BEST PRACTICES: PARKING MANAGEMENT

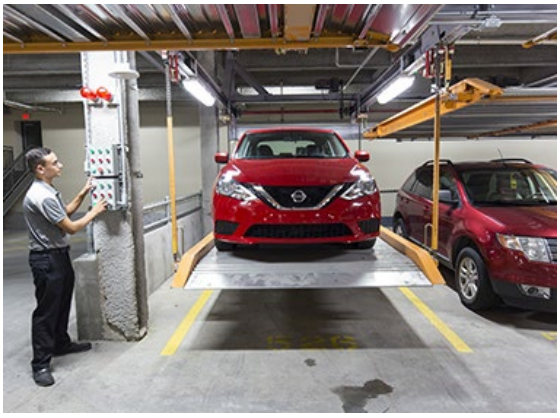
Parking problems are one of the most common issues in cities and can be defined either in terms of supply (too few spaces are available) or in terms of management (available facilities are used inefficiently).[1] Parking management refers to policies and programs that result in more efficient use of both on- and off-street parking. Managing parking, rather than increasing supply, can reduce development costs, increase affordability, encourage multimodal smart growth, improve access to and quality of non-driving modes, and provide flexibility to accommodate new uses and new demands on the transportation system.

Parking Management Strategies

There are three categories of parking management strategies: infrastructure, policy, and technology. **Infrastructure strategies** focus on the physical and built environment and involve optimizing existing parking facilities, adding non-vehicle parking, improving street and sidewalk conditions, or enhancing transit services. **Policy strategies** focus on regulatory levers or incentive-based frameworks, like pricing, shared parking, or transportation demand management. **Technology strategies** use data and digital tools to enforce parking regulations or monitor a municipality's parking supply.

Infrastructure Strategies

Off-site parking strategies provide off-site parking, typically a few blocks or more away from central business districts or event centers. Shuttle buses, free transit services, or shared micromobility can be used to connect off-site parking customers to their destinations. Park-and-ride facilities are an off-site parking strategy that caters to commuters taking public transit to a downtown core or business district.



Valet parking allows a driver to drop off their vehicle and have a garage operator park it. Valet parking can allow for tandem parking or stacked parking spaces, increasing the number of

[1] https://www.vtpi.org/park_man.pdf

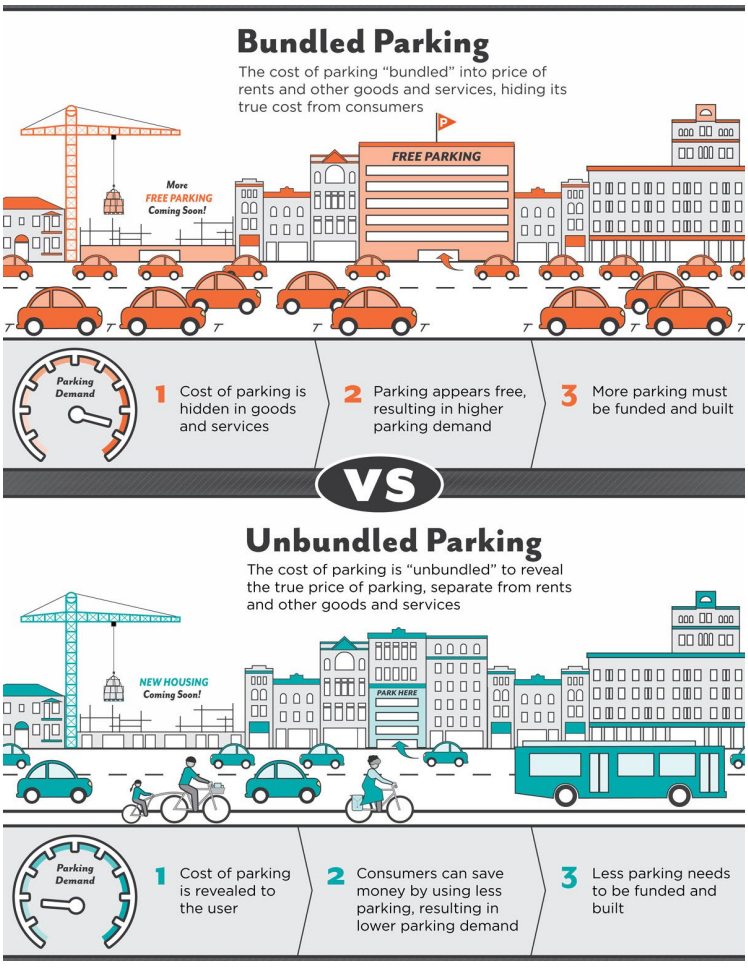
vehicles that can fit in a lot or garage. Some companies offer a "flexible valet" model where a driver can drop their car off at one location and pick it up at another.

Bicycle amenities include convenient parking, secure storage, and changing facilities and showers. Premium bicycle amenities can encourage people to bike to their destination, freeing up parking spaces for those with more limited options.

When drivers must park a distance from their destination, **non-motorized infrastructure improvements** can improve walkability and increase pedestrian safety and comfort. Specific strategies include improved and accessible sidewalks, crosswalks, and paths; pedestrian connections like mid-block crossings and links between dead-end streets; covered walkways and waiting areas with weather protection; street furniture; traffic calming improvements, including speed reductions; and safety features, including pedestrian-scale lighting.

Policy Strategies

Parking pricing strategies manage parking through different fees. **Increased fees** can be used to decrease demand for parking. Increased parking revenue can also be invested back into the neighborhood where the fees are collected or into a city's mobility fund for sidewalks or other transportation infrastructure improvements. Cities can also require that property owners **unbundle parking,** selling or renting parking spaces separately rather than including them with building space. For example, instead of renting an apartment and a parking space for $1,200, the apartment would be rented for $1,000, and the parking space would be rented for $200. Unused parking spaces can be used by other tenants or for public parking. Vanderbilt



University has recently unbundled parking for students, requiring a daily, monthly, semester, or annual permit separate from housing fees.

Dynamic parking pricing, also known as **demand-based parking pricing,** prices parking higher or lower based on demand and occupancy. Municipalities can set a target occupancy rate and adjust parking pricing accordingly until demand meets the city's occupancy goal. Cities can also implement **special resident rates,** using license plate technology, where residents pay a lower rate than visitors.

Shared parking is one of the most common parking management policy strategies. Shared parking is where two or more land uses or businesses share parking facilities, such as a shopping center with several different businesses or a downtown lot where office workers park during the day and residents park overnight. Shared parking typically works best when spaces are shared by uses with differing peak demand periods. This reduces the total number of parking spaces required by combining the parking requirements of each land use. Shared parking can be implemented through agreements between adjacent property owners or through parking management districts.

Parking zoning regulations are regulations in a city's zoning ordinance that direct how parking is provided. Zoning codes should have **flexible and accurate parking standards** to better address specific geographic and demographic factors at different parking locations. In areas with public transportation and transportation demand management (TDM) programs, parking standards are often too high and lead to an over-supply of parking.

Cities can also choose to **remove parking minimums**. Parking minimums are often higher than parking demand and lead to more parking than is needed. Abolishing parking minimums can encourage walkability and transit use and reduce the cost of development. If cities are hesitant to abolish parking minimums or reduce parking minimums, they can implement **parking maximums,** which limit the number of parking spaces that can be built.

Zoning codes can also include **in-lieu fees**. In-lieu fees allow developers to pay into a traffic mitigation or city parking fee instead of providing the required amount of on-site parking.

These fees are often used to provide public parking or transit and pedestrian improvements. In dense urban areas where there is little room to add parking, an in-lieu fee can increase the potential for infill development or redevelopment. Businesses that otherwise would need to build parking can pay the fee rather than providing parking. In-lieu fees are not applicable within much of the Connect Downtown study area as parking is not required in many areas of Downtown Nashville. Additionally, some financial institutions that fund development projects have requirements that prohibit or limit a developer's ability to pay in-lieu fees.

Cities can also establish **residential parking permit programs**. This can be done through the zoning code or through a separate ordinance. Like special resident parking rates, residential parking permit programs prioritize parking spaces for local residents. These programs are often established in areas where parking availability is limited due to heavy employee or visitor parking demand. Metro Nashville has a residential parking permit program in the neighborhoods adjacent to Vanderbilt University and Belmont University, which both have heavy demands from students, faculty and staff, and campus visitors.

Another policy to manage parking is **overflow parking plans.** Parking is often provided to meet peak demands, especially near event centers. This means that on a day-to-day basis, there is far more parking than is needed. Overflow parking plans can be used to better address peak demand and day-to-day demand and can include shared parking arrangements during peak periods, remote parking facilities, promotion of alternative modes like public transit, special parking regulations to favor local residents, and improved walkability.

Parking can also be managed through a parking management association. This could be a parking management authority, transportation management association, or parking benefit district. A **parking management authority** is a public agency or quasi-public agency created to develop, finance, maintain, and operate on- and off-street parking in a designated area, such as Downtown Nashville. A **transportation management association (TMA)** is a non-profit organization that provides transportation services in a set transportation management district. TMAs do not provide parking, but they provide TDM services that reduce parking demand. TMAs can also serve as a parking brokerage, where businesses can share or lease parking facilities from other businesses in the TMA. **Parking benefit districts** are districts where the revenue from parking meters is used as a dedicated revenue stream to fund local improvements such as parking maintenance, sidewalk improvements, or transit.

Technology Strategies

Technology strategies use parking management technology to support operations, enforcement, data collection, and sharing public information. **Parking apps** and websites give travelers the information they need (about on and off-street parking prices, locations, and availability) to decide how they will travel to their destination. **Digital enforcement** technologies enable cities to monitor compliance with parking regulations and issue citations without using staff. Data collected from these technologies can populate **parking databases** to capture data on parking supply, monitor parking demand, identify trends, feed key information into parking apps and websites, and support adjustments to parking management strategies.

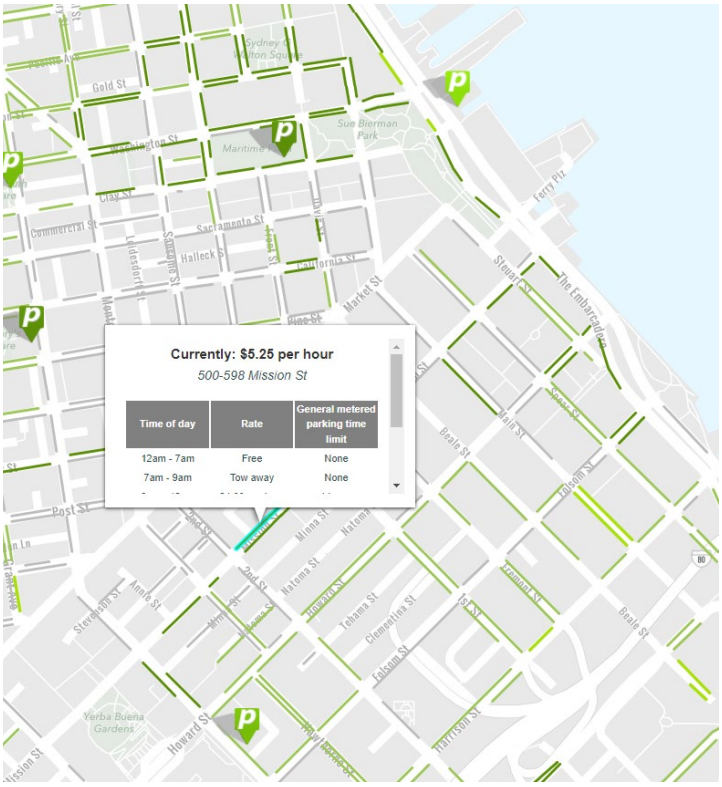
Nashville's Parking Management Needs

Nashville's population growth has led to an influx of traffic in Downtown due to new residents, new corporate headquarters, and a constant wave of visitors attending events each year. Rather than building more parking garages to accommodate the growth, Downtown Nashville can better manage its existing, abundant parking supply. Implementing creative parking management strategies throughout Downtown will encourage sustainable growth and strengthen this walkable, urban area for residents, workers, and visitors alike.

One way that Nashville is already addressing its parking management needs is by soliciting a contractor to implement and manage a smart parking system. This system would replace approximately 1,700 on-street metered parking spaces Downtown and in the Midtown and Vanderbilt areas with more advanced meters offering digital payment options. The smart parking program will use data and technology to maximize convenience and payment options for customers, automate operational processes, and increase overall compliance with parking regulations. The Nashville Department of Transportation (NDOT) is currently negotiating a contract with LAZ Parking Georgia LLC following approval from Metro's Procurement Appeals Board in August 2022.

Case Studies

San Francisco, CA SFpark



Source: https://www.sfmta.com/demand-responsive-parking-pricing

San Francisco implemented SFpark, a demand-responsive parking pricing program, as a pilot between 2011 and 2013 to alleviate parking demand and congestion in some of the busiest areas of the city, including the Financial District. SFpark used several parking management strategies, including demand-responsive pricing, parking meters, longer time limits, improved user interface and product design, improved information for garages, and a highly transparent approach to making changes to parking pricing. Target occupancy was 60%-80% and rates were adjusted by $0.25 every three months based on occupancy. In the pilot phase, SFpark achieved parking occupancy goals for on-street and off-street parking, even when the cost of parking was lowered. SFpark was implemented as a permanent, citywide program in 2017.

Lessons Learned

- **Demand-based parking can make it easier to find parking.** Parking availability at meters improved by 16% in pilot areas and fell 50% in non-pilot areas.[2]
- **Demand-based parking pricing can increase parking utilization.** SFpark achieved the target parking occupancy rate 31% of the time in pilot areas, compared to 6% in non-pilot areas, significantly improving utilization.[2] In garages, parking utilization increased by 11%, exceeding non-pilot garages.
- **Areas without free parking are more likely to meet availability and utilization goals.** Parking availability and utilization improved the most on blocks in SFpark pilot areas that had no free parking. On these blocks, parking availability increased 45% and there was a 100% increase in achieving the target occupancy rate.[2]
- **Demand-responsive parking pricing can decrease the number of commuters driving.** SFpark decreased the number of daily commuters parking in San Francisco Municipal Transportation Agency garages and increased the number of short-term hourly parkers, supporting the goals of reducing commuting by car and improving economic vitality.

Applicability to Nashville

As Nashville improves transportation options in Downtown Nashville, Metro should consider a demand-based parking pilot or permanent program. As more employees return to the office post-pandemic, a demand-responsive parking program could help to manage where and when parking is in peak demand.

Austin, TX Parking Plans & Programs

In Austin, parking needs vary depending on the geographic, demographic, and land use context. These needs are reflected in two geographic-specific parking plans and two programs (the residential parking permit program and affordable parking program) run by the Parking Enterprise Division of Austin's Transportation Department.

The Downtown Austin Alliance, a nonprofit representing the downtown public improvement district, published the **Downtown Austin Parking Strategy** in 2019 to tackle parking challenges in Austin's downtown. The strategy has six overarching strategies and 19 recommendations to improve parking and mobility. The project team created a database of all

[2] SFMTA (2018). *SFpark Pilot Project Evaluation.* Available here: https://www.sfmta.com/sites/default/files/reports-and-documents/2018/08/sfpark_pilot_project_evaluation.pdf

public and private on- and off-street parking spaces in Downtown, parking prices, and utilization to develop a parking baseline identify key issues. The six strategies are:

1. Maximize use of existing parking supply
2. Strategically invest in information and technology
3. Improve mobility options to reduce parking demand
4. Simplify and leverage the zoning code
5. Enhance parking administration and operations
6. Provide additional public parking as needed

Source: https://www.spotangels.com/blog/expert-guide-austin-street-parking/

Austin's South Congress Parking Study is a collaboration between the Downtown Austin Alliance and the City to study parking in the South Congress District and design solutions to address the unique parking challenges in a busy district abutting a dense residential neighborhood. The draft plan includes a toolkit of options to manage parking, regulate parking, and balance all transportation options.

The purpose of Austin's **Residential Parking Permit** program is to ease the impacts of non-resident parking in neighborhoods that are adjacent to commercial properties and where space is limited. The program includes the implementation of designated areas and times for resident-only parking and parking permits for residents and their visitors.

Austin also has an **Affordable Parking Program**. This initiative is aimed at reducing economic barriers for Austin residents who need to travel downtown. For example, service and entertainment industry employees who work downtown can park at affordable monthly rates

as early as 3 p.m. and stay as late as 7 a.m. during the week, and park up to 24 hours during the weekend, depending on the garage. Limited spaces are available for daytime use.

Lessons Learned

- **Data is needed to support strategy development and implementation.** Austin's parking plans created extensive databases of parking spaces, rates, utilization, and occupancy. Both community engagement and strategy creation were data driven.
- **Parking studies for smaller districts are helpful to address specific challenges.** Austin has a citywide Strategic Mobility Plan that includes parking management strategies but developed the Downtown Austin Parking Strategy and the South Congress Parking Strategy to tackle the unique challenges and needs of specific areas.
- **Parking strategies depend on a diverse set of tools.** Successful parking management programs have a toolkit of strategies to address different challenges and different traveler needs. The South Congress Study includes 16 parking strategies, and the Austin Downtown Parking Strategy includes 19 parking strategies, both tailored to their areas.

Applicability to Nashville

Downtown Austin, like Downtown Nashville, is both an employment center and an entertainment hub. Rather than simply referencing parking strategies in large-scale transportation plans, Nashville could undertake a Downtown Nashville Parking Study and/or tailored studies for neighborhoods in Downtown like South Broadway.

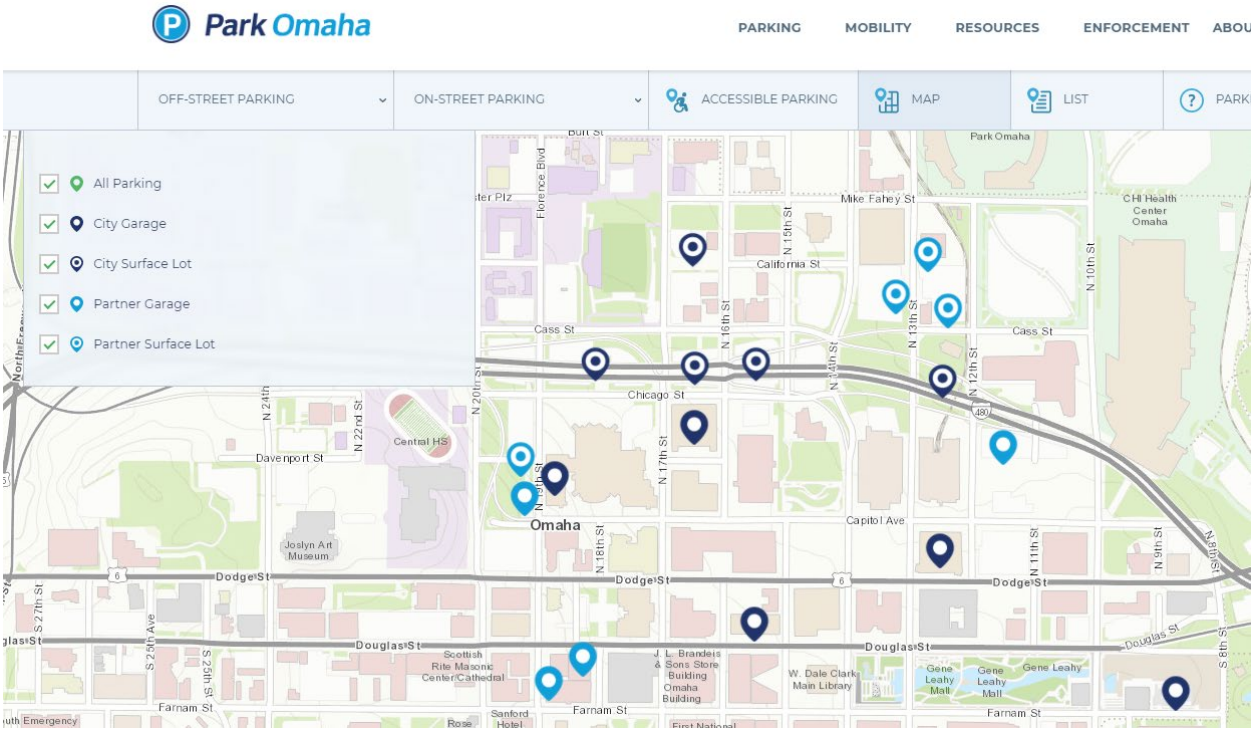
Park Omaha (NE)

The City of Omaha recently branded the Parking Division of its Public Works Department as "Park Omaha" to signal a commitment to provide coordinated and strategic management of its on- and off-street parking resources. A key component of the Park Omaha mission is to avoid building more City parking facilities by coordinating with private parking facilities.

Park Omaha launched the "Park Omaha Partners" program in 2015 as a shared parking program to "boost the number of public parking spaces and help visitors easily locate them in the popular downtown area".[3] The program provides a user-friendly, online process for property owners to offer their unused spaces, at a specified schedule, to the Park Omaha network through a shared parking agreement. Private facilities must apply, and accepted facilities are identified as "partner" facilities in maps and information materials.

[3] Park Omaha. Available here: https://parkomaha.com/about/park-omaha-partners/

As Partner facilities, private lots are given official (copyrighted) signage/iconography with a distinct logo that identifies them as part of the City parking system, while indicating that hours of access, rates, and other regulations may vary from standard Park Omaha facilities. The copyrighted branding helps to prevent unapproved private lots from using the same design and calling themselves Park Omaha Partners. Accepted Partner locations are added to the Park Omaha interactive map. An expanded map view also provides information on rates, hours of operation, and payment options.



Source: https://www.parkomaha.com

Lessons Learned

- **Shared parking systems should have a shared payment method that pays facility owners directly.** This can increase the attractiveness of participating in a shared parking system. One of the key tools for Park Omaha has been facilitating payment via the Park Omaha App. Payments go directly to the facility owners, allowing private owners to monetize their excess parking without having to set up special payment systems. This has been a critical component in recruiting new Partners to the program.
- **Engagement is key to increase participation.** Omaha encouraged participation in the Partners program by giving presentations to local lot owners and operators. Park Omaha has seen the Partners program become increasingly attractive to private facility

owners, especially as it proves profitable. The technology has successfully incorporated private facilities to handle demand, even from large events, seamlessly.

- **There are challenges for cities to incorporate shared parking into their parking system.** Some private owners may fear the added liability associated with opening a lot or structure to the public. In addition, incorporating private resources means choosing to standardize or not standardize pricing, hours, and regulations across available parking resources. Park Omaha chose not to standardize to allow owners control over their facilities. However, this choice does create some confusion for people parking and could work against shared parking management goals.

Applicability to Nashville

There are 2,000 on-street parking meters, 138 surface parking lots, and 50 garages in Downtown Nashville. Many garages sit under-utilized except during major events. Nashville could create a shared parking program like Park Omaha to maximize the public availability of privately owned spaces in Downtown.

Knoxville, TN Parking Maximums

In 2017, Knoxville's City Council voted to update the city's parking ordinance with parking maximums. The table below identifies parking ratios for both minimum requirements and maximum caps on "reserved" parking spaces, which the code defines as "those spaces designated for a specific unit or use." By implementing a parking maximum, developers are now less likely to overbuild parking in walkable, urban areas. They are also incentivized to use strategies like shared parking to meet investor parking needs.

Land Use	Minimum Required (spaces)	Maximum Allowed as Reserved Parking (spaces)
Household Living		
0-1 Bedrooms	1 per unit	2 per unit
2 Bedrooms	1.5 per unit	
3 Bedrooms	2 per unit	
4+ Bedrooms	2.5 per unit	
Guest Parking (multifamily only)	0.125 per unit	0.25 per unit
Commercial	None	3 per 1,000 sq ft of Gross Floor Area

Lessons Learned

- **Removing parking minimums may not go far enough to manage parking**. A 2019 Knoxville study found that the city had more parking spaces than people.[4] Parking maximums were needed to cap parking from new developments.

Applicability to Nashville

Nashville does not have minimum parking requirements in Downtown, but the city could go further and establish parking maximums in Downtown. By establishing maximums as a complement to removing minimums, Nashville could more effectively limit the amount of excess parking that is developed. NDOT and Metro Planning could also incentivize the use of other parking management strategies to make better use of the existing supply.

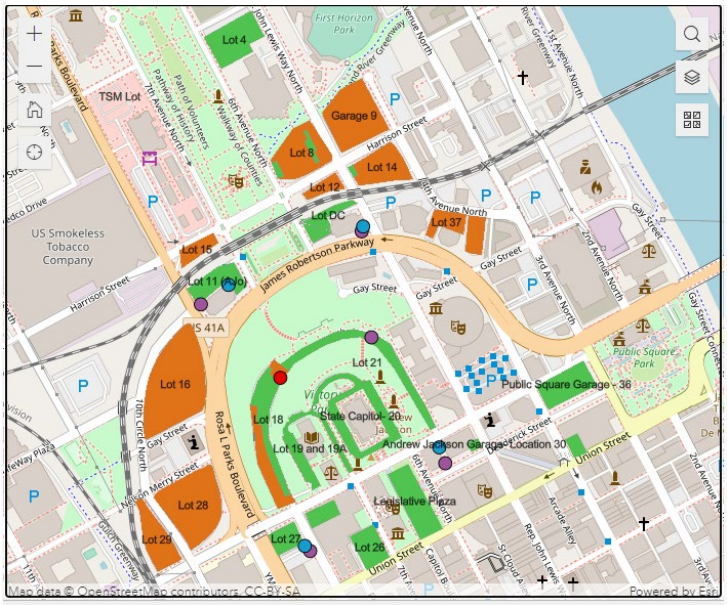
Implementation in Nashville

Nashville has implemented some parking management strategies, including a Residential Parking Permit Program (and a Downtown Nashville Residential Parking Permit Program), removal of parking minimums downtown, and some metered and priced garage parking. NDOT is currently negotiating a contract for a smart parking program that would upgrade existing meters to offer digital payment options, support enhanced operations, and provide better options for parking management.

[4] WBIR (2019). *Knoxville has more parking spaces than people, analysis shows.* Available here: https://www.wbir.com/article/news/local/knoxville-has-more-parking-spaces-than-people/51-7ccf057a-9c2c-4545-9959-5d794d6e31b1

Downtown Nashville would benefit from the implementation of additional parking management strategies to make the best use of the area's robust supply of both public and private parking. For example, Downtown has many private garages that provide parking for State of Tennessee employees. These garages are highly underutilized outside of business hours—and often during business hours due to more employees working from home. The City could work with the State to create a **shared parking program**, like Park Omaha, to use those spaces more effectively.

Downtown Nashville State Employee Parking



Parking meters in Downtown Nashville are currently priced at a flat rate and on a schedule that does not reflect existing demand. A **demand-responsive pricing system** would help to manage supply and make it easier to find parking by adjusting pricing to reflect when demand is the highest. NDOT should consider demand-responsive pricing as part of the smart parking contract currently in negotiation.

The Metro Nashville Transportation Plan that states Nashville needs "parking policies that minimize, rather than maximize, the number of parking spaces, especially in Downtown, Midtown, and Music Row."[5] Nashville updated its Zoning Code to right-size parking requirements and remove parking minimums in Downtown, but the City could go further to manage parking and **create parking maximums.** Developments rarely build no parking (a common fear when minimum parking requirements are removed) and parking maximums can prevent developers from building too many parking spaces. Jurisdictions such as Charlotte, NC; Hartford, CT; Portland, OR; and Montgomery County, MD have all created parking maximums.

The parking management strategies recommended above would be most successful if implemented by and coordinated through an entity with a holistic view of Downtown Nashville. This could be NDOT, the Nashville Downtown Partnership, a downtown transportation management association, or a benefits district. Successful parking management relies on coordination with other strategies focused on reducing parking demand.

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