BEST PRACTICES: CURB MANAGEMENT

The curb is not just a delineator between the sidewalk and the roadway. It is also an important interface between vehicle traffic, pedestrian space on the sidewalk, and the businesses and buildings that line a street. How a curb is regulated, how a curb lane is used, and what gets placed adjacent to a curb all impact how an area functions. The activity from land uses along a street—whether retail, restaurants, transit stops, office space, or green space—places demands on the curb that require effective curb management strategies.

The ways people and goods move in cities, including in Nashville, have changed, resulting in increased competition for limited curb space. Traditionally, curb space has been used for on-street parking and vehicle travel lanes. However, cities are increasingly choosing to prioritize space for walking, biking, and transit over single-occupancy vehicles. At the same time, the growth of transportation network companies like Uber and Lyft and the increase in freight, e-commerce, and on-demand deliveries have led to an unprecedented demand for curb space. The space on the sidewalk side of the curb has also seen growing pressure from shared micromobility[1] services. Limited curb space is becoming increasingly valuable, and conflicts between modes are increasing.

The Curb and Curb Uses

There are several categories of curb space uses, including goods movement, passenger access, parking, active travel, and curb-adjacent land uses:

- A key function of the curb is to serve as a loading and unloading space for **goods movement.** Goods movement includes freight, parcel deliveries, and on-demand food, grocery, and delivery services. Goods and services reach

Source: Getty Images

[1] Micromobility and shared micromobility are often used interchangeably to refer to e-scooters, bikes, and e-bikes that are shared by multiple people. Personally owned bicycles are generally not referred to as micromobility devices.

their customers primarily through commercial vehicle or truck loading zones.

- **Passenger access** includes pick-up and drop-off using personal vehicles, ridehailing, valet services, and transit. When people arrive at their destination or transfer between different transportation modes or services, such as walking or rolling to the bus or switching bus routes, the activity occurs at the curb. Passenger access includes transit stops, passenger loading/unloading zones, taxi zones, short-term parking (15-30 minutes), curb extensions (often used to provide additional space for pedestrians or people waiting for the bus), and curb cuts (for ADA-accessible ramps), among other uses. It is particularly important to accommodate the access needs of people with disabilities at the curb; ground transportation, which can be provided by personal passenger vehicles, by WeGo, and by private transportation services like airport or hotel shuttles, and accessible loading and unloading spaces are critical.

Source: Getty Images

- **Parking** is traditionally a major use of the curb. Parking may include space for personal vehicles as well as dedicated space for specific uses such as police, government, construction vehicles, carshare vehicles, or bus layover. Parking spaces may also be dedicated to bicycle parking and micromobility parking, most often in corrals or at stations. Electric vehicle charging stations are also becoming more popular as curb space uses. During the COVID-19 pandemic, many communities created curbside pick-up zones for short-term parking (for durations of 3 to 15 minutes). This short-term parking replaced parking with longer time limits that was not being used during stay-at-home orders and met the needs of increased on-demand delivery services.

Source: Getty Images/iStockphoto

- **Active travel** includes people using sidewalks and dedicated on-street travel lanes, such as protected bike lanes, to walk, roll, bike, scoot, and skate. Due to conflicts between

pedestrians, especially those with disabilities, and people using micromobility devices, cities are increasingly regulating where micromobility devices can operate. (See the best practices paper on Shared and Micromobility Management for more on this topic.)

Source: Getty Images/iStockphoto

- Curb space can also accommodate **business activities**, including food trucks and mobile vending. When these activities happen along the curb, they are typically in spaces specifically designated for such purposes, which are often limited to certain times of day and/or days of the week. When permitting vending at the curb, it is important to consider adjacent businesses and the sidewalk space that will be required for queuing and waiting for food.
- Cities have increasingly created opportunities to transition curb parking spaces into temporary or permanent **curb-adjacent people spaces**, like outdoor dining, sidewalk cafes, parklets, public art installations, street festivals, retail, and public spaces. These uses contribute to a more active and vibrant street, provide more space for people (especially in places with narrow sidewalks and during the social-distancing needs of the pandemic), and support businesses; however, they also increase demands on the curb.

Source: Getty Images

Source: NACTO, Ben Baldwin, TriMet

- The curb can also serve as part of the system for **stormwater management.** Stormwater can create barriers to crossing streets and can impede access to transit stops. Curbs can be retrofitted to support stormwater management by adding

bio-retention facilities, like planters or swales, and pervious surfaces along the curb. Stormwater-capturing curb extensions and stormwater-friendly transit stops are also options for curb space.

- **Physical infrastructure,** like **curb cuts** and **alley access,** require space along the curb. Curb cuts support greater mobility and accessibility for people walking, rolling, and biking, especially for those with disabilities. Alleys provide a valuable alternative to the curb as spaces where deliveries and freight can be unloaded and service access can be provided. Alley access does require space along the curb, but alleys also play a role in freeing curb spaces for other uses. Ultimately, too many curb cuts, driveways, and alley access points can create an unsafe walking, rolling, and biking environment by introducing additional points of conflict with people driving.

Source: Nelson\Nygaard

Curbside Management Strategies

Curbside management strategies seek to optimize the use of the curb and manage curb space to maximize mobility, safety, and access for the wide variety of curb demands. Curb management contributes to safer streets; reduces conflicts from double parking, deliveries, and pick-ups or drop-offs; reduces conflicts with pass-through sidewalk patrons; ensures context-appropriate use of the curb; and supports flexible, demand-based parking pricing. There are three general categories of curb management strategies: time limits, use limits, and pricing.

Time Limits

Time limits—including short-term parking, short-term loading, short-term passenger loading, and off-peak delivery—regulate the amount of time one person or vehicle can spend at a space on the curb. Time limits are typically easy to implement and are usually easy to understand; however, they can be hard to enforce due to limited staffing capacity and high labor costs In areas with high demand for parking or curb space, time limits generally do not manage demand effectively enough to increase turnover and make it easy to find a space on the curb.

Source: Nelson\Nygaard

Short-term parking provides curb space for parking stays that are generally 10 to 30 minutes. This type of time-limited parking provides curb space for short-term uses, like customers running errands, and encourages high curb turnover.

Short-term loading is similar to short-term parking, but short-term spaces are dedicated for deliveries and freight loading and unloading. These spaces are beneficial for short-term delivery drop-offs, such as UPS or FedEx deliveries, or loading/unloading for restaurants and other businesses.

With the increased use of ride-hailing services like Uber and Lyft, cities have begun to create dedicated **short-term passenger loading spaces**. These are dedicated curb spaces for passenger pick-up and drop-off, and time limits are generally 5-10 minutes.

Off-peak delivery is a strategy increasingly used by cities to restrict freight and delivery unloading to off-peak (often overnight) hours. This strategy is used for longer loading and unloading periods, rather than short deliveries. Off-peak delivery can reduce curbside demand and improve traffic flow, as trucks are more likely to find a space at the curb and less likely to block travel lanes in off-peak hours. However, off-peak deliveries often require delivery operators to adjust employee hours to accommodate off-peak demand.

For more information on parking-related strategies, please see the Parking Management Best Practices paper.

Use Limits

Use limits strategies restrict the types of allowable activities on specific sections of curbs, such as assigning spaces for deliveries or pick-up and drop-off zones rather than for short-term parking.

Source: Nelson\Nygaard

Passenger pick-up and drop-off zones are portions of the curb designated for picking up and dropping off passengers. Vehicles may only be stopped or parked while passengers are actively entering or exiting the vehicle. These zones are restricted to passenger vehicles and are typically designated with signs. Sometimes large transportation or entertainment uses, like an airport or convention center, will have specific passenger pick-up/drop-off zones, even if the municipality does not require them. Enforcement can be required to support proper use of these zones.

Delivery loading and unloading zones are portions of the curb designated for delivery vehicles to load pick-ups and unload drop-offs. Loading and unloading zones give delivery vehicles a space to park along the curb, rather than blocking a travel lane, and prevent passenger vehicles from taking space away from delivery trucks.

Pricing

Pricing strategies put a financial cost on curb space, most often through parking pricing via a parking meter or mobile payment app. Parking pricing is generally applied to passenger vehicles, but some cities have moved toward pricing the curb for deliveries as well.

Source: Nelson\Nygaard

Demand-based pricing, also known as performance-based or dynamic parking pricing, prices parking according to demand for the curb. When demand is high, parking prices increase; when demand is low, prices decrease. Demand-based pricing prioritizes short-term stays and high turnover of spaces along the curb. Rates are set to incentivize people to take other modes of transportation, park for shorter periods of time, or shift the time of day they make their trip to avoid a higher cost. Historically, parking has been free or very inexpensive, which encourages long stays at the curb and reduces turnover. Higher vehicle turnover from demand-based parking increases the number of spaces that are available and can reduce double parking, parking on the sidewalk, and parking that blocks transit stops and bike lanes.

Increasingly, cities have begun to price the curb for goods movement, which is known as **delivery zone pricing**. Implementing paid access to delivery loading and unloading zones can help reduce the duration of occupancy, increase turnover, and shift demand to less congested times. Well-managed curb access for delivery vehicles promotes the economic vitality of commercial areas by making it easier for businesses to receive supplies and fulfill customer requests for deliveries while improving the experience for customers in the area.

Other Strategies

Two additional curb management strategies are curb zone reservation systems and flex zones. These are similar to use limits but can be implemented to achieve a variety of goals.

Curb zone reservation systems allow delivery drivers to reserve curb space for loading and unloading, ensuring they have a space waiting when they arrive. These systems can tell drivers

whether and when spaces are available and provide information on the size of the space. Cities, including Nashville, have piloted curb zone reservation systems in areas where trucks are often double parked.

Smart Zones Pilot

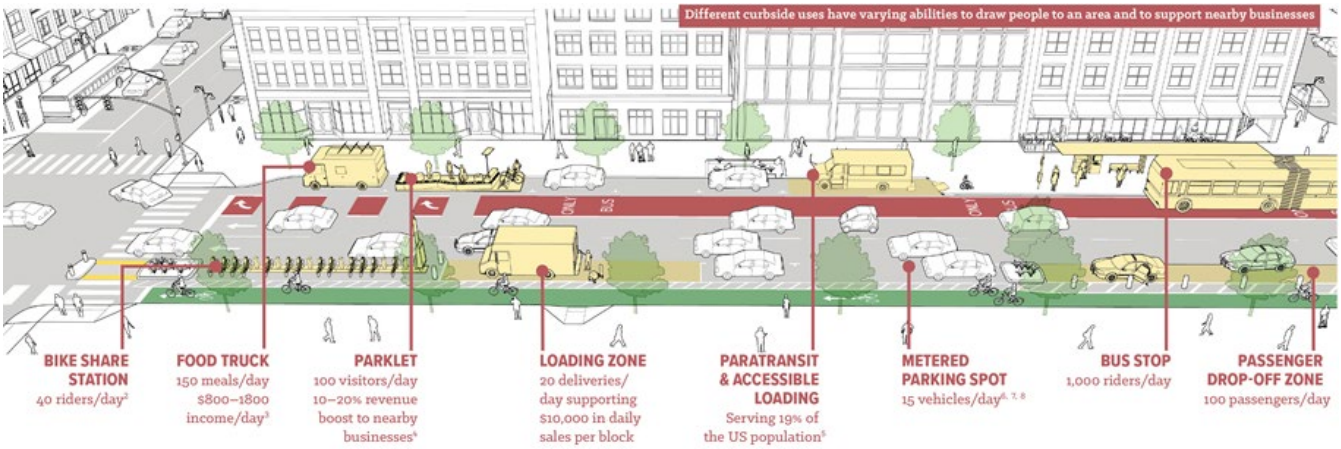
Nashville partnered with Coord (now Pebble)—a company that provides tools and technologies for cities to manage and re-use their parking spaces—to conduct a Smart Zones pilot in 2021. Pebble's Smart Zones are a system for managing commercial loading zones in cities, including the ability to find, reserve, navigate to, and pay for parking or loading spaces.

The pilot included 14 Smart Zones where participating delivery drivers could see the Smart Zone locations and availability in real time. As drivers approached their destination, they could reserve a loading zone and book up to two hours of delivery time. Over 21 delivery fleets participated in the Nashville Smart Zones pilot, generating more than 1,200 bookings as of January 2022. However, larger delivery companies like UPS, USPS, and FedEx did not participate in the pilot, and private vehicles often used the loading space for parking. Pebble provided a mobile app for Nashville parking enforcement to use but did not provide personnel for Smart Zone enforcement.

Nashville could use the data and lessons learned from the pilot to implement a wider curbside management program throughout Downtown, potentially extending beyond freight and deliveries to include passenger pick-up and drop-off.

Source: Pebble

Flex zones are a curb management strategy where permitted uses along the curb can change throughout the day and are prioritized based on the needs of surrounding land uses. Traditionally, cities have designated fixed uses for all portions of the roadway, but flex zones can accommodate different types of land uses and right-of-way functions. Flex zones can be used for commercial deliveries, on-street parking, taxi zones, or temporary seating and can address mobility and public space needs during specific times of the day, week, and year. Flex zones can also be used for accessible (and paratransit) loading, bus stops, food trucks, and passenger pick-up/drop-off points. These uses can change to meet demand, such as a transit-only lane in the morning and evening peak travel period, a delivery loading and unloading zone in the mid-morning hours, parking during the day, and passenger drop-off during the evening.



Source: National Association of City Transportation Officials

Why does curb management matter in Nashville?

Downtown Nashville is an entertainment and nightlife hub, as well as a thriving and growing business and residential center. The intense amount of activity puts unique around-the-clock demands on the curb. Everyone needs the curb: from pick-up and drop-off space, to short- and longer-term parking, to WeGo stops and B-Cycle or scooter parking, to business deliveries, to space for outdoor dining, and to safe spaces to walk, bike, and roll, curb space is at the heart of Downtown activity. To balance the many demands on the curb—and provide time and space for everyone—Nashville must implement active curb management strategies.

There is significant demand for space on Downtown Nashville's curbs, streets, and sidewalks. Downtown is a unique neighborhood of businesses, employees, institutions and residents with delivery and service vehicles, cars, transit, rideshare services, scooters, bikes, and pedestrians all competing for mobility. Besides meeting the demand for competing uses at the curb, curbside management provides an opportunity to generate revenue through improved parking and loading policies, creates a more efficient right-of-way, and prioritizes non-driving modes.

For a busy downtown core like Downtown Nashville, prioritizing non-driving modes is important for residents, workers, and visitors alike. Curbside management can encourage mode shift, support sustainability, increase safety, and advance a more equitable transportation system.

Case Studies

San Francisco's Curb Management Strategy

Source: Zane Selvans via CC Search / CC BY-NC-SA 2.0

The San Francisco Municipal Transportation Agency (SFMTA) manages San Francisco's transportation network and much of the city's curb space. SFMTA's Curb Management Strategy is a roadmap for how the agency will allocate and manage curb space to both respond to current demands and anticipate future curb access needs.

The roadmap defines five curb functions—access for people, access for goods, public space and service, storage for vehicles, and movement—and prioritizes those functions based on the land uses surrounding the curb. Based on those priorities, SFMTA recommends tools, policies, legislative changes, design standards, and process improvements to improve curb access and use throughout the city.

Source: SFMTA

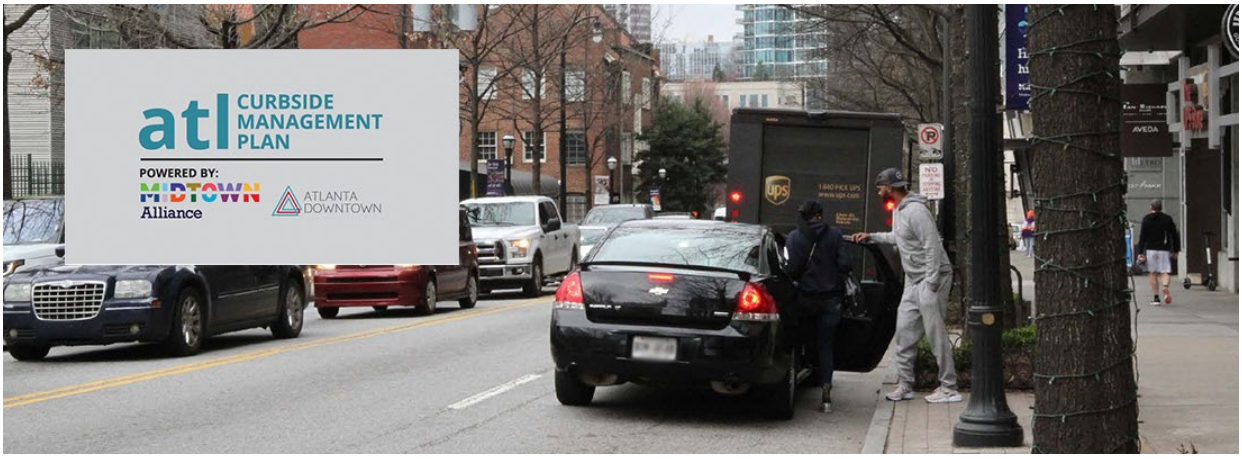
Lessons Learned

- **Different areas of the city have different needs and curb use should reflect that.** SFMTA's Curb Management Strategy is aimed at increasing flexibility for different land uses around the city. One set of guidelines does not work for every neighborhood.
- **While different areas of the city have different needs, access to the curb for people and transit or active transportation are high-priority curb functions.** San Francisco created six land use categories to prioritize curb functions: low-density residential, mid- to -high-density residential, neighborhood commercial, downtown, major attraction, and industrial/production, distribution, and repair. With the exception of industrial/production, distribution, and repair land uses, the other land uses are pedestrian oriented and curb space should be prioritized to reflect that.
- **Curbside management has both equity and accessibility implications.** When SFMTA was developing the Curb Management Strategy, planners identified that the curb was very car-oriented, making the curb inaccessible to many San Franciscans who did not drive or were unable to pay for parking spaces. SFMTA created an equity objective as a result of public outreach to incorporate equity into decisions around the curb hierarchy.

Applicability to Nashville

San Francisco is a very compact and dense city with high levels of traffic congestion and many competing demands for curb space. San Francisco's neighborhoods have different land uses and characters, and the city is both a thriving residential and employment hub and a major visitor destination. Nashville could follow SFMTA's lead by defining and prioritizing curb functions in different parts of Downtown, developing a comprehensive curb management program that can be flexible based on land uses and area-specific needs. This strategy should go beyond loading zones and parking zones—which Nashville already has—to identify more holistic uses of the curb.

Atlanta Curbside Management Action Plan



Source: Midtown Alliance

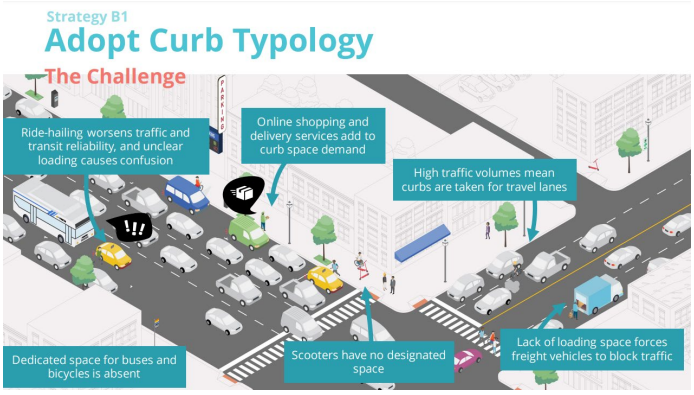
Central Atlanta Progress (CAP), which includes the Midtown Alliance and the Atlanta Downtown Improvement District, is developing the Atlanta Curbside Management Action Plan to identify projects and policies that advance the mobility, safety, and equity of people and businesses in the Downtown and Midtown neighborhoods. The plan addresses curbside uses like parking; commercial loading; taxi, Uber, Lyft, and food deliveries; transit access; bike activity; micromobility; and pedestrian access.

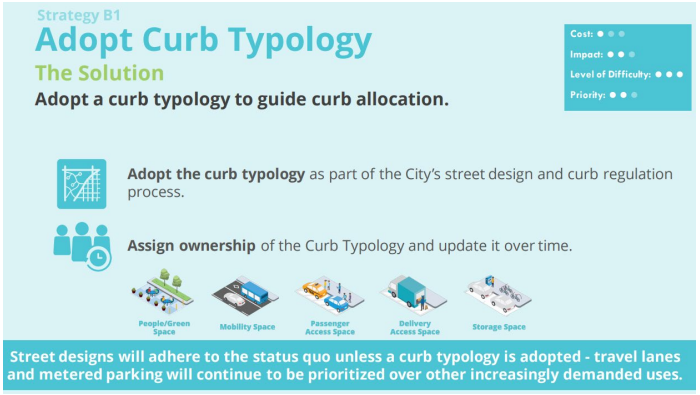
CAP released draft strategies in December 2021 in four major categories: curb operations, policy and regulatory challenges, curb flexibility and performance, and physical infrastructure and curb allocation. As part of the strategy development process, Atlanta developed a curb typology framework to help planners decide how to prioritize curbs in different neighborhoods.

Lessons Learned

- **One size doesn't fit all.** In Atlanta, different parts of neighborhoods have very different contexts and needs. A one-size-fits-all approach does not work, as there are varied block lengths and vastly different land uses within the same block.
- **Consolidate curb management activities.** In Atlanta, there were no defined roles and responsibilities for curb management, there was no coordinator for curb management, there was a lack of clear goals for the curbside, and the City's existing curb management strategies focused only on parking. The draft strategies prioritize consolidation and formalization of curb management to ensure there is clear leadership to guide implementation. As part of consolidation, Atlanta will incorporate curb and other transportation impact assessments as a requirement in existing zoning and development review.

- **Create a curb typology.** Atlanta's curbs have historically been allocated to parking. A curb typology helps to prioritize other uses of the curb, especially as shared mobility, ridehailing, and delivery uses increase.





Source: Nelson\Nygaard, Atlanta Downtown, and the Midtown Alliance

Applicability to Nashville

Like Atlanta, Nashville has few curb regulations coupled with significant interest in regulating the curb. Today, Nashville does not have a curb manager or other role dedicated to planning at the curbside. Yet the Tennessee Department of Transportation and private firms like Pebble are anxious to create curbside management pilots and strategies. Nashville could use the strategies from the Atlanta Curbside Management Action Plan to create a similar vision and goals for the curb in Nashville, beginning with a curb typology. Nashville should consider advancing a curb management plan that is aligned with the scope of Atlanta's Curbside Management Action Plan.

Washington, DC Curbside Management Pilots

Washington, DC routinely uses parking demand management pilots to test new strategies for managing the curb. For information on DC's micromobility program, including micromobility corrals and the curb, see the Best Practices paper on Shared and Micromobility Management.

The **Penn Quarter/Chinatown Parking Pricing Pilot (2014 – 2017)** used demand-based pricing in the Penn Quarter and Chinatown neighborhoods to improve vehicle turnover and parking utilization, improve placard compliance, reduce double parking, and shift visitors from driving to the Metro. District of Columbia Department of Transportation (DDOT) applied demand-based parking pricing to on-street spaces in the pilot area. High-demand blocks had higher hourly prices to improve turnover, and low-demand blocks had lower hourly prices to incentivize greater use.

In the pilot area, prices were based on the DC average cost of parking at $2.30 an hour and varied by block, side of the street, day of the week, and time of day (morning, midday, or

evening). Parking prices changed five times during the pilot. DDOT also applied demand-based pricing to commercial loading zones, with pricing based on the highest prevailing hourly rate on the zone's block.

The pilot received positive feedback from local business owners, customers, and delivery drivers. Customers were able to find parking more easily, reporting a 7-minute decline in the time it took to find a space. Additionally, 72% of block faces had the desired level of use at the end of the pilot.[2] With loading zones, there were fewer cases of illegal double-parking and delivery vehicles were able to find loading spaces more easily.

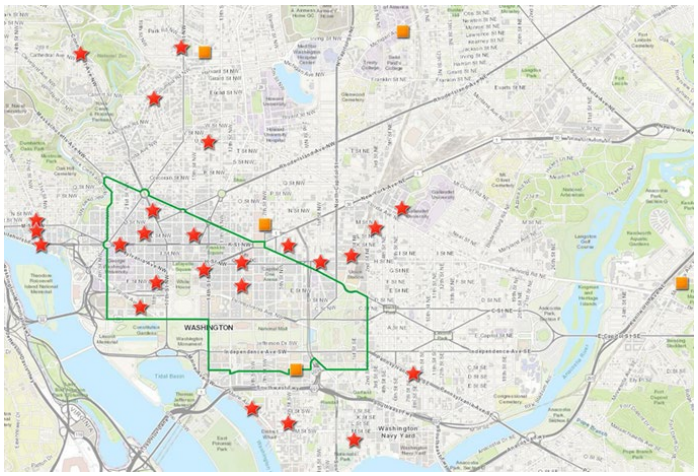
Source: DowntownDC.org

DC launched the **Golden Triangle Nightlife Curb Pilot** in 2017 to address traffic congestion in the Golden Triangle area of Connecticut Avenue and Dupont Circle during nightlife economy hours. Towing enforcement was added six months after the beginning of the pilot. Through the pilot, DDOT hoped to address unsafe passenger loading and ride-hailing from vehicle travel lanes and congestion in areas with heavy pedestrian volumes. The pilot prohibits on-street parking between the hours of 10PM and 7AM from Thursday night to Sunday morning along the busiest stretches of the corridor. Parking is still available on other, less congested,

Source: DDOT

[2] DDOT, 2019. https://ddot.dc.gov/sites/default/files/dc/sites/ddot/page_content/attachments/parkDC%20-%20Executive%20Summary_Final_20190109.pdf

streets. This pilot freed the curb for pick-up and drop-off activity so that people no longer needed to walk into the street to meet their vehicle.



The Golden Triangle pilot's success led to a new **Pick-up/Drop-off (PUDO) Zones Program** in 2020. DDOT and Shared Streets[3] identified 22 other high-demand pick-up and drop-off locations and created 24-hour PUDO zones in those areas. In this iteration of the program, DDOT tested a complete removal of metered parking at the curb, improved signage, and short-term commercial loading. Zones are scattered across the city in the areas with the highest taxi and ride-hailing demand.

Finally, DC also has a freight-specific program that began in 2015. The **Commercial Loading Zone Program** charges commercial delivery vehicles for the time they spend on the curb. Since the beginning of the program, the number of double-parking violations and passenger vehicles parking in loading zones has decreased by more than 50% in pilot areas.[4]

As part of the program, DDOT partnered with curbFlow to explore options for better managing curb space. Private vehicle parking was removed at nine locations where commercial deliveries often result in double parking, and drivers could reserve loading zone time online, either on-demand or in advance. As a result, double parking decreased 64% and commercial drivers from more than 900 companies made 15,000 reservations.

Lessons Learned

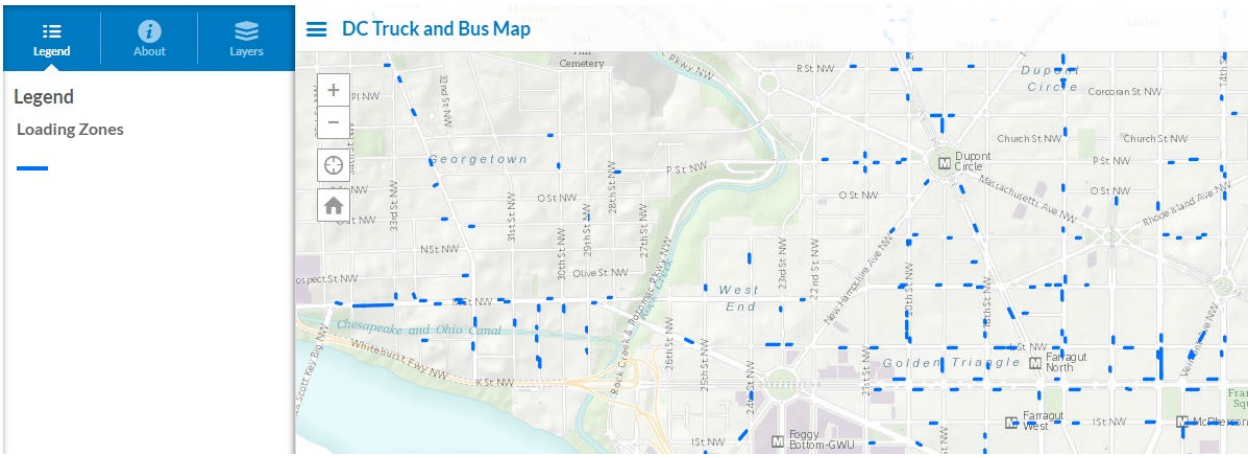
- **Demand-based pricing works.** At the end of the Penn Quarter/Chinatown Parking Pricing Pilot, 72% of block faces in Penn Quarter/Chinatown had the desired usage level, and occupancy stabilized on high-demand blocks as usage went up.[5] When DC increased time limits and lowered costs on low-demand blocks, both occupancy and stay length increased.

[3] Shared Streets is a project of the Open Transport Partnership, a non-profit organization that builds tools for public-private collaboration around transport data. Their data connects information about the street across jurisdictions, companies, and governments.

[4] https://www.ite.org/pub/C29F4D5E-FE34-2037-3B96-DE312E1DBBFF

[5] https://ddot.dc.gov/sites/default/files/dc/sites/ddot/page_content/attachments/parkDC%20-%20Executive%20Summary_Final_20190109.pdf

- **Reliability of having a guaranteed loading spaces is worth the cost.** Although the proposal to charge commercial vehicles through the Commercial Loading Zone Program was initially met with pushback, DC has found that delivery companies are willing to pay for the time savings, reduction in parking violations, and guarantee of loading space. Additionally, more loading spaces were created because of demand for the program.



Source: DDOT

- **Data is key.** The DC Department of Transportation (DDOT) prioritized gathering both before and after data and creating curb-specific evaluation metrics for their pilots. These metrics, tailored to the neighborhood context of each pilot, allow DDOT to evaluate success. Metrics included the following:
  - Dwell time (amount of time spent at the curb)
    - Goal: Dwell times do not exceed set time limits
  - Parking turnover (average number of vehicles per block per hour)
    - Goal: 80% occupancy
  - Occupancy rate (parking or loading spaces occupied by vehicles)
    - Goal: 80% occupancy with 1-2 spots available at all times
  - Parking cruising time (time spent searching for a parking space)
    - Goal: Reduced time circling for parking
- **Pilots are an easy way to test a new curb strategy.** Pilots in small, concentrated areas have allowed DC to see if a strategy, like the PUDO Zones or the Red Top Meters, will achieve the District's curb management goals. After evaluation, DDOT has expanded successful pilots into new neighborhoods.

Applicability to Nashville

Like the Golden Triangle, Downtown Nashville is a nightlife center. A formal pick-up/drop-off zone may be beneficial for the area and a pilot could be implemented first on a small number of blocks, specifically in areas convenient to Broadway.

There is a significant amount of on-street parking in Downtown Nashville. A dynamic curb parking pricing program could be piloted in Downtown Nashville to incentivize people to take transit or park in off-street garages. This could be piloted along streets with high parking demand and low parking turnover. This could also be piloted during a short period of time, such as over the summer months, when there are more events and visitors in Nashville.

Santa Monica, CA's Micromobility Corrals

Source: Gary Kavanagh, StreetsBlog LA

Santa Monica, California, began experimenting with managing micromobility at the curb as early as 2012, when the city implemented bicycle corrals as part of a Bicycle Action Plan. The bicycle corrals replaced on-street car parking spaces and represented a re-prioritization of the curb away from vehicle storage and toward active transportation uses. The bike corrals also gave cyclists a place to park their bicycles off of the sidewalk.

In 2017, Santa Monica launched a shared micromobility pilot program that included curb management. Curb management solutions included geofencing technology to address scooters

parking improperly and cluttering the curb and an additional 107 designated parking zones and corrals for micromobility devices. Santa Monica hired a full-time enforcement officer for the pilot, which improved effectiveness of the curb management strategies. Over 1,200 devices were impounded by the enforcement officer for blocking access to the sidewalk or parking in the street.

Lessons Learned

- **Corral use is mixed.** While people using personal bicycles are more likely to park their bicycles in corrals, many scooter and free-floating bike riders park their devices elsewhere. To address this, Santa Monica has required operators to return e-bikes and scooters to the corrals after they are picked up for charging, offsetting some of the parking issues.
- **Operator-focused enforcement is effective.** The pilot included a dedicated enforcement officer to keep operators accountable for incorrectly parked devices and appropriately manage the curb. The enforcement officer impounded improperly parked devices, which incentivized operators to address infractions. From October 2018 to May 2019, an average of 16 devices were impounded every month. As impounds increased, operators managed their fleets more actively, resulting in a 72% decrease in violations.[6] The increased threat of impoundment and attention to removing problem devices from the curb, sidewalk, and right-of-way encouraged providers to take a more proactive approach to maintaining safe and orderly public spaces.
- **Equity is directly tied to fare cost.** In Santa Monica's pilot, fares (set by operators) were unaffordable for people with lower incomes, limiting access for some potential riders. As part of Santa Monica's pilot review, the City recognized that additional equity strategies, including enforcement- and citation-related strategies, were needed.
- **When incentives were introduced, parking compliance increased.** However, not all operators wanted to implement incentives. Before the pilot, parking for micromobility devices, especially scooters, was haphazard. During the pilot, the City required operators to provide parking incentives for riders to encourage them to end their trips in designated parking zones. Incentives included things like small discounts off rides or monthly raffles. These incentives helped encourage riders to park in appropriate locations and increased parking compliance. However, the incentive programs saw limited promotion across providers.

[6]https://www.smgov.net/uploadedFiles/Departments/PCD/Transportation/SantaMonicaSharedMobilityEvaluation_Final_110419.pdf

- **Rider behavior at the curb must change.** Sidewalk riding was a key concern for Santa Monica. The emergence of shared micromobility resulted in conflicts between pedestrians and people using assistive mobility devices, cyclists, and people using micromobility devices. Micromobility riders, especially people using scooters, would ride on the sidewalk, forcing pedestrians to step into the travel lane or parking lane to avoid them. The City responded to these challenges by focusing enforcement on areas of concern based on community complaints.

Applicability to Nashville

Santa Monica has entertainment and tourism demands similar to Nashville. The city is home to the Santa Monica Pier and Santa Monica Beach, two areas with high pedestrian and tourist traffic along the lines of Lower Broad. Santa Monica was one of the first U.S. cites to introduce micromobility corrals and geofencing, including a deactivation geofence around the beach and pier area, which brought devices to a full stop. The City provided corrals along the edges of the deactivation area so that people could park the devices when they stopped moving. This largely eliminated conflicts and safety issues and reduced the number of devices along Santa Monica's boardwalk and beach path. Nashville could work with micromobility providers to create a more restrictive geofence in heavy pedestrian areas, stopping rather than slowing scooters, complementing that geofence with additional corrals.

Implementation in Nashville

Nashville has begun to lay the foundation for a holistic curb management strategy. The City is more actively managing parking, is carefully considering locations for valet and loading zones, and has piloted smart zones on select blocks. But there is much more to do.

The Metro Nashville Transportation Plan[7] recommended a comprehensive planning effort for better curb management in Nashville. The plan articulated guiding principles that should be used to shape a future curb management strategy:

- Align with broader planning goals within NashvilleNext as they pertain to Ensuring Opportunity for All, Expanding Accessibility, and Creating Economic Prosperity;
- Prioritize the throughput of people instead of the movement and storage of cars;
- Meet the transportation network goals established in nMotion and WalknBike;
- Vary by adjacent land use context and time of day; and
- Use pricing to incentivize what we want and disincentivize what we don't want.

[7] https://www.nashville.gov/sites/default/files/2022-04/Metro-Nashville-Transportation-Plan-2020.pdf

As part of a curb management strategy effort, Nashville could adopt a new standard for congestion tolerance that is focused on the movement of people rather than vehicles. Metro could implement this standard by repurposing curb space, specifically reallocating parking and vehicle storage space in the right-of-way for active transportation and/or bus-only lanes.

Converting or repurposing curbside parking to another use can make the curb more productive, allowing more people to use the curb. For example, a passenger loading zone or a bus stop will serve more people than a space that houses a single parked car. Removing or repurposing parking lanes as bike lanes or transit-only lanes on the busiest streets in Nashville can help to prioritize pedestrian access to the curb and increase comfort for people walking, biking, and rolling. Nashville could consider implementing flex zones to maintain parking spaces but more actively manage their use throughout the day.

To develop a curb management strategy, Nashville should begin by creating an inventory of curb space and current uses. This task could be led by the new traffic management center and could build upon the inventory Pebble developed during the Smart Zones pilot. With the inventory in hand, the City could establish a curb space typology to prioritize curb space throughout Downtown. As Nashville works to rebuild 2nd Avenue, there is an opportunity to test the typology and to redefine how curb space is managed throughout Downtown Nashville.

Nashville could also explore additional pilot projects, building on the Smart Zones pilot, to test new curb management strategies, including additional reservation-based loading zones. The City could also pilot reservable passenger loading and unloading zones for tourism use, such as transportainment and motor coaches. Nashville could also pilot pick-up and drop-off zones with a variety of regulations, including 24-hour pick-up and drop-off zones or flex zones that are used for short-term parking during the day and pick-up/drop-off zones at peak times.