, such as in Downtown Houston and other high-demand areas. Less popular areas such as the Warehouse District are priced at \$0.50 per hour.



Source: Adobe Stock, 2023

COMMUNITY PARKING PERMITS

Houston operates a Community Parking Program, which is intended to serve mixed-use areas of development and is a curbside management tool to enhance access to the curb for residents, business owners, and visitors.

Additionally, revenue from a Community Parking Program is dedicated to a Parking Benefit District.



KANSAS CITY

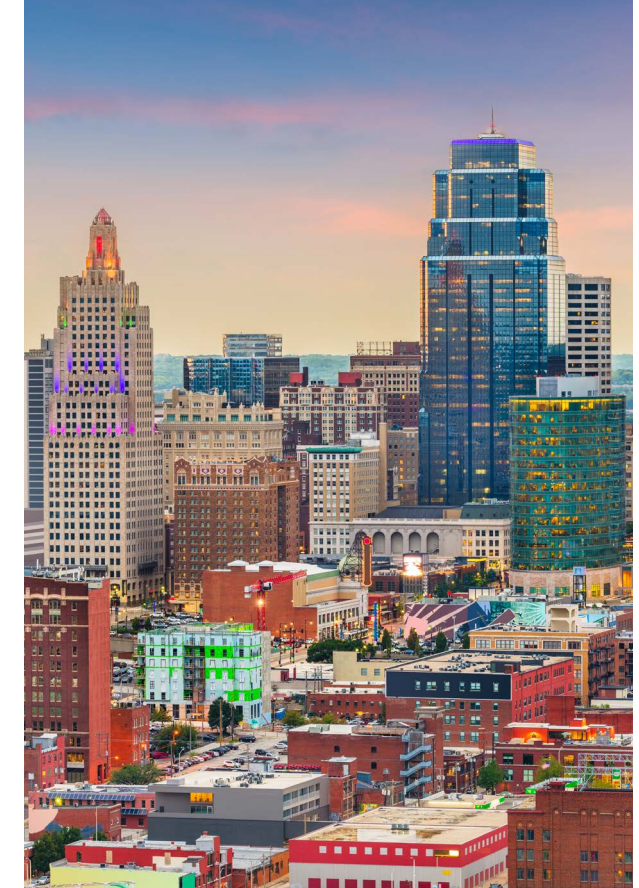
Population: 508,394 Metered Spaces: 1,200

Hours of Operation	Meter Cost	Meter Fine	Time Limit	Meter System
12:00 AM – 11:59 PM (varies) Monday – Sunday (varies)	\$1.00 - \$3.75/hr.	\$25.00	Varies	Single-space Meters, Multi-space Meters

System Profile: Park KC is part of the Kansas City Public Works Department and is responsible for the operations and management of on-street parking. Park KC manages approximately 1,200 metered on-street parking spaces within downtown Kansas City.

System Funding: Kansas City’s parking system currently operates through a General Fund, generating \$300,000 per year from on-street parking and reinvesting those funds into city services and/or infrastructure.

Pricing & Payment System: Park KC utilizes a progressive parking rate with rates ranging from \$1.00 to \$3.75 per hour. Program hours and days of operation vary by location, with some areas operating 24 hours a day, 7 days a week. Time limits are imposed throughout the system, but those time limits vary depending on the zone. Color-coded signage reflects the maximum time limit within the zone and provides customers with the information to pay via the Park KC app, by text, or utilizing the nearest kiosk.



Source: Adobe Stock, 2023

KANSAS CITY (KC) STREETCAR

The KC Streetcar is a free transit option for riders to travel throughout downtown Kansas City. The KC Streetcar and KC Streetcar Authority advocate for a well-managed parking system and are strong partners of Park KC. If the on-street parking system is poorly managed, then circling for parking or idling causes increased traffic congestion and transit delay.



MIAMI

Population: 439,890 Metered Spaces: 12,020

Hours of Operation	Meter Cost	Meter Fine	Time Limit	Meter System
7:00 AM – 2:00 AM (varies) Monday – Sunday (varies)	\$1.75 - \$3.25/hr	\$36.00	3-hour limit	Multi-space meters, Pay-by-App

System Profile: The Miami Parking Authority (MPA) is an independent parking authority that manages over 12,000 on-street parking spaces, 68 surface lots, 14 public garages, and accommodates 6 million vehicles annually.

System Funding: MPA is a self-sustaining agency receiving no taxpayer support from the city. Operations are funded through parking revenues and bond issuance. MPA has returned millions of dollars of revenue to the City of Miami by generating revenues that meet/exceed operational requirements.

Pricing & Payment System: Parking rates in Miami vary by district (Design, Entertainment, etc.) and range from \$1.75 to \$3.25 per hour, with most areas charging \$3.25 per hour. The MPA has approximately 120 on-street pay stations, reduced from an original 800 stations. Approximately 97% of all revenue collected is by mobile payment. MPA has upwards of 500 zones for pay-by-app parking.



Source: Adobe Stock, 2023

CURB MANAGEMENT PLANNING

MPA has partnered with Cleverciti Comprehensive Parking Management Platform, a curb management platform that offers driver guidance in key high-demand areas of the city. Circling for parking results in increased congestion, leading to higher rates of emissions and negative interactions between modes. Curb management tools can help reduce these impacts.



MINNEAPOLIS

Population: 425,336 Metered Spaces: 9,500

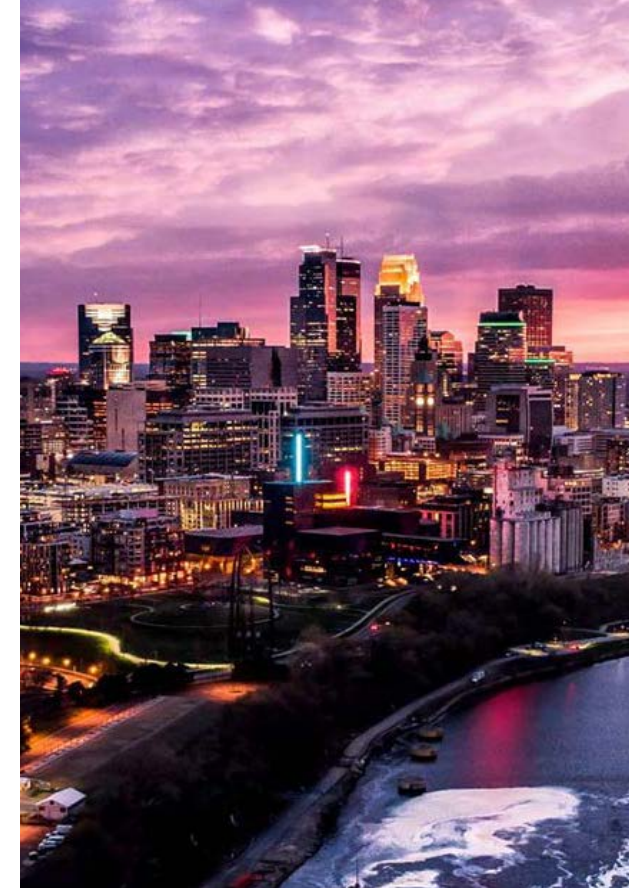
Hours of Operation	Meter Cost	Meter Fine	Time Limit	Meter System
8:00 AM – 12:00 AM (varies) Monday – Sunday (varies)	\$0.50 - \$6.00/hr	\$45.00	2-hour to 10-hour limits	Multi-space Meters

System Profile: Minneapolis (MPLS) Parking includes the management of 9,500 on-street parking spaces and 15 off-street garages. MPLS does not operate all metered spaces in the city. Private entities including Minneapolis Parks & Recreation, the University of Minnesota, and other private entities such as hospitals also manage metered spaces.

System Funding: The Municipal Parking Fund, managed by the Public Works Department, accounts for the operation and maintenance of the City parking system. Major parking capital construction, repairs, and replacement activities also occur in this fund. Parking Fund revenues and expenses are generated daily from off-street parking (ramps and surface lots), on-street parking (parking meters and parking zones), and the impound lot (tow operations and vehicle auctions).

Pricing & Payment System: Parking rates vary by zones in the city. More popular zones are priced at \$3.00 per hour, such as in

downtowns and high-demand areas. Lower-demand areas are priced at \$0.50 per hour. While most of the public parking is enforced daily, it does not apply to all areas; some are only enforced Monday through Friday, while other places are enforced Monday through Saturday. Additionally, Minneapolis enforces meter event zones, which include areas such as Target Field, Target Center, US Bank Stadium, Huntington Bank Stadium, and the Convention Center. These zones vary from \$2.00 to \$6.00 per hour and are contingent on events. For example, Target Field and Target Center event zones have a rate of \$5.00 per hour three hours prior to the event and one hour after event start.



Source: City of Minneapolis, 2023

CRITICAL PARKING PERMITS

MPLS offers critical parking permits for residents or businesses that are located within critical parking areas. These permits cost \$25.00 per year for residents (3 per household) and \$25.00 per month for businesses (2 per address). Residents are also allowed 2 visitor permits for \$10.00 per year.



NASHVILLE

Population: 678,851 Metered Spaces: 1,700

Hours of Operation	Meter Cost	Meter Fine	Time Limit	Meter System
12:00 AM – 11:59 PM (varies) Monday – Sunday (varies)	\$1.75 - \$2.25/hr.	\$25.00	2-hour to 6-hour limits	Single-space meters, Multi-space meters

System Profile: Nashville’s parking system is managed within the Nashville Department of Transportation and Multimodal Infrastructure (NDOT) and includes 1,700 metered parking spaces, two public garages, and a parking permit program. The Metropolitan Traffic and Parking Commission is the governing body for the managed parking system and enacts parking limitations and regulations.

System Funding: Nashville’s parking system is operated through the General Fund.

Pricing & Payment System: Majority of Nashville operates under a flat rate of \$1.75 per hour. However, the Central Business District’s hourly parking rate is \$2.25 per hour. Maximum time limits vary by location and time of day. For example, in some locations the maximum time limit is 3 hours until 6:00pm, when the maximum limit is extended up to 6 hours. The system utilizes single-space and multi-space meters with credit card, coin, and mobile payment options.



Source: Adobe Stock, 2023

PARKLET PERMIT PROGRAM

NDOT operates a Parklet Program that facilitates the re-use of underutilized on-street parking spaces for public parklets – serving pedestrian-friendly streets and supporting the city’s public realm. Applicants pay a \$150 application fee and an annual fee of \$750 for metered spaces and \$375 for non-metered spaces.



OMAHA

Population: 487,300 Metered Spaces: 4,500

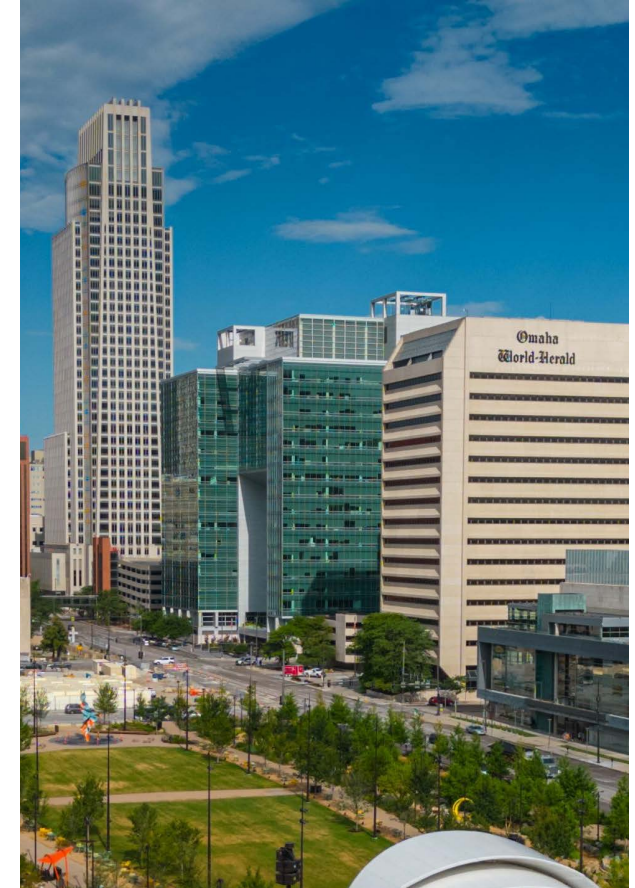
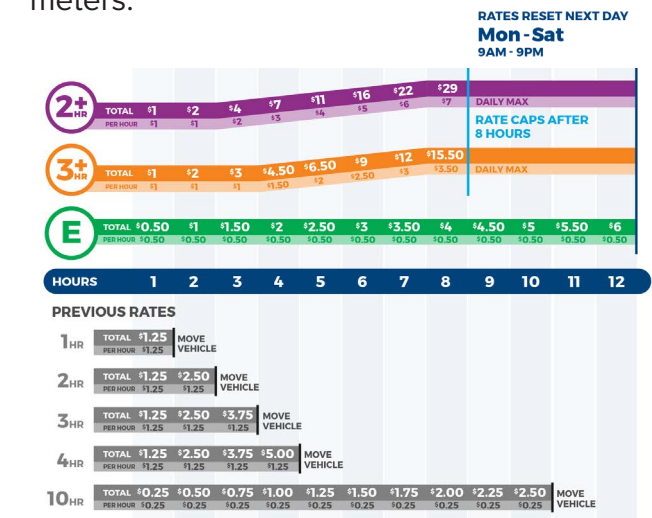
Hours of Operation	Meter Cost	Meter Fine	Time Limit	Meter System
9:00 AM – 9:00 PM Monday – Saturday	\$0.50 - \$7.00/hr.	\$16.00 - \$50.00	No maximum	Multi-space Meters

System Profile: The Parking & Mobility Division is part of the City of Omaha’s Public Works Department and operates Park Omaha. Park Omaha manages on-street parking throughout downtown and midtown Omaha. Included within the system are two parking garages, four surface lots, and 4,500 metered spaces.

System Funding: Park Omaha is funded through a City enterprise fund, which reinvests revenue into the city through improvements to the parking and mobility system and directly benefiting the Downtown Business District.

Pricing & Payment System: The City of Omaha operates a progressive, or tiered, pricing system. Within this system, drivers pay for the time that is used according to the three established rate zones. A Purple 2+ area will begin increasing hourly rates after two hours. An Orange 3+ area will begin increasing after three hours. And a Green E area is an economy rate, with no increase. Each rate zone has a rate cap, as illustrated

in the graphic on this page. Parkers can pay utilizing the Park Omaha App, ParkMobile, Text-to-Pay, or pay-by-plate at multi-space meters.



Source: Adobe Stock, 2023

PROGRESSIVE RATE ZONES

Progressive Rate Zones encourage turnover based on need throughout the managed parking area. Purple zones indicate the need for high turnover, increasing the hourly rate after two hours. Orange zones indicate the need for medium turnover. And lastly, Greens indicate low turnover need and provides a more affordable option.



RALEIGH

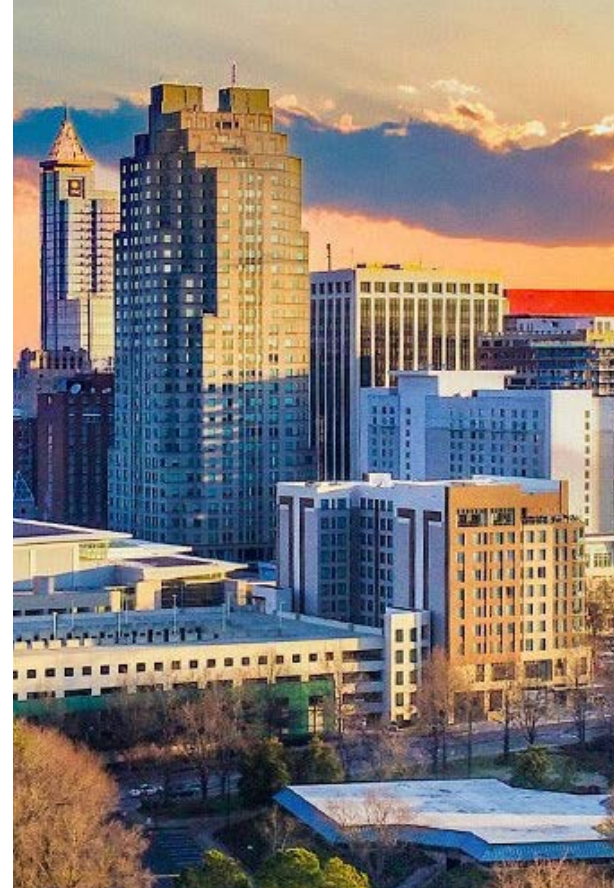
Population: 469,124 Metered Spaces: 1,600

Hours of Operation	Meter Cost	Meter Fine	Time Limit	Meter System
8:00 AM – 8:00 PM (varies) Monday – Friday	\$1.25 - \$1.50/hr.	\$20.00	2-hour limit	Multi-space meters

System Profile: Raleigh Parking is responsible for the management and enforcement services for approximately 1,600 parking spaces and 8 city-owned parking garages. Parking is enforced by a combination of Raleigh Parking staff and the City of Raleigh Police Department.

System Funding: In the City of Raleigh, the parking division pays for itself through an enterprise fund. Its funds are separate from the city’s general funds and is not supported by property or sales tax. It’s a self-supporting business activity.

Pricing & Payment System: Parking rates vary by zones in the city. More popular zones in the city are priced at \$1.50 per hour, such as in the Hillsborough and Fayetteville Street Corridor. Lower demand areas such as the Glenwood South corridor and Downtown Central Business District are priced at \$1.25 per hour. Parkers can utilize multi-space meters or mobile app payment to pay for a parking session.



Source: City of Raleigh, 2023

MIXED-USE LOADING ZONES

Raleigh recently created Mixed-Use Loading Zones, a new loading zone type which encompasses all types of loading and is mainly utilized around mixed-use developments where multiple curb space uses are typically competing for access.



SACRAMENTO

Population: 525,041 Metered Spaces: 6,300

Hours of Operation	Meter Cost	Meter Fine	Time Limit	Meter System
8:00 AM – 10:00 PM (varies) Monday – Sunday (varies)	\$1.75 - \$3.75/hr.	\$62.50	Varies	Single-space Meters, Multi-space Meters

System Profile: The Parking Services Division of the Public Works Department manages and enforces on-street parking throughout Sacramento. The system includes 6,300 metered and 25,000 total on-street parking spaces located primarily within Central City Sacramento.

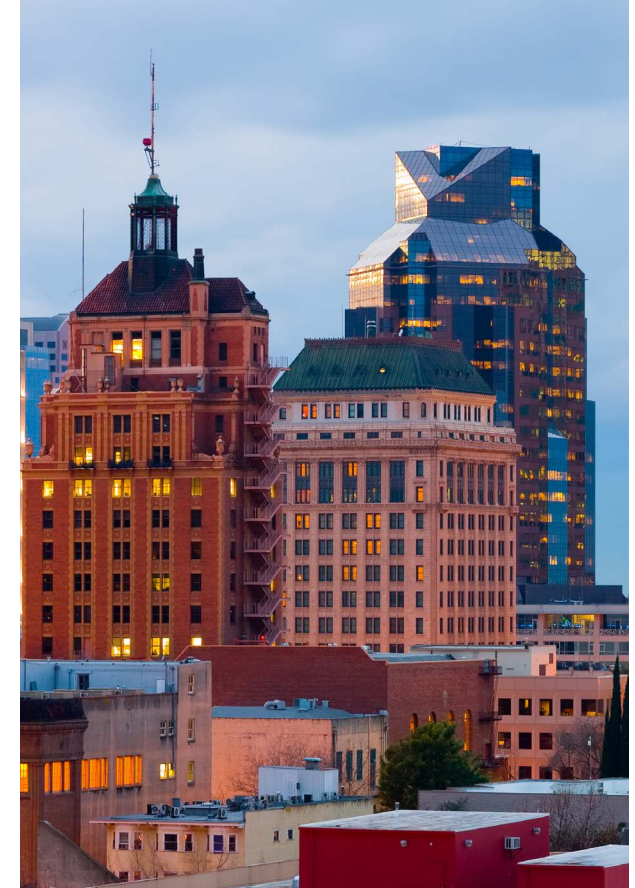
System Funding: Sacramento’s on-street parking revenue contributes to the City’s General Fund.

Pricing & Payment System: Sacramento utilizes a tiered parking structure, ranging from 1+ hour to 4+ hour rate structures. For example, a 3+ zone will increase in the hourly rate after 3 hours with the following structure:

- Tier One: Hours 1 to 3 at \$1.75/hr.
- Tier Two: Hour 4 at \$3.00/hr.
- Tier Three: Hours 5+ at \$3.75/hr.



Additionally, Sacramento utilizes short-term and long-term meters. Majority of meters are considered short-term and include the tiered rate structure. Long-term meters allow up to 10 hours of parking and an \$8 flat rate. Parking sessions can be paid using single-space meters, multi-space meters, or the ParkMobile app.



Source: Adobe Stock, 2023

TIERED PRICING SYSTEM

The City of Sacramento utilizes a tiered pricing system for on-street parking to encourage turnover and prioritize short-term parking, thereby supporting residents, visitors, and businesses and shifting long-term parking off-street or to specific on-street locations.

OUTREACH SUMMARY

In Fall 2022, CDOT hosted an online survey to gather user-experience and feedback on the Uptown and South End managed parking areas, Residential Parking Permit Program, and loading zones.

Through over 1,000 responses to the online survey, CDOT gathered feedback and sentiment on how the existing system is operating. The following are key themes and results from the survey.

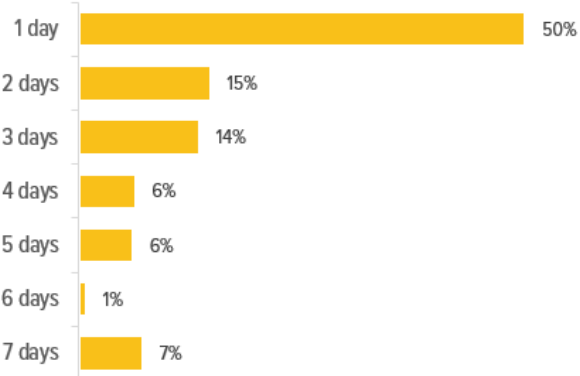
Question #1: Please rank your preferred parking option: (n=681)

Of the options provided, most respondents ranked on-street parking as their preferred parking option. If available, a parker will most likely park in on-street parking upon arriving at their destination, regardless of their duration of stay. With a finite amount of on-street parking availability, incentivizing parking turnover and utilization of other modes of transportation or off-street parking is key.

On-Street Parking	2.07
Off-Street Parking	2.24
Car-free options (bike, walk, scooter, transit, etc.)	2.77
Private Parking Garage	2.77

Question #2: In a typical week, how often do you use public on-street parking spaces? (n=818)

Of those that responded, 50% of parkers utilize on-street parking one day a week, with 79% of parkers using on-street parking three or less days a week. Just over 20% of parkers utilize on-street parking for four or more days a week.



Question #3: How would you describe on-street parking availability for the following areas: (n=831)

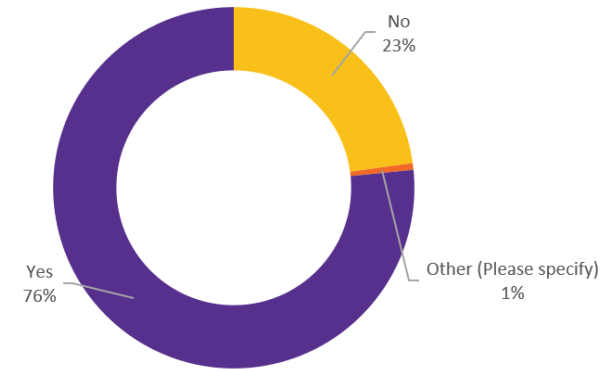
Of those that responded, almost 90% of parkers describe on-street parking availability in Uptown and South End as difficult during peak times or always difficult. Approximately 10% of parkers would describe parking in these areas as usually available.

	Uptown	South End
Always Available	2%	2%
Usually Available	9%	10%
Difficult during peak times	46%	43%
Always Difficult	42%	46%

Question #4: Have you ever tried to patronize a business and left because you could not find an on-street parking space? (n=831)

Other comments: (n=6)

Of those that responded, 76% of parkers have tried to patronize a business but left because they could not find an available on-street parking space, while 23% have not had this experience.



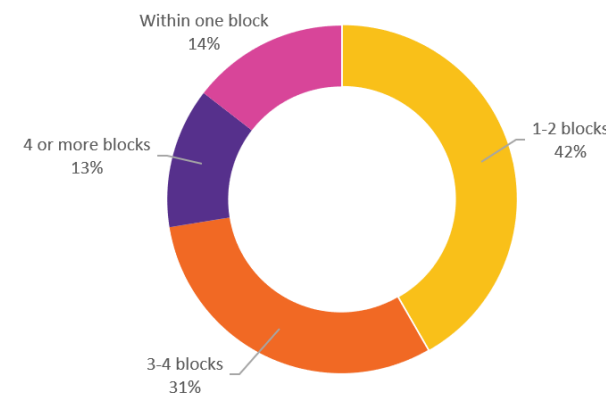
Question #5: Please rank the reasons you choose to utilize on-street parking: (n=585)

Of the options provided, most respondents ranked “It is the fastest option” as their top reason for using an on-street parking space.

It is the fastest option	2.33
It is the cheapest option	2.34
It is easy to use	2.80
There are spaces available	3.38
I feel safest using on-street parking	4.00

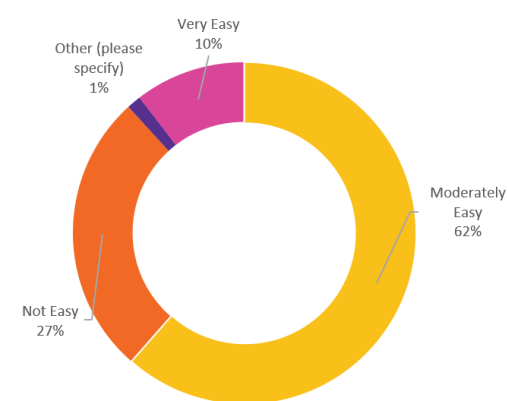
Question #6: How far from your destination are you willing to park? (n=820)

Of those that responded, 86% are willing to park more than a block away from their destination, with 13% of respondents willing to park more than 4 blocks away from their destination. 14% of parkers are willing to park within one block of their destination.



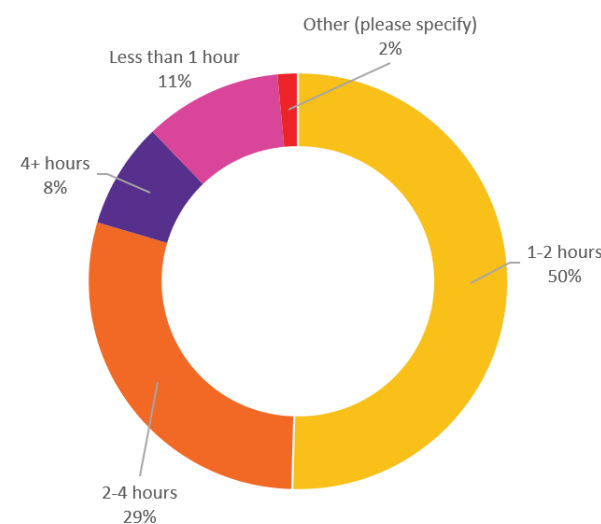
Question #7: When you use on-street parking, is parking signage easy to understand? (n=815)

72% of respondents indicated that when using on-street parking, parking signage is at least moderately easy to understand. While 27% describe signage as 'Not Easy' to understand.



Question #8: When using on-street parking, how long is your typical parking session? (n=803)

Of those that responded, 11% of parkers will typically use on-street parking for less than an hour, while 50% typically park for 1 to 2 hours and 37% will park for 2 hours or more.



Question #9: What time do you typically need to use on-street parking? (select all that apply) (n=759)

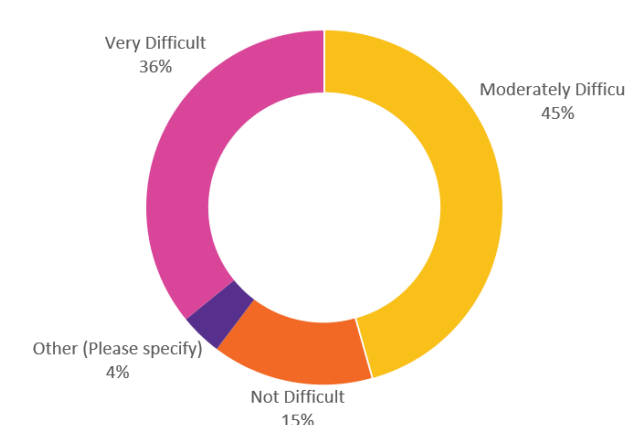
Other comments (n=25)

Of those that responded, most parkers indicated needing to use on-street parking in the afternoon (12:00 PM - 6:00 PM) and evening (6:00 PM - 12:00 AM). 24% typically need to use on-street parking in the morning (6:00 AM - 12:00 PM), and less than 10% need to use on-street parking overnight (12:00 AM - 6:00 AM).

Evening (6:00 PM – 12:00 AM)	59%
Afternoon (12:00 PM – 6:00 PM)	57%
Morning (6:00 AM – 12:00 PM)	24%
Overnight (12:00 – 6:00 AM)	7%
Other (Please specify)	5%

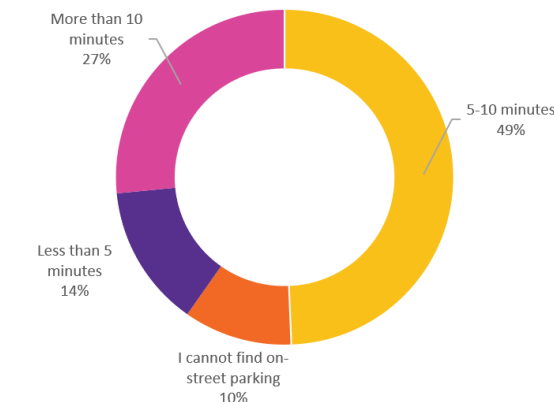
Question #10: When you use on-street parking after 6:00 PM, how difficult is it to find an available space? (n=778)

Of the respondents, over 80% of parkers describe finding an available on-street parking space after 6:00 PM as either very difficult or moderately difficult. 15% indicated that finding an available space is not difficult after 6:00 PM.



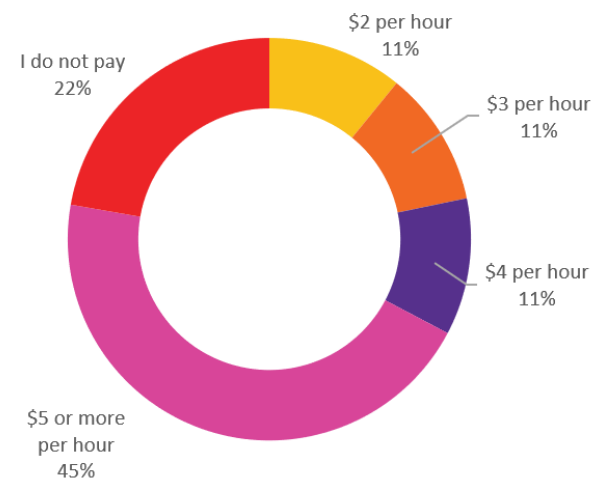
Question #11: When you use on-street parking spaces, how quickly are you able to find an available space? (n=780)

Of those that responded, 14% of parkers are able to find an available on-street parking space in under 5 minutes, while it takes 76% of respondents more than 5 minutes, with 27% taking more than 10 minutes to find an on-street parking space. 10% of parkers indicate that they cannot find on-street parking.



Question #12: When you do not use on-street parking, how much do you pay per hour to park elsewhere? (n=773)

Of the options provided, 33% of respondents pay \$2 to \$4 per hour for off-street parking. 45% of parkers who responded pay \$5 or more, and 22% indicate that they do not pay when they do not use on-street parking.



Question #13: If you knew a parking space would always be available, how much would you pay per hour to park on-street? (select all that apply) (n=728)

Of those that responded, 44% of parkers would pay at least \$2 per hour, while 8% would pay \$5 or more per hour. 28% of respondents indicated that they would not pay to park on-street even if it meant knowing a spot would always be available.

\$2 per hour	44%
I would not pay	28%
\$3 per hour	20%
\$4 per hour	10%
\$5 or more per hour	8%

Question #14: How satisfied are you with your on-street parking experiences? (n=752)

About 23% of respondents indicated feeling satisfied with their overall on-street parking experiences. 41% reported feeling dissatisfied, with 13% feeling “very dissatisfied” with their on-street parking experiences.

	Overall	Uptown	South End
Very Satisfied	3%	3%	3%
Satisfied	20%	16%	13%
Neutral	36%	26%	27%
Dissatisfied	28%	35%	34%
Very Dissatisfied	13%	21%	24%

Question #15: Please rank improvements you would like to see in the on-street parking system. (n=634)

Of the options provided, respondents ranked “Having more spaces available” and “Knowing the location of available parking spaces” as the top two improvements they would like to see in the on-street parking system.

Having more spaces available	2.04
Knowing the location of available parking spaces	2.3
Other (Please specify)	3.35
Improved signage	3.51
Longer time limits	3.59
More technology options	4.12
Permits for long-term parking	4.8

Respondents identified additional improvements to the parking system through 92 written comments that included the following themes:

- Investing in multimodal transportation options such as walking, biking, and/or taking transit will reduce the demand on the parking system. **(25 comments)**
- Low or no cost parking options. **(20 comments)**
- Remove on-street parking to make room for alternative curb uses including bus lanes, bike lanes, or automobile travel lanes. **(12 comments)**
- Increased enforcement and additional restrictions in residential areas are needed. **(13 comments)**
- Additional space for pick-up/drop-off, delivery, and loading zones to direct short-term parking to specific areas and ease congestion and violations. **(4 comments)**

Question #16: What parking technologies have you used? (select all that apply) (n=541)

Of those that responded, 88% of parkers have used a parking meter/pay station. 85% have used the mobile app and 30% have used text-to-pay for on-street parking.

I've used a parking meter/pay station	88%
I've used the mobile app	85%
I've used Text-to-Pay	30%
I've used the mobile app	85%
I've used Text-to-Pay	30%

Question #17: If you have used the following technologies, how satisfied were you? (n=532)

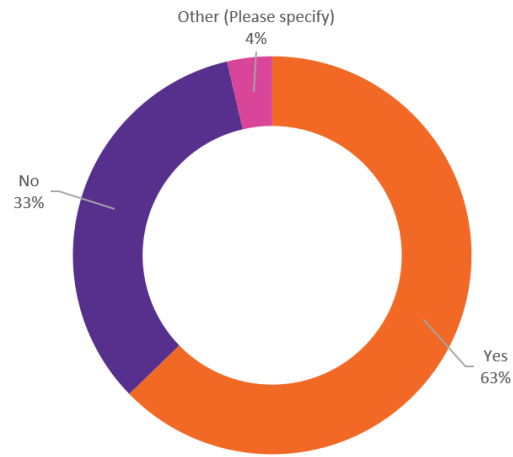
About 60% of respondents reported feeling satisfied while using parking meters and pay stations to pay for on-street parking. Around 10% reported feeling dissatisfied, while 23% remained neutral about both technologies.

	Parking Meter	Pay Station
Very Satisfied	13%	8%
Satisfied	51%	52%
Neutral OR have not used	23%	23%
Dissatisfied	10%	13%
Very Dissatisfied	4%	3%

Question #18: If you are a resident, do you have overnight parking options besides on-street parking? (n=523)

Other comments: (n=5)

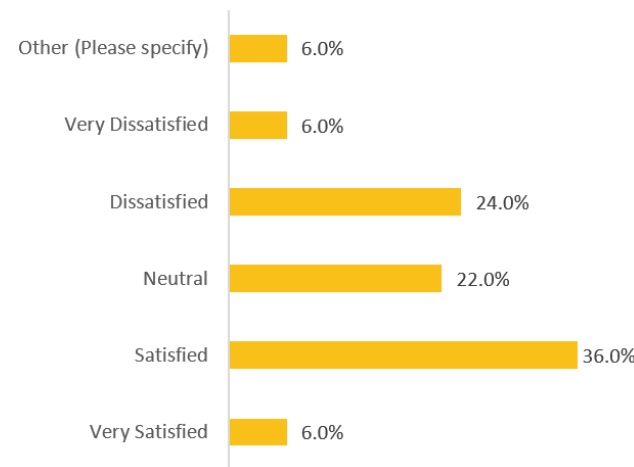
More than 60% of resident respondents have access to overnight parking options besides on-street parking, while 33% do not have access to other overnight parking options outside of on-street parking.



Question #19: If you are part of the city’s Residential Parking Permit Program, how satisfied are you? (n=50)

Other comments: (n=3)

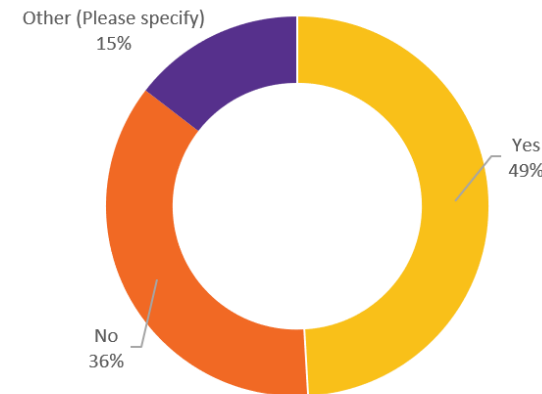
Out of the respondents who are part of the city’s Residential Parking Permit Program, over 40% report feeling satisfied, while 30% feel dissatisfied or very dissatisfied. 22% of respondents reported neutral feelings towards the RPP Program.



Question #20: If you have a Residential Parking Permit Program in your area, do you think it is an effective tool to manage parking in your neighborhood? (n=55)

Other comments: (n=8)

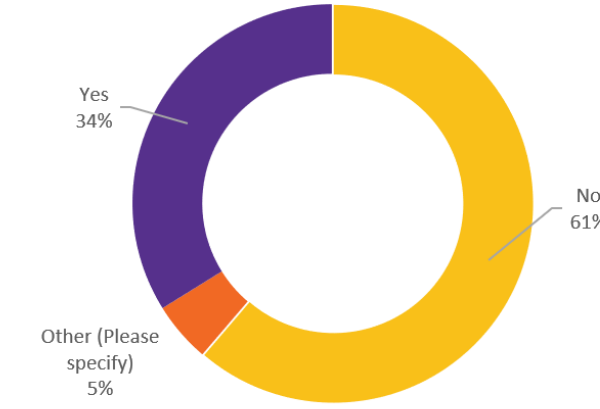
Out of the respondents who have a Residential Parking Permit Program in their neighborhood, 49% think it is an effective tool to manage parking in their neighborhood. 36% do not think the RPP Program is an effective tool to manage parking in their neighborhood.



Question #21: If a Residential Parking Permit Program is NOT in your area, do you think residential parking would benefit your area? (n=449)

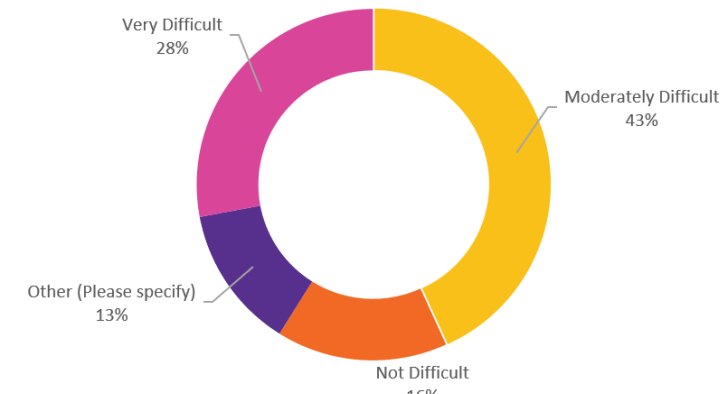
Other comments: (n=16)

Of the respondents who do not have a Residential Parking Program, 34% reported that the program would benefit their area, while 61% believe residential parking would not benefit their area.



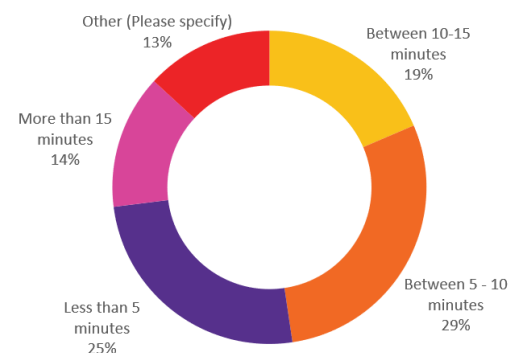
Question #22: When you use on-street loading zones, is it difficult to find an available space? (n=433)

Of those that responded, 71% of parkers describe available loading zone spaces as difficult to find, with 28% describing these spaces as “very difficult” to find. Less than 20% of respondents describe available loading zones as “not difficult” to find.



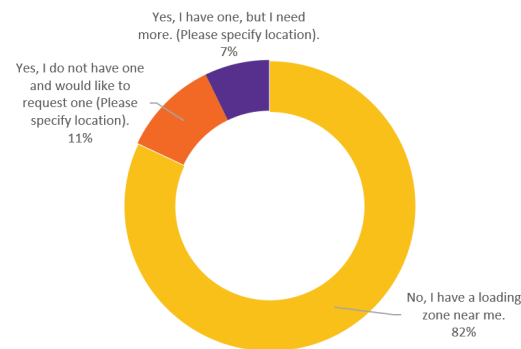
Question #23: When you use on-street loading zones, how long are your typical loading times? (n=426)

75% of respondents typically spend 15 minutes or less using on-street loading zones, with 25% spending less than 5 minutes in the loading zone space. 14% of respondents reported typically spending more than 15 minutes in an on-street loading zone space.



Question #24: If there is not an available loading zone near you, would you like to request one? (n=389)

Of those that responded, 82% have a loading zone near them, 11% do not have a loading zone near them and would like to request one, and 7% of participants do have a loading zone near them, but need to request more.



Respondents included specific locations for proposed loading zones, additional comments on enforcement and proper use, and recommendations for improved signage resulting in the following themes:

- Improper use of bike lanes for loading zones or parking leads to safety concerns for bicyclists. **(18 comments)**
- A lack of enforcement for proper loading/unloading is causing safety concerns for drivers, pedestrians, and bicyclists. **(19 comments)**
- Improved signage for loading zones would encourage proper use of loading zones and decrease user confusion. **(5 comments)**
- Additional locations identified for proposed loading zone implementation. **(22 comments)**

Question #25: What suggestions do you have for improving the parking experience?

When asked for suggestions to improve the parking experience, respondents provided 429 written comments with the following themes:

- Increased management for the on-street system including demand-based costs and appropriate time limits to encourage turnover will reduce traffic congestion and circling for parking. **(26 comments)**
- Lower and no-cost parking options would encourage visits to Uptown and South End and enhance the parking experience during events. **(43 comments)**
- Parking availability is needed with solutions including additional managed parking spaces, better wayfinding, and clear signage. **(62 comments)**

- Investing in infrastructure for multimodal transportation such as walking, biking, and/or taking transit will reduce the demand on the on-street parking system and make traveling to and from Charlotte communities to Uptown and South End safer and more inviting. **(103 comments)**
- Parking on weekends and evenings should be low or no cost. **(21 comments)**
- Designated pick-up/drop-off, delivery, and loading zone space would be beneficial for short-term parking needs. **(15 comments)**
- Reducing on-street parking for other curb space needs such as bike lanes and bus lanes to safely move more people. **(25 comments)**
- Eliminate on-street parking on highly utilized thoroughfares to decrease traffic congestion or conflicts with the Gold Line. **(25 comments)**

- Increased density and population within activity centers have increased the demand on surrounding neighborhood and residential streets. Parking permit programs and enforcement are a needed tool. **(26 comments)**
- Clear signage and pavement markings would enhance experience and reduce confusion. **(25 comments)**
- Off-street parking is a preferred tool for longer-term parking if the cost is right and users know where to find parking. **(61 comments)**
- Increased technology options for wayfinding or space availability will enhance the user experience. **(29 comments)**

Question: Use the map below to provide feedback on specific areas-- Give general comments, suggest additional loading zones, ADA and regular parking spaces, and more using the custom pins at the top of the map.

In addition to the Strategic Parking Plan Online Survey, CDOT provided an interactive feedback map where respondents were also asked to provide their feedback on specific areas including ADA and general parking, loading zones, ride share, residential parking by permit, food delivery pickup, electric vehicle parking, and general comments.

Respondents placed 110 pins on the interactive feedback map and included 57 written general comments. Written feedback included the following comments and general themes:

- Greater enforcement in high-traffic areas and areas with significant overflow parking would encourage compliance with parking restrictions and enhance neighborhood livability for residents, businesses, and visitors.

- Residential parking is increasingly more challenging in areas adjacent to South End due to long-term visitor and employee parking. A lack of driveways in nearby residential areas causes increased need for on-street parking and residential permits.
- Circling for parking causes increased traffic congestion and safety conflicts with pedestrians and bicyclists in activity centers. Increased management of curb space can enhance user experience and parking availability.
- South End construction and development creates parking issues in adjacent neighborhoods, such as Dilworth. Residential parking permits are a necessity.

- Need space designated for ride share pick-up and drop-off and loading zones.
- Need to manage spaces that never turn over.
- It's important to maximize on-street parking along Camden and Hawkins and throughout South End.
- Parking management is needed. On-street parking is being used all day as a light rail park and ride.

- Additional Enforcement, Planning, & Safety Measures Needed **(17 comments)**
- Residential Parking Permits Needed & Construction Parking Issues **(14 comments)**
- Congestion & Traffic Caused by Circling for Parking **(12 comments)**
- Additional Parking or Managed Parking **(11 comments)**
- Additional Loading Zones & Pick-up/Drop-off Zones Needed **(9 comments)**
- Remove Parking or Close Street to Parking **(9 comments)**
- Multimodal Investments (Bike/Pedestrian/Transit) **(8 comments)**

