

SMART PARKING SOLUTIONS

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Introduction to Smart Parking Strategies and Policies

For decades, parking regulations in zoning ordinances have made generous accommodations for automobiles as car ownership, driving, and parking have become essential elements of the transportation system.¹

A 2011 study conducted by the University of California estimated that an average of 3.4 parking spaces per vehicle and around 800 million parking spaces exist in the United States, covering about 25,000 square miles of land.² Despite this large supply of parking, drivers often cannot find convenient parking near locations they want to visit, which leads to a perceived lack of parking. In recent years, cities and towns have started implementing progressive parking strategies aimed at balancing an appropriate amount of parking for cars with infrastructure that promotes alternative transportation.³

Progressive parking strategies such as lowering minimum parking requirements and including shared parking provisions in local codes, pricing parking smartly, unbundling parking costs, and establishing vehicle permit programs can achieve this goal. Beyond efficiently allocating parking supply, these parking strategies create walkable communities and encourage the use of alternative modes of transportation. To be successful, however, local governments should pair these changes with improvements to pedestrian, bike, and transit services that will decrease the demand for driving and the subsequent demand for parking at destinations.

1 N.Y.C. DEP'T OF CITY PLANNING, PARKING BEST PRACTICES: A REVIEW OF ZONING REGULATIONS AND POLICIES IN SELECT US AND INTERNATIONAL CITIES 2 (2011), http://www1.nyc.gov/assets/planning/download/pdf/plans/transportation/parking_best_practices.pdf [hereinafter PARKING BEST PRACTICES].

2 Chester et al., Parking Infrastructure and the Environment, ACCESS 28, 30 (2011), http://www.accessmagazine.org/wp-content/uploads/sites/7/2016/01/access39_parking.pdf.

3 PARKING BEST PRACTICES, supra note 1, at 2.



Updating Parking Requirements

Historically, local governments have relied on conventional minimum parking requirements that often provide for excess off-street parking and require all or too much of it to be provided on the development site.⁴

Parking requirements are typically applied to individual land-use categories, such as residences, offices, and shopping, that ensure developers will provide enough spaces to satisfy peak demand for free parking.⁵ These requirements relieve developers from determining where parking is appropriate for the market, and this individual-land-use practice allows planners to err on the side of caution.⁶ However, minimum parking requirements have significant drawbacks.

In an abstract of his book, *The High Cost of Free Parking*, parking reform expert Donald Shoup suggests “that minimum parking requirements seriously distort the markets for both transportation and land.”⁷ Minimum parking requirements often result in places where destinations are widely separated and walking, biking, and public transit are not available.⁸ Additionally, such requirements “increase the cost of development and creates disincentives with respect to smart growth development and redevelopment, create excess parking spaces that consume land and resources, encourage automobile use and associated pollution, and degrade water quality.”⁹

As communities have shifted development plans to embrace urban revitalization, redevelopment, and infill development trends, generic parking ratios have failed to meet the needs of associated parking supply and demand. Local governments have responded by implementing flexible parking requirements: lower parking minimums, elimination of minimums altogether, maximum parking ratios, transferable parking credits, and in-lieu fees.

Lowering or Eliminating Minimum Parking Requirements Through Context-Specific Standards:

Rather than using a fixed parking ratio for each land-use category, context-specific parking requirements take into account density, demographics, availability of transportation choices, and

the surrounding land-use mix and recognize that all of these factors influence the demand for parking.¹⁰ Recognizing that parking demand is affected by these variables, many municipalities have reduced parking minimum requirements when certain conditions are met, such as location in a TOD zone, central business district, or downtown area.¹¹ Even further, some places have done away with minimum parking requirements for the entire municipality while others have targeted specific zoning districts.¹² Ridding of all parking minimum requirements is particularly appropriate for communities that provide a range of convenient transportation options. Many municipalities have lowered parking minimums or rid of parking minimums altogether in the following types of zones:

TOD Zones

Lowered parking requirements can be dictated by distance from public transportation, with the lowest ratios for properties closest to transit stations. As Smart Growth America points out, “land near transit stations is a valuable commodity. Hundreds or thousands of people travel to and through these places each day, and decisions about what to do with this land have implications for local economies, transit ridership, residents’ access to opportunity, and overall quality of life for everyone in a community.”¹³ Typically parking demand is lower in areas with frequent and accessible transit services, and these areas are often characterized by high density and mixed uses where it is easier for people to walk from destination to destination.

- ▶ **In Eugene, OR**, the Walnut Station Special Area Zone, located along the regional Bus Rapid Transit (BRT), is a mixed-use area that permits residential and commercial uses. The minimum number of required parking spaces allows 0.5 parking spaces per dwelling unit for residential use and 1 parking space for every 660 square feet of gross floor area for non-residential use.
- ▶ **In Montgomery County, MD**, the zoning ordinance reduces parking requirements in Reduced Parking Areas and Parking Lot Districts, which are in Commercial/Residential and Employment Zones and near Metrorail stations. In these Zones within these Parking Areas, the minimum number of required parking spaces can be reduced up to 20% of the baseline parking minimums, which range from 0.25 (dormitories) spaces to 2 spaces per dwelling unit (single, two-unit, townhouse, and multi-unit living).
- ▶ **Additionally, the Arlington County, VA** zoning code requires no parking for listed uses (restaurants, retail and service-commercial areas, and grocery stores) where the major portion of the use is located within 1,000 feet of a Metrorail station entrance. For residential and houses uses, minimum

4 EPA, ESSENTIAL SMART GROWTH FIXES FOR URBAN AND SUBURBAN CODES 14 (2009), https://www.epa.gov/sites/production/files/2014-01/documents/2009_essential_fixes_0.pdf [hereinafter SMART GROWTH FIXES FOR URBAN AND SUBURBAN CODES].

5 EPA, PARKING SPACES/COMMUNITY PLACES: FINDING THE BALANCE THROUGH SMART GROWTH SOLUTIONS, <http://pipta.org/wp-content/uploads/2014/04/Smart-Growth-Parking-Solutions.pdf> [hereinafter PARKING SPACES/COMMUNITY PLACES].

6 Forinash et al., Smart Growth Alternatives to Minimum Parking Requirements at 2, 2nd Urban Street Symposium (July 28-30, 2003), <https://pdfs.semanticscholar.org/9aca/93497f2f31589bce1ef46f2faddbfbf601b9f.pdf>.

7 Donald C. Shoup, *The High Cost of Free Parking*, ACCESS 1, 2 (1997), <https://www.access-magazine.org/wp-content/uploads/sites/7/2016/02/access10-01-the-high-cost-of-free-parking.pdf>.

8 PARKING SPACES/COMMUNITY PLACES, supra note 5, at 6.

9 KIMLEY-HORN, PARKING REQUIREMENTS REFORM: A WHITE PAPER 12 (2015), <http://www.ccdeboise.com/wpcontent/uploads/2016/02/Document-N1-Parking-Requirements-Reform-White-Paper.pdf>.

10 PARKING SPACES/COMMUNITY PLACES, supra note 5, at 14.

11 NELSON\NYGAARD CONSULTING ASSOCIATES, TECHNICAL MEMORANDUM #3: ZONING CODE 4 (2013), <http://www.concordnet.org/DocumentCenter/Home/View/1510>.

12 Id. at 5.

13 SMART GROWTH AM., EMPTY SPACES: REAL PARKING NEEDS AT FIVE TODS iii (2017), <https://smartgrowthamerica.org/resources/empty-spaces-real-parking-needs-five-tods/>.



Ithaca NY: There are no minimum parking requirements within the Mixed-Use Collegetown districts, which accommodate retail, office, service, hotel, and residential uses, often within the same building.

requirements range from 1 per dwelling unit to 1 and 1/8 for each of the first 200 dwelling units in any structure, depending upon the type of dwelling.

Downtown Zones

In walkable communities, typically downtown areas, new zoning districts can call for lowered parking minimums.

- ▶ **The Downtown District Urban Village in Bellingham, WA** reduces parking requirements for uses in the Residential Transition (RT-1 & RT-2), Commercial Core (CC), Commercial Transition (CT), and Industrial Transition (IT) areas of the district. All uses within a mapped portion of the CC (around 30 blocks) are exempt from parking requirements. Beyond this area, the minimum parking requirements for Residential Use in the Urban Village District are as follows: 0.5 space for each studio unit, 0.75 space for each 1-bedroom unit, 1 space for each 2- and 3-bedroom unit, and 0.5 additional space for each bedroom over 3 per unit.
- ▶ **In Eugene, OR's** Downtown Riverfront Special Area Zone, which permits residential uses such as apartments and retirement center apartments (including those with accessory services such as food service, dining rooms, and housekeeping), condominiums, and rowhouses, requires 0.75 parking spaces per dwelling unit for residential use, and there is no minimum for non-residential use.
- ▶ **Further, in Port Chester, NY**, "requirements for off-street parking facilities shall be applicable in all districts except the Central Business District, which district shall be defined as all lands located in the C2 Main Street Business District, the C5

Train Station Mixed-Use District, and the C5T Downtown Mixed-Use Transitional District, except that cabarets, catering and events establishments and theaters located in the C2 Main Street Business District, the C5 Train Station Mixed-Use District, and the C5T Downtown Mixed-Use Transitional District shall provide off-street parking according to the requirements applicable to those uses."¹⁴ The C2 Main Street Business District allows multifamily dwellings as "special exception use." The C5 Train Station Mixed-Use District and the C5T Downtown Mixed-Use Transitional District both allow multifamily dwellings as "special exception use" and multifamily dwellings (floors above first floor) as permitted use. The schedule of off-street parking space requirements provides nothing below a minimum of 1.

- ▶ **In Rochester, NY's** Center City District, no minimum parking is required. Six regulatory districts comprise the CCD: Riverfront District, Main Street District, Grove Place District, East End District, Tower District, and Cascade-Canal District. "The CCD is intended to foster a vibrant, safe, twenty-four-hour Center City by encouraging residential development while retaining and further developing a broad range of commercial, office, institutional, public, cultural and entertainment uses and activities. The regulations are intended to define and promote the Center City as the anchor for the region and as a desirable place to live, work and recreate."¹⁵ The Village Center (includes Harbortown Village and Public Market Village) also has no minimum parking requirements. "A Village Center District offers a variety of uses, such as

¹⁴ VILL. OF PORT CHESTER, NY, MUN. CODE, § 345-14, ATTACHMENT 3A.

¹⁵ CITY OF ROCHESTER, NY, MUN. CODE, §§ 120-65, 75, 173.

residential, commercial, civic and open space, that result in traditional neighborhoods where living, working and shopping are in close proximity to one another.”¹⁶

- ▶ The downtown Collegetown area of **Ithaca, NY** is divided into six districts: Collegetown Residential (CR) 1–4 and Mixed Use (MU) 1–2. There are no minimum parking requirements within the Mixed-Use Collegetown districts, which accommodate retail, office, service, hotel, and residential uses, often within the same building. Additionally, only within CR-4, “Buildings that fully comply with the NY State Building Code or Residential Code for new construction” have no minimum parking requirements, “provided [that] a transportation demand management plan is accepted by the Planning and Development Board during site plan review.”¹⁷ Parking requirements for the four CR districts range from 1 to 2 spaces depending upon the number of beds or sleeping rooms per dwelling unit.
- ▶ Effective April 3, 2017, **Buffalo, NY**’s “Unified Development Ordinance” is the city’s first comprehensive zoning rewrite since 1953. It removes minimum parking requirements throughout the city. Section 8.3 of the code states that there are no provisions that establish a minimum number of off-street parking spaces for development. However, certain development proposals are required to complete a transportation demand management plan, per Section 8.4, which can result in the provision of off-street parking.
- ▶ In **Milwaukee, WI**’s downtown zone, there are no minimum parking requirements for any land use except high-density housing (RT4, RM5, RM6, RM7, RO2, NS2, LB2, LB3, RB2, CS, C9A, IM Districts), where the ratio is set at 2 spaces per 3 units.
- ▶ There are no minimum parking requirements the Downtown Commercial District (C1) in **Bath, ME**, which provides a location for the retail-, business-, and tourist-oriented activities.

Case-by-Case Evaluation & Other Zones

In some communities, city-wide zoning changes are not possible or feasible, but reductions can still be granted on a case-by-case basis, often subject to approval of specific plans that detail development proposed requirements at the parcel level.

- ▶ **Once again, in Eugene, OR**, the zoning code states that reductions will be granted subject to a parking study showing that the proposed ratio will adequately to meet demand.
- ▶ **The Chelsea Central District in Norwich, CT** allows for waiver of minimum parking requirements under certain circumstances, such as availability of parking supply in nearby public or private parking, the type of proposed use and deter-

mination of parking needs, and consideration of peak parking demand times, parking for employees, and availability of parking facilities outside of the immediate area with public transit.

- ▶ **Further, in Boston, MA**’s Allston/Brighton, Charlestown, Dorchester, East Boston, Jamaica Plain, Mattapan, Roxbury, South Boston neighborhood districts, 1.0–1.5 spaces per unit are required for developments greater than a 10-minute walking distance from an MBTA Station and 0.75–1.25 spaces are required for developers within a 10-minute walking distance from an MBTA Station.
- ▶ **In the borough of Park Ridge, NJ**, off-street parking requirements for all permitted in the NB Neighborhood Business District may be reduced or account for shared parking among uses, at the discretion of the approving body. The “reductions for shared parking should be consistent with New Jersey Transit’s publication ‘Planning for Transit-Friendly Land Use,’ which recommends a five to twenty-five percent reduction for office uses, a ten to fifteen percent reduction for other non-residential uses, and a twenty-five to thirty percent reduction for residential uses.”¹⁸ A parking study must be submitted by the applicant that shows that the use for which the shared parking is proposed does not result in a substantial conflict during peak hours of parking demands.

Maximum Parking Requirement Limits:

Maximum parking requirements restrict the total number of spaces that can be constructed and are typically based on the square footage of a particular land use.¹⁹

- ▶ For residential uses and use categories in Parking Lot Districts and Reduced Parking Areas in **Montgomery County, MD**, parking maximums vary from 0.25 spaces (dormitories) to 2 spaces (single, two-unit, and townhouses) per dwelling unit. In Reduced Parking Areas, an applicant may provide more parking spaces than allowed by the maximum if all of the parking spaces provided in excess of the maximum number allowed are made available to the public and are not reserved or if a parking waiver is approved.²⁰
- ▶ **In Eugene, OR**’s Downtown Riverfront Special Area Zone, a maximum of 2.25 parking spaces is allowed per dwelling unit for residential use, and a maximum of 1 parking space per every 250 square feet of gross floor area is permitted.

¹⁶ Id.

¹⁷ CITY OF ITHACA, NY, MUN. CODE, § 325-45.2.

¹⁸ BOROUGH OF PARK RIDGE, NJ, MUN. CODE, § 101-58.24(A)(2).

¹⁹ PARKING SPACES/COMMUNITY PLACES, *supra* note 5, at 16.

²⁰ MONTGOMERY CNTY., MD, MUN. CODE, § 6.2.4(B).

Transferable Parking Entitlements:

Implemented with maximum parking limits, transferrable parking entitlements treat the maximum number of spots for a particular development as an “entitlement” that can be transferred or sold to another development if they are unused.²¹

“This policy enables cities to control the parking supply, without restricting developments that would not be feasible without additional parking. Projects that require more parking can proceed, while those that need less parking can benefit by selling their rights, or negotiating shared parking agreements for their employees or customers.”²²

- **For example, the City of Portland, OR** combines parking maximums with transferable parking entitlements where “[t]he allowed number of parking spaces for a particular development are an entitlement that can be transferred or sold to another development if they are unused.”²³ These parking entitlements, referred to as “Preservation Parking” in the zoning code,²⁴ allow older buildings that have historically relied on parking from other nearby lots to transfer unused the building’s parking entitlements to future developments.²⁵ In downtown Portland, this creative use of transferable development rights was implemented in order “to densify an older area and accommodate for the Portland Hilton Executive Tower. By [Portland’s] normal zoning requirements, the project would have been limited to 312 parking spaces in their garage; however, because of the transfer of the parking ‘entitlements’ from nearby buildings, the garage touts 680 spaces, of which, they are able to collect parking revenues from tenants and customers of Pioneer Place Mall and nearby commercially-zoned historic buildings in addition to hotel guests.”²⁶ The Portland zoning code also provides for maximum parking limits that are lower in areas zoned for more intense development or are easily reached by alternative modes of transportation than areas with less intense development or that do not have readily accessible modes of transportation.²⁷



In New Rochelle, NY, residential developers may pay a cash fee to the city instead of providing required on-site parking within the Central Parking Area.

In-Lieu Fees:

Developers can opt out of constructing required parking ordinarily required by a city’s zoning ordinance by paying an in-lieu fee to the local government. Collected funds can then be used for sustainable transportation initiatives and municipal infrastructure projects.²⁸ According to surveys of in-lieu programs in 46 cities throughout the United States, Canada, the United Kingdom, South Africa, Germany, and Iceland conducted by Donald Shoup, in-lieu programs have five major benefits for both cities and developers: provide developers with an alternative to meeting the parking requirements on sites where providing all the required parking spaces would be very expensive or difficult, encourage shared parking, improve urban design, support historic preservation, and decrease variance requests and therefore allow cities to treat developers consistently.²⁹ Provisions in municipal codes can be written that allow a developer to pay the set fee in lieu of providing parking supply directly.

- **In New Rochelle, NY,** residential developers may pay a cash fee to the city instead of providing required on-site parking within the Central Parking Area. The City Council may approve a request, subject to findings, and for developments including ten or more dwelling units, the City Council may in no event approve a cash-in-lieu fee for more than 35% of the required parking for such construction. The payments are held within City of New Rochelle Parking Fund, and the expenditure of revenues from the fund are “limited exclusively to capital improvements designed to increase the quantity and/or the quality of parking spaces available to serve properties within the Central Parking Area and/or for public transportation improvements to reduce off-street parking demand in the Central Parking Area.”³⁰

21 PARKING SPACES/COMMUNITY PLACES, *supra* note 5, at 16.

22 *Id.*

23 Forinash et al., *supra* note 6, at 5.

24 See generally CITY OF PORTLAND, OR, MUN. CODE, § 33.510.263(B).

25 PORTLAND BUREAU OF TRANSP., CENTRAL CITY PARKING POLICY UPDATE (2015), <https://www.portlandoregon.gov/transportation/article/554113>.

26 JOHN A. STARK, PARKING LOTS: WHERE MOTORISTS BECOME PEDESTRIANS 30 (2012), http://www.albany.edu/gp/files/Parking_Lots_Where_Motorists_Become_Pedestrians.pdf.

27 JOHN A. STARK, PARKING LOTS: WHERE MOTORISTS BECOME PEDESTRIANS 30 (2012), http://www.albany.edu/gp/files/Parking_Lots_Where_Motorists_Become_Pedestrians.pdf.

28 See generally WALI MEMON, CITY OF VANCOUVER PARKING BY-LAW – A RECITAL OF SUSTAINABLE PARKING POLICIES (2009), <http://www.citevancouver.org/quad/presentations/City%20of%20Vancouver%20Parking%20Presentation-Wali%20Memon%20-ITE%20Quad%20.pdf>.

29 Donald C. Shoup, In-Lieu of Required Parking, 4 J. PLANNING EDUC. & RESEARCH 307, 308 (1999), <http://journals.sagepub.com/doi/pdf/10.1177/0739456X9901800403>.

30 CITY OF NEW ROCHELLE, NY, MUN. CODE, § 331-126(2).

Shared Parking

Shared parking is a parking management tool that communities can employ when setting parking requirements and means that parking spaces are shared by more than one user.³¹

Different types of land uses attract customers, workers, and visitors during different times of the day, which results in differing peak parking demand hours for the related land uses. Shared parking takes advantage of these varying demand patterns and allows adjacent land uses with complementary peak demands to share a parking lot spaces.³² For example, “[a]n office that has peak parking demand during the daytime hours . . . can share the same pool of parking spaces with a restaurant whose demand peaks in the evening.”³³

Shared parking agreements also work well when parking facilities, such as large lots or garages, have a relatively constant supply of unused spaces. The owner of the parking facility, whether it be the local government or a private entity, can enter into lease agreements with individuals, businesses, or the government to lease the excess parking spaces on a monthly basis.

This parking strategy optimizes parking capacity by allowing complementary land uses to share spaces and also reduces overall development costs by allowing developers to provide less on-site required parking.³⁴ Many municipalities have implemented shared parking provisions in zoning codes, and the language, requirements, and restrictions, of these provisions vary from community to community. Successful shared parking agreements require that destinations be within walking distance of shared parking facilities and encourage people to park in one spot and then walk from one destination to another.³⁵

Beyond efficiently managing parking supply and demand, shared parking arrangements have environmental and aesthetic benefits including less stormwater runoff and less concrete expanses, and they support transit-oriented development. Additionally, they save time and expenses on constructing unnecessary parking facilities, and depending upon the agreement, can provide for revenue sharing as well.

Two major approaches to facilitating shared parking agreements include creation of parking management or benefit districts and execution of private contractual agreements:

Parking Management Districts:

Parking management districts regulate parking supply and pricing to meet the specific needs of the area and provide a centralized way for communities to manage off-street parking requirements by incorporating specific regulations that govern parking requirements for a defined area or district.³⁶ Parking management districts collect fees from property owners that are used to develop and maintain parking within the outlined area, and typically the management district is responsible for maintenance, security, signage, and other parking-related costs. An oversight committee elected by members of the district usually governs the districts, and all uses within the district have access to all the parking spaces dependent upon private leasing of spaces and time restrictions.³⁷ Parking management districts often provide for shared parking between all parking spaces within in the district.

- ▶ **As mentioned before, the Montgomery County, MD** code establishes four Parking Lot Districts (PLDs)—Bethesda, Montgomery Hills, Silver Spring, and Wheaton—that permit reduced parking minimums and also facilitates and promotes public, shared parking between developments.
- ▶ **In downtown San Buenaventura (Ventura), CA,** the City created a parking benefit district to solve parking and traffic problems. Within the PBD, the zoning ordinance permits shared parking between land uses with different peak parking demand periods for all on-site parking. Additionally, shared parking is allowed to satisfy 100% of the minimum parking requirement for each land use. In 2013, the first private business to take advantage of shared parking options within the PBD leased exclusive reserved spaces to individuals for \$142 per month in an established off-street parking facility and leased 52 spaces in the parking structure for \$71 per month for parking between 8:00 AM and 5:00 PM. Revenues from the program help fund PBD expenditures.

Contractual Agreements:

Under legally binding contractual agreements, the parking spaces that would be shared would be defined in the contract. The ordinance allowing shared parking in a city’s code should require a legal agreement.

- ▶ **For example, in San Diego County, CA,** an administrative permit is required for the sharing of parking spaces. To obtain a permit, a signed agreement between the applicant and the other property owner(s) providing the off-street parking spaces that are subject to the agreement must be submitted. Involvement by the local government as a third-party beneficiary is also required in order to form a contractual shared parking agreement. The code also provides a degree of flexibility by providing ideal maximum walking distances for customers/visitors (600 feet) and employees (1,000 feet) in the agreement and states that the “Director shall review and determine that the shared parking spaces are generally

31 Shared Parking, VICTORIA TRANSP. POLICY INST., <http://www.vtpi.org/tdm/tdm89.htm> (last updated Dec. 21, 2015).

32 INST. FOR TRANSP. & DEVELOP. POLICY, SHARED PARKING 1 (2014), https://www.itdp.org/wp-content/uploads/2014/12/Shared-Parking_ITDP.pdf.

33 Forinash et al., *supra* note 6, at 6.

34 Id.; INSTITUTE FOR TRANSP. & DEVELOP. POL’Y, *supra* note 25, at 1.

35 CRCOG BEST PRACTICES MANUAL, CHAPTER 8: SHARED PARKING FACT SHEET 3 (2002), <https://www.alexandriava.gov/uploadedFiles/planning/info/SharedParking-FactSheet.pdf> [hereinafter

36 Parking Management Districts, LA METRO, <https://www.metro.net/projects/tod-toolkit/parking-management-districts/> (last visited Nov. 20, 2017).

37 SHARED PARKING FACT SHEET, *supra* note 28, at 4.

within” the provided distances.³⁸ Many codes provide a strict distance that must be met to receive approval of a shared parking agreement.

- ▶ In **North Kansas City, MO**, by conditional use permit, the City may allow a reduction in the number of parking spaces for multi-use developments or for uses that are located near one another that have different peak parking demands and operating hours. In obtaining a conditional use permit, the applicant must demonstrate through a parking study that the proposed agreement: “(1) clearly establishes that uses will make use of the shared spaces at different times of the day, week, month or year; (2) addresses the size and types of activities, composition of tenants, rate of turnover for parking spaces, and anticipated peak parking and traffic loads; (3) that such a study is based upon the Urban Land Institute’s shared parking” table, or other industry standards as the city determines to be acceptable for the types of uses proposed.”³⁹ The agreement is enforced through a written agreement signed by the property owner(s) and is reviewed and approved by the zoning administrator and city counselor.
- ▶ **The Bellingham, WA** municipal code has a similar agreement scheme as North Kansas City, MO. The code describes shared parking as a situation where “parking spaces are shared by more than one user or business that has different parking demand patterns,” that “result[s] in fewer total parking spaces needed when compared to the total number of spaces needed for each land use or business separately.”⁴⁰ Required off-street parking provided in the code may be reduced when shared parking facilities for two or more uses are proposed so long as “[p]arking for each use is utilized at different times of the day; the shared parking facility is within 1,000 feet of the use(s) deficient in parking as measured by a pedestrian walkway between the shared parking facility and generator; the total number of parking spaces is not less than the minimum required spaces for any single use; the applicant submits a parking generation study demonstrating to the director’s satisfaction that the resultant parking will be adequate for the anticipated uses; and a shared parking agreement specifying respective rights and/or operating times is signed by all participants and the director and filed in the county auditor’s office.”⁴¹
- ▶ **Within the the urban overlay district in Nashville, TN**, shared parking is permitted “when uses are located near one another and have different peak parking demands and operating hours, or other characteristics that would enable them to share parking areas without resulting in significantly higher on-street parking in surrounding areas or unauthorized use of other parking facilities, based upon a favorable recommendation of a shared parking study and site plan from the metropolitan traffic engineer.”⁴² The same criteria are

required for areas outside the urban overlay district except for showing that on-street parking will not be increased. Within the urban overlay district and outside of it in cases where the uses for which shared parking is requested are located on lots under different ownership, a three party agreement between the metropolitan government and owners is required and subject to approval by the local government.

- ▶ In **West Hartford, CT**, the zoning code permits shared parking agreements as an alternate method meeting parking requirements. As with many shared parking provisions in zoning codes, an applicant that wishes to enter into a shared parking agreement must demonstrate to city officials that the off-street parking facility is so located with respect to the proposed structure or use that it is convenient for the use of employees, customers, and other persons associated with that structure and that it will not cause traffic congestion.⁴³ From the suggestion of the Town, the parking lots for several businesses have been combined into one single parking lot. While these lots are privately owned, the Town successfully lobbied the owners to consolidate their various parking lots by agreeing management terms such as maintaining lots, including the striping, snow removal, and other aspects.⁴⁴

Common types of shared parking agreements include public leasing from private and private leasing to private.

Public Leases from Private Agreement:

In this kind of agreement, the local government directly leases parking from a private landowner or entity for public parking use.⁴⁵

- ▶ **The City of Sacramento, CA** Parking Division offers a “Managed Parking Solutions” program for privately owned facilities in which the City leases over 10,000 spaces through shared parking agreements.⁴⁶ In the shared-parking leasing agreement, the City offers four management options: enforcement only, payment management and enforcement, enforcement and monthly parking contracts, and full management.⁴⁷ With enforcement only agreements, revenue goes the City, and there is no management fee; with full management agreements, the parking facility is treated as if the City owns it, and revenue goes to the City. Both agreement types use the City’s insurance.⁴⁸
- ▶ **The City Falls Church, VA** has entered into many shared parking agreements with private entities to provide public parking. In 2013, a private property management company

38 SAN DIEGO CNTY., CA, MUN. CODE, § 6784.

39 CITY OF NORTH KANSAS CITY, MO, MUN. CODE, § 17.76.030(C)(6).

40 CITY OF BELLINGHAM, WA, MUN. CODE, § 20.37.350(E).

41 Id. § 20.12.010(A)(6).

42 METRO GOV’T OF NASHVILLE & DAVIDSON CNTY., TN, MUN. CODE, § 17.20.100.

43 TOWN OF HARTFORD, CT, MUN. CODE, § 177-32(G)(2).

44 NELSON\NYGAARD CONSULTING ASSOC., MAXIMIZING URBAN-CORE PARKING WITH PRIVATE-PUBLIC AND PRIVATE-PRIVATE PARKING AGREEMENTS: CONVENIENT FINDINGS 18 (2015), https://www.usdn.org/uploads/cms/documents/2015usdnconvening_summary.pdf [hereinafter PARKING AGREEMENTS]

45 Id. at 10.

46 Id. at 15.

47 Parking Management Services, CITY OF SACRAMENTO, CA, <https://www.cityofsacramento.org/PublicWorks/Parking-Services/Business-Services/Parking-Management-Services> (last visited Nov. 20, 2017).

48 PARKING AGREEMENTS, *supra* note 36 at 93.

signed an agreement with the City to open 50 parking spaces in its private parking facility, located in a prime downtown location, to the public on nights and weekends. In 2014, the Kaiser Permanente Medical Center also entered in an agreement with Falls Church to open up its 564-space downtown private garage to the public on weekday evenings, weekends and several major holidays. As part of the agreement, the City is permitted to use the garage for free for public parking but must provide security and pay for trash removal.⁴⁹

Private Leases to Private Agreement:

In this type of agreement, a private business works directly with another private business to lease existing parking spaces. This agreement works particularly well when parking facilities have differing peak uses/peak demand times, when one facility has excess parking, or when multiple neighboring facilities can combine their lots to create one parking area.

Since 1999 in **West Concord, MA**, four neighboring private retail businesses within the West Concord Village District have agreed to share their parking lots. The businesses are designated as “Formula Business,” which are regulated more closely within the district “to maintain the unique, small-scale, small-town character and the quality of life for all Concord residents by preserving the individuality and distinctive appeal.”⁵⁰ After applying, the Town granted the businesses a special permit to operate their lots as one single area. By combining the four lots into one parking area, the business owners were able to remove one of the driveways and add a brick pedestrian pathway running from the sidewalk to the parking lot. The agreement has allowed people to park in one spot easily shop around the Village, which has had positive impact on the business environment. Management costs are split 45/45/5/5 between the owners in proportion to the size of the landowners’ holdings, and the shared lot has significantly lowered costs per square foot, providing for an improved parking area with better paving, signage, and weather-condition management. West Concord’s zoning code does not have a specific provision allowing shared parking but permits it through special use permits upon satisfaction of certain criteria.⁵¹

Implementing Shared Parking:

This process should begin with municipal government policy development. Community outreach should encourage shared parking arrangements be actually made between individual facility developers and managers. The process may require changes to the zoning code. Below are general steps to implementation:

- ▶ **Identify the need** – establish purpose, conduct parking utilization study, collect data, analyze costs and benefits.
- ▶ **Create basic educational for community members and stakeholders** – parking economics, land use trade-offs, opportunities, downtown walkability and livability, convenience, etc.
- ▶ **Build a coalition – community outreach, contact business owners, landowners, employees, residents, developers, banks, etc.**

- ▶ **Identify obstacles** – zoning, party concerns like lease terms, community opposition.
- ▶ **Create regulatory framework** – updating zoning to include shared parking ordinance, develop authority and partnerships.
- ▶ **Develop shared parking/lease agreement template** – sample language, insurance information, zoning proposals, economic considerations.⁵²
- ▶ **Create marketing and education materials** – hold community outreach meetings, invite business owners and landowners, present them with materials.
- ▶ **Maintain reporting and monitoring.**

Smart Phone Applications That Facilitate Shared Parking:

- ▶ **ParqEx** is a smart phone application (“app”) that is currently available for use and that focuses specifically on the sharing of private parking spaces. ParqEx is an app that “connects owners of private parking spots to people looking for parking. In urban areas where parking demand is high but available options are scarce or expensive, ParqEx makes additional supply available to the driving public by listing exclusive inventory owned by local residents and businesses.”⁵³ Many of the spots available for parking are in protected areas, such as the parking garage of a condo building. The app even employs “technology that lets parking spot renters open the door to a parking garage using the app.”⁵⁴ Listing a parking spot is free through the app and the company collects 20% of the parking fee.⁵⁵
- ▶ While not yet a viable program, **AirGarage** is a smart phone app that “tap[s] into the ethos of the shared economy” and allows residential or commercial property owners to rent out their unused parking spaces to drivers looking for a spot in the area.⁵⁶ It’s goal is to “provide affordable parking in congested areas — a problem that is troubling cities nationwide, and the solution is one that falls in line with a bigger smart city trend of utilizing shared space.”⁵⁷ The app won first place won the third Phoenix, AZ Smart City Hack competition.

52 KIMLEY-HORN, EXAMPLE SHARED PARKING AGREEMENTS, <https://www.alexandriava.gov/uploadedFiles/tes/info/2012-04-10%20Del%20Ray%20Appendix.pdf>. This source provides various shared parking agreements, complete with sample clauses and provisions.

53 PARQEX, <https://www.parqex.com/> (last visited Nov. 19, 2017).

54 Amina Elahi, Parqex Raises More Than \$1M to Rent Out Private Parking Spots, CHICAGO TRIBUNE (Dec. 20, 2016), <http://www.chicagotribune.com/bluesky/originals/ct-parqex-raises-1-million-bsi-20161220-story.html>.

55 Id.

56 James Brasuell, An Appt To Rent Driveways, PLANETIZEN (Oct. 27, 2017), <https://www.planetizen.com/news/2017/10/95521-app-rent-driveways>.

57 Kristin Musulin, Parking network AirGarage wins Phoenix Smart City Hack, SMART CITIES DIVE (Oct. 25, 2017), <https://www.smartcitiesdive.com/news/parking-network-airgarage-wins-phoenix-smart-city-hack/508031/>.

49 CITY OF FALLS CHURCH, VA, SHARED PARKING ANALYSIS AND RECOMMENDATIONS 12 (2016), <http://www.fallschurchva.gov/documentcenter/view/5587>.

50 TOWN OF CONCORD, MA, MUN. CODE, § 3.3.

51 PARKING AGREEMENTS, supra note 36 at 16-17.



Day and Overnight Parking for Commercial Vehicles

Many municipalities prohibit day and overnight parking for commercial and oversized vehicles in downtown or residential zones, with the exception of temporary parking when performance of a delivery or providing a service.

Additionally, homeowners' associations-governed communities often prohibit commercial and oversized vehicles to park on streets or in driveways within neighborhoods.⁵⁸ Although these prohibitions may be effective in restricting commercial vehicle parking in these locations and the associated "eyesore," they leave the owner of the vehicle without a place to park when parking is not available on-site at the business or when the owner uses the vehicle for livelihood and must park the vehicle at home. Commercial vehicles may generally be defined as any vehicle that is primarily used for "the transportation of commodities, merchandise, produce, freight, animals, or passengers for hire."⁵⁹ Cities typically define oversized vehicles by their size, weight, or function. Legal definitions of commercial and oversized vehicles vary and are found in a locality's municipal code.

58 Mike Antich, Branded Fleet Vehicles Put Drivers in Conflict with Homeowners Associations, TRUCKING INFO (Sep. 22, 2008), <http://www.truckinginfo.com/blog/market-trends/story/2008/09/branded-fleet-vehicles-puts-drivers-in-conflict-with-homeowner-associations.aspx>.

59 Commercial Vehicle Definition, DICTIONARY.COM, <http://www.dictionary.com/browse/commercial-vehicle?s=t> (last visited Nov. 19, 2017).

Commercial Vehicle Parking Permit Programs:

To mitigate this problem, some communities provide for off-street parking in a residential, commercial, and downtown zones through special commercial vehicle parking permits. These programs allow parking of a commercial vehicle in a designated location, either by day or overnight, and require that the vehicle be of certain weight and height, that it have limited or no markings on the exterior, and be owned by or registered to a resident of the municipality. Permit allowances are generally made on a case-by-case basis by a city official or administrator after evaluating the permittee's application. Effective dates and costs of the permits and vary from city to city.

- **Residents of Daly City, CA** that rely upon commercial vehicles (trucks other than pick-ups, limousines exceeding nineteen feet in length, buses, and trailers attached to a truck) for their livelihood may obtain a commercial vehicle permit that permits parking on certain street segments only by commercial vehicles displaying a city-issued permit from 5:00 PM to 7:00 AM.⁶⁰ To obtain a permit that is applicable for one year, the vehicle owner must submit an application form that requires proof of residency in Daly City and a fee.⁶¹ The program is designated within the City's municipal code and establishes specific parking zones, describes procedures for issuing permits, and provides other details like placement and prohibitions of the permits.⁶²

60 Commercial Vehicle Permit, CITY OF DALY CITY, CA, http://www.dalycity.org/City_Hall/Departments/Finance/Parking_in_Daly_City/Commercial_Vehicle_Permit.htm (last visited Nov. 9, 2017).

61 Id.

62 CITY OF DALY CITY, CA, MUN. CODE, § 10.32.155.

► The City of **Somerville, MA** has separate parking permit programs for day and overnight parking of commercial vehicles.⁶³ Both residential commercial vehicle day and overnight permits apply to “residents driving commercial vehicles for personal use without commercial decals or markings” and require proof of insurance, vehicle registration in Somerville, and proof of residency in Somerville.⁶⁴ A residential commercial vehicle day permit allows parking anywhere throughout the City, Monday through Saturday from 7:00 AM to 7:00 PM for one year and costs \$35/month.⁶⁵ A residential commercial vehicle overnight permit similarly allows parking anywhere throughout the city but for everyday of the week from 12:00 AM to 8:00 AM.⁶⁶ It is also applicable for 12 months but costs the vehicle owner only \$25/year.⁶⁷

► The City of **Laurel, MD**’s Special Vehicle Parking Permit Program “provides an opportunity to allow certain vehicles that meet established criteria to park on City streets.”⁶⁸ A Special Vehicle Parking Permit is available to residents of the City and is described as a “temporary parking permit program administered by the Office of the Fire Marshal & Permit

Services to allow residents to park certain oversized vehicles in front of their residence for a pre-determined period of time (several days to six months).”⁶⁹ Under the program, one oversized commercial or recreational vehicle per dwelling unit on a street within a residential district is eligible to obtain a permit, provided that the vehicle weight does not exceed pound, width, and wheel requirements.⁷⁰ After submitting an application, the city administrator must find from a preponderance of the evidence of record that the on-street stopping, standing or parking of such commercial or recreational vehicle:

- (1) Will not overburden existing public roads and other public facilities and improvements;
- (2) Will not be detrimental to the use or development of adjacent properties or the neighborhood;
- (3) Will not adversely affect the health and safety of the residents or workers in the area;
- (4) Will not obstruct, nor create a safety hazard for, vehicular or pedestrian traffic; and
- (5) Will not constitute a violation of any provision of this Code or applicable law.⁷¹

This specific case-by-case evaluation by the city administrator is one of the stricter standards found while researching commercial vehicle parking programs. Most programs found include evaluation of the vehicle owner’s application on a case-by-case basis but do not include a high these extensive criteria.

63 Parking Permits, CITY OF SOMERVILLE DEP’T OF TRAFFIC & PLANNING, <http://parksomerville.com/parking-permits.html> (last visited Nov. 16, 2017).

64 CITY OF SOMERVILLE DEP’T OF TRAFFIC & PLANNING, RESIDENTIAL COMMERCIAL VEHICLE DAY PERMIT, http://parksomerville.com/pdfs/permits/Residential_Commercial_Vehicle_Day_Permit.pdf [hereinafter SOMERVILLE COMMERCIAL VEHICLE DAY PERMIT]; CITY OF SOMERVILLE DEP’T OF TRAFFIC & PLANNING, RESIDENTIAL COMMERCIAL OVERNIGHT PERMIT http://parksomerville.com/pdfs/permits/Residential_Commercial_Vehicle_Overnight_Permit.pdf [hereinafter SOMERVILLE COMMERCIAL VEHICLE OVERNIGHT PERMIT].

65 SOMERVILLE COMMERCIAL VEHICLE DAY PERMIT, *supra* note 57.

66 SOMERVILLE COMMERCIAL VEHICLE OVERNIGHT PERMIT, *supra* note 57.

67 *Id.*

68 Special Vehicle Parking Permit, CITY OF LAUREL, MD, <https://www.cityoflaurel.org/permits/permits/special-vehicle-parking-permit> (last visited Nov. 16, 2017).

69 *Id.*

70 CITY OF LAUREL, MD, MUN. CODE, § 17-41(c).

71 *Id.* § 17-41(d).





Parking Demand Management and Pricing Solutions

Smart parking demand management policies and programs such as parking management districts, dynamic pricing, unbundling parking costs, and residential parking permits can help shape demand and better manage the city's existing parking supply.

Dynamic Pricing:

When all parking spaces are priced equally, then drivers will choose the space that is closest or most convenient to their destination and will likely stay in that space longer than they may need to stay. Essentially, underpricing and overcrowded curb parking as well as overpriced and under-crowded parking create problems that progressive parking pricing can help fix.⁷² A progressive parking case study for the city of Santa Rosa, CA indicates that “[a] key component of any progressive parking policy is a concept known as demand-responsive pricing, also known as variable-rate pricing, performance-based pricing, or dynamic pricing.”⁷³ During low-demand periods, lower rates are offered. As demand increases, higher rates are offered. Cities that have implemented progressive parking pricing policies have seen positive results: decreased time spent looking for parking spaces, increased visitor satisfaction with parking, and increased availability in parking spaces.⁷⁴

Suggested steps for implementing a dynamic-pricing policy include:

- (1) Current conditions assessment.
- (2) Conducting example research.
- (3) Comprehensive evaluation of the inter-relationship of all parking rates and fines.
- (4) Exploration of the latest pricing models.
- (5) Demand-based pricing for on-street parking.
- (6) Progressive on-street parking pricing.
- (7) Planning extensive community outreach and engagement.

► **In 2011, the City of San Francisco, CA** implemented SFpark, a program that “uses demand-responsive pricing to open up parking spaces on each block and reduce circling and double-parking. Rates may vary by block, time of day, and day of week. Rates will be adjusted by no more than 50 cents per hour down or 25 cents per hour up, and no more often than once per month.”⁷⁵ When San Francisco first implemented this project, average hourly rates at meters decreased by \$0.11 per hour and average hourly rates at garages decreased by \$0.42 per hour. The amount of time that blocks were at 100% capacity decreased by 16%, and the amount of time to find a space decreased by 43%. On-street parking availability increased by 22% during peak periods and 12% during off-peak periods. SFpark is considered one of the most successful dynamic parking policies in the nation, and other cities have adopted similar approaches.⁷⁶ Real-time rates are available on SFpark’s website and SFpark smart phone app.⁷⁷

► **In 2014, the Seattle, WA City Council** approved a 2-year pilot program to upgrade each of Seattle’s 2,200 parking meters with dynamic pricing technology. Due to its success,

⁷² Gregory Pierce & Donald Shoup, *Getting The Prices Right: An Evaluation of Pricing Parking by Demand in San Francisco*, J. AM. PLANNING ASS’N (2013), <http://shoup.bol.ucla.edu/PricingParkingByDemand.pdf>.

⁷³ NELSON\NYGAARD CONSULTING ASSOCIATES, MEMORANDUM: BEST PRACTICES REVIEW FOR CITY OF SANTA ROSA 3 (2016), <https://srcity.org/DocumentCenter/Home/View/13182> [BEST PRACTICES REVIEW].

⁷⁴ Id.

⁷⁵ Pricing, SFPARK, <http://sfpark.org/how-it-works/pricing/> (last visited Nov. 2, 2017).

⁷⁶ Id.

⁷⁷ Id.

it was implemented in 2016 citywide. Prices, time limits, and hours of operation change at the paid parking area level, and prices vary by time of day. On-street parking varies from \$0.50-\$5.00 per hour and is limited to 2, 4, or 10-hours (all day). Paid parking is in effect Monday-Friday, and parking is free on Sundays when time limits generally do not apply. Additionally, parking in some areas of town are free after 6:00 PM.⁷⁸ After implementation, the average hourly rate decreased about \$1 in 55% of neighborhoods, stayed the same in 27% of neighborhoods, and increased by \$1.00-\$2.00 in 18% of neighborhoods. More recently, the average hourly rate has remained the same in 47% of neighborhoods, and in most of the areas where hourly rates decreased or have remained the same, there has been no increase in space occupancy.⁷⁹ The on-street paid rate program and e-Park, the city's real-time parking space availability system that informs drivers of how many spaces are available in garages throughout the Downtown Retail Core, Pike Place Market, Pioneer Square and Central Waterfront neighborhoods, are both part of Seattle's "Play Like a Parking Pro Program" campaign designed to educate the public about the parking system so that people can learn how to park smart.⁸⁰ Just like San Francisco, Seattle has a smart phone application for users to access real-time pricing rates.

- ▶ **In January 2017, the City of Boston, MA** launched a pilot program, Performance Parking, designed to test two different pricing structures: dynamic pricing in the Seaport District and increased meter pricing in the Back Bay District.⁸¹ In Seaport, the goal of dynamic pricing strategy is to offer "the lowest possible hourly rate that leaves one space per block. For blocks where it's difficult to find a parking space, rates increase until at least one space is available on each block most of the day. On blocks with many open parking spaces, the rate will decrease until empty spaces start to fill up, or [until the city] reach[es] [its] floor rate of \$1 per hour."⁸² There is also a \$4.00 per hour maximum rate. Because blocks have varying levels of traffic congestion dependent upon the time of day, so prices are spaced from 8 AM – 12 PM rate, 12:00 – 4:00 PM, 4:00 – 8:00 PM, and an all-day Saturday rate. In Back Bay, the City has increased meter prices to \$3.75 an hour during all meter hours. This pilot program is still in the process of being carried out.

Unbundling Parking Costs:

Unbundling parking "means that parking is rented or sold separately, rather than automatically included with building space."⁸³

This strategy allows renters to choose how my spaces they wish to buy or rent rather than that parking cost automatically being

included into the lease.⁸⁴ Ideally unbundled parking will allow residents and employees to purchase parking on a monthly or possibly daily basis. In the case of commercial parking, the spaces can be rented through the property management association or a third-party parking manager. For office buildings, instead of parking at work, employers could give employees the option to instead receive a transportation allowance of equivalent value, which "could take the form of tax-free transit, vanpool, or bicycling benefits for employees whose commutes make them legally eligible for such benefits, plus taxable cash."⁸⁵ In the case of residential parking, spaces can be leased through the homeowners' or other management association.⁸⁶ As a result, parking demand is more accurately reflected and supply is more efficiently allocated. Similarly to many of these smart parking strategies, unbundling parking costs works well when the targeted location is located near public transit options.⁸⁷

- ▶ **The Bellingham, WA** zoning code states that "unbundled parking means the parking required of a project is not assigned to building space; it is sold or leased separately" and that its purpose is "[t]o make more efficient use of parking that is required of a project but not otherwise used or needed by tenants of the project."⁸⁸ Unbundling parking is permitted in commercial core, industrial, and public zones.⁸⁹
- ▶ **In Montgomery County, MD**, unbundling residential space is permitted in the municipal code as an "adjustment to vehicle parking"⁹⁰ but provides a baseline minimum of 0.75 spaces for Townhouse Living, 2-Bedroom, and 3+ Bedroom multi-unit living and a baseline minimum of 0.50 spaces for Efficiency and 1-Bedroom multi-unit living. Without unbundling parking, these uses or use groups have baselines parking minimums that range from 1 to 2 spaces per dwelling unit.
- ▶ **The City of Santa Monica, CA** municipal code establishes zoned Areas Requiring Unbundled Parking and provides that all off-street parking spaces associated with new residential of 4 dwelling units or more, new conversions of nonresidential buildings to residential use of 10 dwelling units or more, and new non-residential projects "shall be leased or sold separately from the rental or purchase fees."⁹¹ The code also incorporates shared parking of unused spaces by allowing remaining residential unbundled parking spaces that are not leased or sold to on-site users to be leased to off-site residential users on a month-to-month basis. In terms of remaining commercial unbundles spaces, those may be leased to other off-site residential or commercial users on a month-to-month basis.⁹²

84 PARKING SPACES/COMMUNITY PLACES, *supra* note 5, at 32.

85 Allen Greenberg, To Discourage Building Empty Garages, Unbundle Parking, GREATER WASHINGTON (Oct. 22, 2012), <https://ggwash.org/view/29179/to-discourage-building-empty-garages-unbundle-parking>.

86 U.S. DEP'T OF TRANSP., CONTEMPORARY APPROACHES TO PARKING PRICING: A PRIMER 19 (2012), <https://ops.fhwa.dot.gov/publications/fhwahop12026/fhwahop12026.pdf>.

87 Neha Bhatt, Smarter Parking Codes to Promote Smart Growth, SMART GROWTH AM. (Aug. 12, 2014), <https://smartgrowthamerica.org/smarter-parking-codes-to-promote-smart-growth/>.

88 CITY OF BELLINGHAM, WA, MUN. CODE, § 20.37.350(D).

89 *Id.*

90 MONTGOMERY CNTY., MD, MUN. CODE, § 59-6.2.3.I(5).

91 CITY OF SANTA MONICA, CA, MUN. CODE, § 9.28.110(A).

92 *Id.* at § 9.28.110(C).

78 Seattle On Street Parking: Rates Vary by Time of Day, SEATTLE DEP'T OF TRANSP., <http://seattlecitygis.maps.arcgis.com/apps/MapSeries/index.html?appid=5fc6cb313ec34374a3141d4d24b05c5d> (last visited Nov. 2, 2017).

79 BEST PRACTICES REVIEW, *supra* note 72, at 3.

80 Play Like a Parking Pro, SEATTLE DEP'T OF TRANSP., http://www.seattle.gov/transportation/projects-and-programs/programs/parking-program/play-like-a-parking-pro?utm_source=printad&utm_medium=redirect&utm_campaign=parking2015 (last visited Nov. 2, 2017).

81 Performance Parking Pilot, CITY OF BOSTON, MA, <https://www.boston.gov/transportation/performance-parking-pilot> (last visited Nov. 2, 2017).

82 *Id.*

83 VICTORIA TRANSP. POLICY INST., PARKING MANAGEMENT: STRATEGIES, EVALUATION AND PLANNING 20 (Sep. 12, 2016), http://www.vtpi.org/park_man.pdf.



Impact of Autonomous Vehicles and Shared Vehicle Programs on Parking Demand and Supply

The rapid introduction and evolution of on-demand ride-sharing services, like Uber and Lyft, and driverless vehicles could substantially impact parking demand.

“Ride-sharing services operate under the theory that it doesn’t matter which car people travel in, so long as one is available immediately. And because most people travel only intermittently, then the same car, with or without a driver, can be used over and over and over again to transport people around.”⁹³ As a result, with or without a driver, these ride-sharing vehicles are never parked, freeing up spaces in parking lots.

Because these technologies are relatively new in the urban transportation world, research of their impact on parking facilities is not abundant. However, “MIT scientists found that if the trend toward ride-sharing keeps accelerating, traffic congestion could be

reduced by 37% and the number of vehicles on the road decreased by 19% (assuming half of drivers shifted over to ridesharing). Some studies also estimate that autonomous vehicles could erase the need for up to 90% of our current parking lots in the next 15 years.”⁹⁴ Further, some evidence suggests that ride-sharing services may be lessening the need to even own a car at all. A recent study revealed that in eight American cities, including metro areas of Chicago, Detroit, Los Angeles, Miami, New York, San Diego, San Francisco, and Washington, D.C., commuting to and from work by Uber is cheaper than owning and traveling by a personal vehicle.⁹⁵ While many of these projections are optimistic, a general consensus among scholars and professionals in the transportation field is that local governments should start planning now for the affect that ridesharing and driverless vehicles will have on parking infrastructure and demand.

Marshal Brown, an Illinois Institute of Technology associate professor of architecture and team member of The Driverless City Project,⁹⁶ predicts that the change will create obsolete parking

93 William Fulton, The Future of Parking in an Era of Car-Sharing, GOVERNING THE STATES AND LOCALITIES (Apr. 2015), <http://www.governing.com/columns/urban-note-book/gov-drive-less-park-less.html>.

94 Parking in a New Mobility Future: Getting More for Our Transportation Investments, LOCAL GOV'T COMMISSION (Feb. 2016), <https://www.lgc.org/resources/community-design/lpu/feb2016/> (citing Lauren P. Alexander & Marta C. González, Assessing the Impact of Real-time Ridesharing on Urban Traffic using Mobile Phone Data, UrbComp'15 (2015), <http://files.ctcdn.com/551bc6cf001/4203d269-ca91-447b-82c2-295c89e0377b.pdf>).

95 Diamond Richardson & Elizabeth Renter, Uber vs. Driving: The Cheapest Commute in 20 Metros, NERD WALLET (Mar. 7, 2017), <https://www.nerdwallet.com/blog/insurance/uber-vs-driving-cheapest-commute-in-20-metros/#tablepress>.

96 The Driverless City Project will develop social scenarios, technical solutions, infrastructure prototypes, and model urban codes that transform city streets into twenty-first century human infrastructure. See THE DRIVERLESS CITY, <https://www.id.iit.edu/driverlesscity/> (last

facilities, what he calls “parking lot blight,” or opportunities for new spaces and uses.⁹⁷ To plan for this possible dramatic parking demand decrease, new parking facilities should be designed so that they may be repurposed for future alternative uses like office, retail, residential, gym, or artist space. According to architecture experts, the following elements should be used to design a retrofittable parking garage:⁹⁸

- ▶ Space columns so that they do not ruin the look of a future living room or retail floor.
- ▶ Construct high ceilings, possibly up to 13 feet.
- ▶ Place elevators and stairs in the middle, as they are in offices.
- ▶ Install knock-out panels in the ceiling and floors to create future light wells.
- ▶ Enclose the garage to accommodate heating and cooling.
- ▶ Pre-built components where future electrical equipment can be stored and where ductwork can someday run.
- ▶ Most importantly, floors should be level rather than slanted as they typically are in parking garages. Removable steel ramps, elevators for cars, or ramps built around the outside of the deck that could be destroyed prior to retrofitting are all options to replace inclines.
- ▶ The outside design of the structure is important as well. It should blend into the surrounding neighborhood, and if it is initially built with office or retail, it should match so windows can be added after the conversion.

visited Feb. 6, 2017).

97 Ryan Ori, Will Uber and Driverless Cars Turn the Parking Biz into Roadkill?, *CRAIN'S CHICAGO BUSINESS* (Nov. 5, 2016), <http://www.chicagobusiness.com/article/20161105/ISSUE01/311059991/will-uber-and-driverless-cars-turn-the-parking-biz-into-roadkill>.

98 Roger Vincent, When Car Ownership Fades, This Parking Garage Will Be Ready For Its Next Life, *L.A. TIMES* (Apr. 16, 2017), <http://www.latimes.com/business/la-fi-car-future-real-estate-20170405-story.html>; Aarian Marshall, It's Time to Think About Living in Parking Garages, *WIRED* (Nov. 2, 2016), <https://www.wired.com/2016/11/time-think-living-old-parking-garages/>.

Plans for parking garage projects like this are in motion in Los Angeles, Seattle, Nashville, and Boston. Parking garages could also see the addition of grocery stores and other retail spaces on ground floors and in addition to parking garages, surface lots at suburban malls “could turn from asphalt into verdant mixed-use complexes with apartments, offices and more stores and restaurants.”⁹⁹

Barriers to constructing retrofittable parking garages include costs, technical improvements and support, and ultimately getting all stakeholders on board with the idea. Municipalities can incentivize a retrofit by creating a “future use” tax credit or by giving “credits to developments in neighborhoods where it plans to build more transit down the line.”¹⁰⁰ Additionally, local regulations can require that new parking garages be built to be retrofitted in the future, possibly through a form-based code that provides guidance on design elements for developers.

Although the success and longevity of ride-sharing services and autonomous vehicles are dependent upon many factors, current research and predictions suggest that planners, architects, engineers, developers, municipal officials, and all other stakeholders should be “gearing up” for a substantial decrease in parking demand throughout 2020 and into 2030.¹⁰¹ If parking garages must be built now to accommodate parking demand, local regulations should incentivize or require that they be built for future retrofit.

99 When Car Ownership Fades, This Parking Garage Will Be Ready For Its Next Life, *supra* note 102.

100 It's Time to Think About Living in Parking Garages, *supra* note 102.

101 Getahn Ward, Ride-Hailing Services, Driverless Cars Reshape Parking Garage Design, *TENNESSEAN* (Aug. 29, 2016), <https://www.tennessean.com/story/money/real-estate/2016/08/29/ride-hailing-services-driverless-cars-reshape-parking-garage-design/87929764/>.



Other Parking Management Strategies

The following definitions and examples of parking management strategies are provided by the New York City Department of Planning's "Parking Best Practices" compilation of parking regulations and policies used by various cities across the United States, Canada, and London as a way to manage on-street and off-street parking resources, as well as address traffic congestion.¹⁰²

¹⁰² N.Y.C. PLANNING DEPT. TRANSP. DIV., PARKING BEST PRACTICES: A REVIEW OF ZONING REGULATIONS AND POLICIES IN SELECT U.S. AND INTERNATIONAL CITIES (2011), http://www1.nyc.gov/assets/planning/download/pdf/plans/transportation/parking_best_practices.pdf.

Bicycle Parking Requirements – This policy is designed to encourage mode shifts and bicycle use by requiring secure, indoor, long-term bicycle parking at residential, community facility, and/or commercial buildings.

- ▶ **New York, NY** – Secure bicycle parking is required for new residential, community facility, and commercial uses. The amount of spaces required is based on dwelling units, floor area, or vehicle spaces, depending on use.
- ▶ **Minneapolis, MN** – Enclosed parking is required for multi-family dwellings and non-residential uses are required to provide enclosed parking or a bicycle rack outdoors, depending on the use.
- ▶ **Portland, OR** – There are short-term and long-term bicycle parking requirements. Some districts require uses to provide shower and changing facilities for bicyclists.

Car Share Provision

Car share programs provide short-term car rentals and are operated by a private company or not-for-profit organization. Several cities include zoning language that encourages or requires



developers to dedicate spaces for car share vehicles. Some cities give developers incentives to provide spaces for car share vehicles through reduced parking requirements. Studies suggest that car sharing can reduce demand for accessory residential parking, overall vehicle miles traveled, vehicle ownership rates, and household transportation costs.

- ▶ **New York, NY** – Car share vehicle may locate in off-street parking public parking garages or in parking facilities accessory to residential, commercial, or other uses.
- ▶ **Philadelphia, PA** – The city designates on-street parking spaces for not-for-profit car share organizations, and requires the organizations to pay a \$150 annual fee per space. For-profit car share companies are not eligible for these spaces. The City Council can designate additional areas for use by car share organizations, and the Parking Authority can temporarily designate spaces for the same use for up to 6 months. These spaces are available to car share organizations on a first-come, first-served basis.

Parking Freeze

A parking freeze mitigates the growth of parking by stopping or carefully managing future parking development. Cities may simply forbid the building or expansion of any parking lots, or they can only cap certain types of parking (e.g., commuter parking).

- ▶ **Boston, MA** – Boston has multiple zones that freeze parking, many of which were created after 1973 as a result of the Clean Air Act. Construction or expansion of any new lots must be approved by the Air Pollution Control Commission.

Parking Management Plan

Some cities require developers to submit a parking plan along with other development documents. The parking management plan often requires developers to outline measures to mitigate parking demand, for example, by demonstrating how the development will accommodate carpool vehicles and short-term parkers.

- ▶ **Baltimore, MD** – Developers must apply for permits to build surface parking lots or to replace an existing building with surface parking lots. The mayor and city council have the authority to approve permits after evaluating the potential impacts and design of the proposed parking lot.
- ▶ **Portland, OR** – Portland has a central city review process that requires developers to submit reports detailing specific parking plans.
- ▶ **San Francisco, CA** – Before receiving an occupancy permit, new buildings in the downtown core must have an approved parking plan.

Special Populations Provision

Parking requirements are reduced for developments designed for special populations, such as low-income housing or elderly housing. Housing without parking can be more affordable for developers and tenants.

- ▶ **New York, NY** – Reduced parking requirements exist for public or publicly-assisted housing and non-profit housing for the elderly. Los Angeles, CA – Parking requirements have been reduced for deed-restricted affordable housing.
- ▶ **San Diego, CA** – Residential multiple dwellings in low-income areas have reduced parking requirements.
- ▶ **Seattle, WA** – Minimum parking requirements are reduced for elderly and disabled housing.

Travel Demand Management Plan

Large developments such as institutions are required to submit a travel demand management plan during the development permit process. The developer or building owner must outline how they will mitigate adverse traffic impacts. Depending on the city, the plan may require specific strategies for reducing single-occupancy vehicle trips and promoting alternate modes of transportation.

- ▶ **Portland, OR** – Universities, hospitals and other large institutions are required to submit a transportation demand management plan if located outside the CBD.
- ▶ **Seattle, WA** – Seattle requires a transportation management program for major institutions such as hospitals or higher education facilities if their parking plan exceeds 135 percent of the minimum requirement, or if the developer applies for a master use permit requiring 20 or more spaces. Each program is subject to city council approval.

Updating Parking Requirements Appendix

TOD Zones

- ▶ ARLINGTON CNTY., VA, MUN. CODE, § 14.3.
- ▶ CITY OF EUGENE, OR, MUN. CODE, §§ 9.3165, 9.3970(4), 9.8030(10)(a).
- ▶ MONTGOMERY CNTY., MD, MUN. CODE, § 59-6.2.3.

Downtown Zones

- ▶ CITY OF BATH, ME, MUN. CODE, §§ 8.07(A), 10.06(A)(2).
- ▶ CITY OF BELLINGHAM, WA, MUN. CODE, § 20.37.540(B).
- ▶ CITY OF ITHACA, NY, MUN. CODE, § 325-45.2.
- ▶ CITY OF MILWAUKEE, WI, MUN. CODE, § 295-403.
- ▶ CITY OF ROCHESTER, NY, MUN. CODE, §§ 120-65, 75, 173.
- ▶ VILL. OF PORT CHESTER, NY, MUN. CODE, § 345-14, ATTACHMENT 3A.

Other Zones

- ▶ CITY OF BOSTON, MA, MUN. CODE, arts. 51, 55, 56, 60, 62, 65, 68.
- ▶ CITY OF BUFFALO, NY, MUN. CODE, Unified Development Ordinance.
- ▶ CITY OF NORWICH, CT, MUN. CODE, Appendix A § 2.6.5.



