File #: 2015-0372, **Version:** 1

AMEND 172.05 (ADM 15-5088 UDC AMENDMENT CHAPTER 172.05 NON-RESIDENTIAL PARKING REQUIREMENTS:

AN ORDINANCE TO AMEND SECTION 172.05 OF THE UNIFIED DEVELOPMENT CODE TO REMOVE MINIMUM PARKING STANDARDS FOR NON-RESIDENTIAL USES

WHEREAS, removing minimum parking standards for non-residential uses will advance City Plan 2030 goals of reducing sprawl, prioritizing infill development and promoting traditional town form, and

WHEREAS, minimum parking standards were primarily developed based upon parking surveys that measure peak demand, and

WHEREAS, requiring a minimum number of parking spaces based upon a limited number of times a year when a parking lot will be completely full is a wasteful use of valuable land, and

WHEREAS, landowners and developers are periodically denied the ability to adaptively reuse their property due to parking minimum requirements tied to specific land use categories, and

WHEREAS, the potential economic development opportunity and streamlining of City code is a benefit to the City's development climate.

NOW, THEREFORE, BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF FAYETTEVILLE, ARKANSAS:

Section 1. That the City Council of the City of Fayetteville, Arkansas hereby amends section §172.05: **Standards for the Number of Spaces by Use** of the Unified Development Code by repealing and replacing it with Exhibit "A."

City of Fayetteville Staff Review Form

2015-0372

Legistar File ID

9/1/2015

City Council Meeting Date - Agenda Item Only

N/A for Non-Agenda Item

Jeremy Pate	8/14/2015	City Planning / Development Services Department
Submitted By	**Submitted Date**	**Division / Department**

Action Recommendation:

ADM 15-5088 Administrative Item (UDC AMENDMENT CHAPTER 172.05 NON-RESIDENTIAL PARKING REQUIREMENTS): Submitted by CITY PLANNING STAFF for revisions to the Unified Development Code, Section 172.05. The proposal is to remove minimum parking standards for non-residential uses.

Budget Impact:

Account Number			Fund	
Project Number			Project Title	
Budgeted Item?	NA	Current Budget	$	-
		Funds Obligated	$	-
		Current Balance	$	-
Does item have a cost?	No	Item Cost		
Budget Adjustment Attached?	NA	Budget Adjustment		
		Remaining Budget	$	-

V20140710

Previous Ordinance or Resolution #

Original Contract Number: Approval Date:

Comments:

CITY OF Fayetteville ARKANSAS

CITY COUNCIL AGENDA MEMO

MEETING OF SEPTEMBER 1, 2015

TO: Mayor and City Council

THRU: Andrew Garner, City Planning Director

FROM: Quin Thompson, Current Planner

DATE: August 14, 2015

SUBJECT: **ADM 15-5088 Administrative Item (UDC AMENDMENT CHAPTER 172.05 NON-RESIDENTIAL PARKING REQUIREMENTS):** Submitted by CITY PLANNING STAFF for revisions to the Unified Development Code, Section 172.05. The proposal is to remove minimum parking standards for non-residential uses. .

RECOMMENDATION:
Staff and the Planning Commission recommend approval of an ordinance to amend Section 172.05 of the Unified Development Code, removing minimum parking requirements for non-residential uses.

BACKGROUND:
Minimum parking requirements common throughout many cities have an enormous effect on many aspects of our built environment, and yet has limited research justifying the numbers. Minimum ratios are typically based on Institute of Transportation Engineers (ITE) recommendations that are in turn based on surveys performed to measure "peak demand", that one day each year when suburban parking lots are at their fullest. Further, more than half of the 101 published parking rates are based on four or fewer surveys of parking occupancy, and 22% are based on a single survey[1].

Several times each year in Fayetteville, planning staff denies a business license or has to discourage a prospective business owner from moving into an existing building because the location cannot meet the minimum parking requirements laid out in Chapter 172.05. Many times this is the result of a change in use of the property, for example from office use to restaurant or retail use. Retail use has a higher minimum parking ratio requirement than does office use, and the restaurant use is higher still. Because of the minimum parking ratios, an older office or retail center cannot easily adapt to changing real estate market conditions and prospective tenants are limited to the originally anticipated use. This has the effect of stifling the ability for a property to be adaptively reused over time.

Staff also meets with different developers about the same properties over and over again, particularly downtown and along developed corridors, such as College Avenue, where new

[1] Shoup, Donald. 1999. The trouble with minimum parking requirements. *Elsevier Science Ltd.*

potential infill development proposals are impossible or too costly to develop because of minimum parking requirements.

DISCUSSION: Staff proposes to remove the minimum parking ratios for non-residential uses. The first intention of this code amendment is to encourage appropriate infill development and revitalization, the first goal of City Plan 2030. This change will allow business owners/developers of non-residential uses and market demand to determine minimum parking needs for the intended use. In staff's opinion, a more accurate assessment of parking needs for a non-residential use will come from the business owner/developer and customers. Maximum parking ratios and residential parking ratios are not affected by the proposed code amendment.

There are numerous cities around the United States that have either partially or totally removed minimum parking ratios for non-residential uses with positive results. Staff's research and observation in Fayetteville has been that if a non-residential use does not have enough parking, the use will go out of business, move to a location that meets the customer's needs, or customers will find a different mode of transportation to the site. The City very rarely receives complaints about a lack of non-residential parking or adverse impacts to surrounding property because of a lack of non-residential parking, even in the downtown business community. While a scientific study in Fayetteville has not been conducted, recent studies by the Transportation Research Board show that parking is already oversupplied in mixed use districts by an average of 65%[2]. Moreover, surface parking lots suppress property value and waste potential for highly valuable economic development opportunities in many properties throughout our commercial districts.

The City's codes have included a parking waiver downtown for many years allowing a change of use in existing buildings without having to provide additional parking. This waiver has helped facilitate the redevelopment and revitalization of Dickson Street and the greater downtown area, but it has limited new and infill development. With the construction of the new municipal parking deck downtown and the recently implemented pay parking program and residential parking program, staff believes the timing is now appropriate to remove the minimum parking requirements for non-residential uses not just downtown but throughout the entire city.

This code change is an economic development tool that will allow turnover and revitalization of our existing building stock for a variety of new and start-up businesses. Underused parcels represent a costly missed opportunity in many cases. As noted in a recent Planning Magazine article published by the American Planning Association, "getting parking right might be a more dependable and longer lasting form of economic development" than any traditional approach. Simplified development procedures, opening up infill development to be more functionally viable, activating underperforming, vacant, or derelict lots, and enabling more opportunities for sustainable or green development principles are all potential, positive outcomes of this proposal. This proposal places a priority on people rather than automobiles for new development, and aligns our code with the City Plan 2030 policy direction for urban and traditional development patterns. The code change is essential for valuable growth of progressive, thoughtful infill projects where the number of parking spaces is dictated by the market rather than a contextually insensitive suburban code. Eliminating the non-residential minimum parking requirement does not mean developments will begin providing no parking-in fact, it would be difficult to justify even getting a development loan for construction if that was the case. Rather, it simply means there is more

[2] Canepa, Brian & Karlin-Resnick, Joshua. (2015, May). Releasing the Parking Brake on Economic Development. *Planning, The Magazine of the American Planning Association, 81(5), pp. 23-27.*

flexibility to provide the parking that is truly needed for a development to succeed[3], as determined by those best placed to make that decision.

The City does receive complaints on a regular basis when a residential development does not have enough parking. This can result in violations such as parking in the grass, blocking fire lanes, and property trespass. These issues are compounded in a university city like Fayetteville where a large number of students live off campus and where visitor parking is neither anticipated nor provided. For this reason staff does not propose to modify the minimum number of parking spaces for residential use at this time.

BUDGET/STAFF IMPACT:
None

Attachments:

- CC ordinance
- Exhibit 'A'
- July 27, 2015 Planning Commission staff report.
- Public Comment
- Supplementary Materials

[3] Shoup, Donald. (2015, May). Putting a Cap on Parking Requirements: A Way to Make Cities Function Better. *Planning, The Magazine of the American Planning Association, 81(5), pp. 28-30.*

Thompson, Quin

From: Garner, Andrew
Sent: Thursday, July 30, 2015 12:03 PM
To: Thompson, Quin
Subject: [public comment for parking code change] FW: Parking

Quin,
Please save this email in the public comment file and include a copy on the City Council packet.
Thanks,
Andrew

From: Ben Salmonsen [mailto:bensalmonsen@gmail.com]
Sent: Tuesday, July 28, 2015 12:03 PM
To: Garner, Andrew
Subject: Parking

Mr. Garner,

I believe ending the parking regulation rules would be a positive change for the city of Fayetteville. I agree with Hoskins saying that the business owners who are using their sources of capital to operate should be the ones who decide how much parking they have. Also, I think we can all agree that this is just one less requirement for developers to have to fulfill and will surely promote new development across Fayetteville. Thanks for taking the time to hear my recommendation on this issue.

Respectfully,

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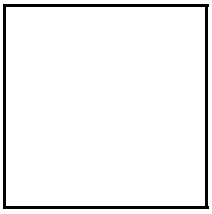
Regards,

Benjamin Salmonsen
Keller Williams Commercial Division
Northwest Arkansas Region Representative
Cell: 479-330-1250



From: Art Hobson [mailto:ahobson@uark.edu]
Sent: Tuesday, August 04, 2015 8:22 AM
To: Planning <planning@fayetteville-ar.gov>; Mayor <Mayor@fayetteville-ar.gov>; Marr, Don <dmarr@fayetteville-ar.gov>; Matthew Petty <matt@matthewpetty.org>; Adella Gray <adellag@cox.net>; Lioneld Jordan <lljordan7@hotmail.com>; Kinion, Mark <ward2_pos1@fayetteville-ar.gov>; Marsh, Sarah <ward1_pos2@fayetteville-ar.gov>; Tennant, Justin <ward3_pos1@fayetteville-ar.gov>; Schoppmeyer, Martin <ward3_pos2@fayetteville-ar.gov>; La Tour, John <ward4_pos1@fayetteville-ar.gov>; longward4@gmail.com; Pate, Jeremy <jpate@fayetteville-ar.gov>; agarner@fayetteville-ar-gov
Cc: Marie Riley <mriley@uark.edu>
Subject: Parking proposal

Dear City Planners and City Councilors:

Congratulations to the Fayetteville Planning Commission for proposing that minimum parking requirements for commercial establishments be abolished! This has been needed for decades. I hope and presume that the City Council will follow suit. This will improve our quality of life, and make central Fayetteville a more supremely walkable destination—the leading goal of our excellent 2004 Downtown Master Plan that hundreds of our best citizens had a hand in creating. Infill, higher density, fewer cars, and more fun should be our bywords for downtown planning.

Cheers - Art Hobson

Art Hobson, Emeritus Professor of Physics, U Arkansas.
Look for Tales of the Quantum Oxford University Press, in 2015.
See my textbook & other stuff here.

CITY OF Fayetteville ARKANSAS

PLANNING COMMISSION MEMO

TO: Fayetteville Planning Commission

THRU: Andrew Garner, City Planning Director

FROM: Quin Thompson, Current Planner

MEETING DATE: ~~July 27, 2015~~ UPDATED AUGUST 05, 2015

SUBJECT: **ADM 15-5088 Administrative Item (UDC AMENDMENT CHAPTER 172.05 STANDARDS FOR THE NUMBER OF SPACES BY USE):** Submitted by CITY PLANNING STAFF for revisions to the Unified Development Code, Chapters 172.05. The proposal is to remove minimum parking standards for non-residential uses.

RECOMMENDATION:
Staff recommends that the Planning Commission forward **ADM 15-5088** to the City Council with a recommendation for approval.

BACKGROUND:
This amendment was tabled at the July 13, 2015 Planning Commission meeting in order to allow more time for comment and discussion.

The minimum parking requirement has an enormous effect on many aspects of our built environment, and yet has limited research justifying the numbers. Minimum ratios are typically based on Institute of Transportation Engineers (ITE) recommendations that are in turn based on surveys performed to measure peak demand, that one day each year when suburban parking lots are at their fullest. Further, more than half of the 101 published parking rates are based on four or fewer surveys of parking occupancy, and 22% are based on a single survey (Shoup, 1999)[1].

Several times each year planning staff denies a business license or has to discourage a prospective business owner from moving into an existing building because the location cannot meet the minimum parking requirements laid out in Chapter 172.05. Many times this is the result of a change in use of the property, for example from office use to restaurant or retail use. Retail use has a higher minimum parking ratio requirement than does office use, and the restaurant use is higher still. Because of the minimum parking ratios, an older office or retail center cannot easily adapt to changing real estate market conditions and prospective tenants are limited to the originally anticipated use.

Staff also meets with different developers about the same properties over and over again, particularly downtown and along developed corridors, where new potential infill sites are impossible or too costly to develop because of minimum parking requirements.

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[1] Shoup, Donald. 1999. The trouble with minimum parking requirements. Elsevier Science Ltd.

DISCUSSION: Staff proposes to remove the minimum parking ratios for non-residential uses. The intention of this code amendment is to encourage appropriate infill development and revitalization, the first goal of City Plan 2030. This change will allow business owners/developers of non-residential uses and market demand determine minimum parking needs. In staff's opinion, a more accurate assessment of parking needs for a non-residential use will come from the business owner/developer and customers. Maximum parking ratios and residential parking ratios are not affected by the proposed code amendment.

There are numerous cities around the United States that have either partially or totally removed minimum parking ratios for non-residential uses with positive results. Staff's research and observation in Fayetteville has been that if a non-residential use does not have enough parking, the use will go out of business or users will find a different mode of transportation to the site. The City very rarely receives complaints about a lack of non-residential parking or adverse impacts to surrounding property because of a lack of non-residential parking.

The City's codes have included a parking waiver downtown for many years allowing a change of use in existing buildings without having to provide additional parking. This waiver has helped facilitate the redevelopment and revitalization of Dickson Street and the greater downtown area, but it has limited new and infill development. With the construction of the new municipal parking deck downtown and the recently implemented pay parking program and residential parking program, the timing is now appropriate to remove the minimum parking requirements for non-residential uses throughout the entire city. This code change is an economic development tool that will allow turnover and revitalization of our existing building stock for a variety of new and start-up businesses. This proposal places a priority on people rather than automobiles for new development, and aligns our code with the City Plan 2030 policy direction for urban and traditional development patterns. The code change is essential for valuable growth of progressive, thoughtful infill projects where the number of parking spaces is dictated by the market rather than a heavy-handed suburban code.

The City does receive complaints on a regular basis because a residential development does not have enough parking. This can result in violations such as parking in the grass, blocking fire lanes, and property trespass. These issues are compounded in a university city like Fayetteville where a large number of students live off campus. For this reason staff does not propose to modify the minimum number of parking spaces for residential use.

PLANNING COMMISSION ACTION:	☐ **Approved**	☐ **Denied**	X Forward
Date: July 27, 2015			
Motion: HOFFMAN		**Vote:** 7-1-0	
Second: AUTRY			
Note: RECOMMEND FORWARD AS PROPOSED BY STAFF, WITH BROWN VOTING 'NO'.			

BUDGET/STAFF IMPACT:
None

Attachments:

- UDC Chapter 172.05 (Existing)
- UDC Chapter 172.05 (Proposed)
- UDC Chapter 172.05 (Proposed changes shown in strikeout-highlight)
- Comments submitted by Tom Brown at the 07-13-15 Planning Commission meeting

Existing UDC 172.05

172.05 Standards For The Number Of Spaces By Use

(A) *Required parking*

(1) *Required number of spaces.* A proposed use shall conform to the established parking ratios listed in Table 3. The minimum number of spaces required for a use not specifically included in this section shall be as required for the most similar use listed or as otherwise determined by the Planning Division utilizing reference standards. For all parking space requirements resulting in a fraction, the fraction shall be:

(a) rounded to the next higher whole number when the fraction is 0.5 or higher.

(b) rounded to the next lower whole number when the fraction is less than 0.5.

(2) Change of use - existing structure. A change of use in an existing structure may be permitted if the use adequately meets the minimum parking ratio standards herein. A change of use shall not be penalized for existing parking spaces that exceed the required parking ratios included in this chapter.

(3) *Change of use – waiver.* In Downtown Core, Main Street Center, and Downtown General zoning districts, parking requirements are waived for any existing structure with a change of use. New construction, razed buildings or enlarged buildings shall conform to the parking requirements of the City of Fayetteville. For enlarged buildings, additional parking spaces will be calculated by the amount of square footage that is added.

(4) *Building footprint – waiver.* In Downtown Core, Main Street Center and Downtown General zoning districts, parking requirements are waived for the square footage "footprint" of any building which existed and has been removed since October 1, 1995, in order to rebuild.

(5) Downtown Core, Main Street Center, and Downtown General Zoning Districts accessory outdoor use areas - Accessory outdoor patios, balconies, decks, and other similar outdoor use areas for restaurants and bars shall be exempt from meeting off-street parking requirements in the *Downtown Core, Main Street Center, and Downtown General* zoning districts.

TABLE 3

PARKING RATIOS
(Use/Required Spaces)

Residential

Single-family, duplex, triplex	2 per dwelling unit
Multi-family or townhouse	1 per bedroom

Commercial

Agricultural supply	1 per 500 sq. ft. of GFA
Amusement	1 per 200 sq. ft. of GFA
Auditorium	1 per 4 seats
Auto/motorcycle service stations	4 per each enclosed service bay
Bank	1 per 200 sq. ft. of GFA
Barber or beauty shop	2 per chair
Building/home improvement supply	1 per 500 sq. ft. of GFA
Coin-operated laundry	1 per 3 machines
Dry cleaning	1 per 300 sq. ft. of retail area and 1 per employee
Hotels and motels	1 per guest room, plus 75% of spaces required for accessory uses.
Furniture and carpet store	1 per 500 sq. ft. of GFA
Plant nursery	1 per 1,000 sq. ft of indoor/outdoor retail area
Restaurants	1 per 100 sq. ft. GFA plus 4 stacking spaces per drive-thru window.
Retail	1 per 250 sq. ft. of GFA
Retail fuel sales with convenience stores	1 per 250 square feet of retail floor area. Owner may count spaces at pump islands as parking spaces.
Retail fuel sales only	1 per employee. Owner may count spaces at pump islands as parking spaces.

Office

Medical/Dental office	1 per 250 sq. ft. of GFA
Professional office	1 per 300 sq. ft. of GFA
Sales office	1 per 200 sq. ft. of GFA

Public and Institutional Uses
Nonprofit Commercial

Art gallery, library, museum	1 per 1,000 sq. ft. of GFA
Auditorium	1 per 4 seats, provided only auditorium space is counted in determining parking
Child care center, nursery school	1 per employee plus on-site loading and unloading spaces at a rate of 1 per 10 children accommodated
Church/religious institution	1 per 4 seats in the main auditorium or 1 per 40 sq. ft. of assembly area, whichever provides more spaces
College auditorium	1 per 4 seats
College dormitory	1 per sleeping room
College or university	1 per 500 sq. ft. of classroom area

Existing UDC 172.05

Community center	1 per 250 sq. ft. of GFA
Cooperative housing	1 per 2 occupants
Convalescent home, assisted living, nursing home	1 per 2 beds
Detention home	1 per 1,500 sq. ft. of GFA
Elderly Housing	1 per 2 units
Funeral homes	1 per 4 seats in main chapel plus 1 per 2 employees plus 1 reserved for each vehicle used in connection with the business
Government facilities	1 per 500 square feet of floor area
Hospital	1 per bed
Convalescent home	1 per bed
School--elementary and junior high	1 per employee plus 1 space per classroom
School--senior high	1 per employee plus 1 per 3 students based on design capacity, or 1 per 6 seats in auditorium or other places of assembly, whichever is greater
Zoo	1 per 2,000 sq. ft. of land area
All other public and institutional uses (only auditorium space shall be counted for churches, auditoriums, or group occupancy space)	1 per 4 occupants

Manufacturing/Industrial

Manufacturing	1 per 1,200 sq. ft. of GFA or one per employee, whichever is greater
Heavy industrial	1 per 1,200 sq. ft. of GFA
Extractive uses	Adequate for all employees, trucks, and equipment

Recreational Uses

Amusement park, miniature golf	1 per 1,000 sq. ft. of site area
Bowling alley	6 per lane
Commercial recreation	1 per 200 sq. ft. of GFA
Commercial recreation-large sites	1 per 1,000 sq. ft. of site area
Dance hall, bar or tavern	1 per 50 sq. ft. of GFA, excluding kitchen
Golf course	3 per hole
Golf driving range	1 per tee box
Health club, gym	1 per 150 sq. ft. of GFA
Regional or community park	2 per acre of accessible active and passive space
Neighborhood park	None
Private club or lodge	1 per 500 sq. ft. of GFA or 1 per 3 occupants based on the current adopted Standard Building Code whichever is greater
Riding stable	1 per acre; not required to be paved
Tennis court	2 per court
Theater	1 per 4 seats
All other recreational uses	1 per 4 occupants

Warehousing and Wholesale

Warehousing	1 per 2,000 sq. ft. of GFA
Wholesale	1 per 1,000 sq. ft. of GFA
Center for collecting recycled materials	1 per 1,000 sq. ft. of GFA

(B) *On-street parking.* Permitted on-street parking spaces adjacent to a project frontage may count toward the parking requirements for all development, subject to approval by the Zoning and Development Administrator. Each on-street parking space provided may count toward the total required parking spaces for the development.

(C) *Off-street parking.*

(1) *Motorcycle and scooter parking.* In parking lots containing 25 parking spaces or more, one (1) space for every 25 parking spaces of the required number of parking spaces for a use or combination of uses shall be striped as a motorcycle and scooter parking space.

(2) *Maximum number allowed.* Developments may utilize the following increases to the required spaces listed in Table 3 when the following standards are met:

(a) Developments may increase the number of off-street parking spaces by 15% above the parking ratios listed in Table 3.

(b) Developments may increase the number of off-street parking spaces by an additional 10% when alternative stormwater treatment techniques are utilized, such as:

(i) Bioswales

(ii) constructed wetlands

(iii) pervious pavement

(iv) other such techniques that aid in improving water quality and quantity as approved by the City Engineer

(c) Developments may increase the number of off-street parking spaces by an additional 5% when one (1), two-inch (2") caliper tree for every 10 additional parking spaces is planted on-site in addition to all other landscaping requirements.

(3) Reductions. Developments may utilize the following reductions to the required off-street

Existing UDC 172.05

parking ratios listed in Table 3 when the following standards are met:

(a) *Transit stops.* Properties located within a quarter (0.25) mile radius of a transit stop may further reduce the minimum off street parking requirements by up to fifteen percent (15%).

(b) *Motorcycle and scooter spaces.* Up to 10% of the required automobile parking spaces may be substituted with motorcycle/scooter parking at a rate of one motorcycle/scooter space for one automobile space.

(c) *Bike racks.* Up to 10% of required automobile parking may be substituted with bicycle parking at a rate of one additional bicycle rack for one automobile space. This reduction shall be allowed in addition to other variances, reductions and shared parking agreements.

(d) *Shared parking.* Parking requirements may be shared where it can be determined that the peak parking demand of the existing or proposed occupancy occur at different times (either daily or seasonally). Such arrangements are subject to the approval of the Planning Commission.

(i) *Shared parking between developments.* Formal arrangements that share parking between intermittent uses with nonconflicting parking demands (e.g. a church and a bank) are encouraged as a means to reduce the amount of parking required.

(ii) *Shared parking agreements.* If a privately owned parking facility is to serve two or more separate properties, then a "Shared Parking Agreement" is to be filed with the city for consideration by the Planning Commission.

(iii) *Shared spaces.* Individual spaces identified on a site plan for shared users shall not be shared by more than one user at the same time.

(e) *Reduced parking within mixed use developments.* Parking requirements may be reduced where it can be determined that the peak parking demand of the existing or proposed occupancy occur at different times (either daily or seasonally). Such arrangements are subject to the approval of the Planning Commission.

(i) *Request for parking space reduction.* A shared parking plan must be prepared to the satisfaction of the Planning Commission showing that parking spaces most conveniently serve the land uses intended, directional signage is proved if appropriate, and pedestrian links are direct and clear.

(ii) *Calculating parking space reductions.* Parking space reductions can be determined by a calculation using Table 4, Parking Occupancy Rates. If the calculation does show a parking space regulation reduction to be feasible, the applicant shall submit a parking reduction worksheet showing the process for calculating the reduction as outlined herein. The calculation using Table 4, Occupancy Rates shall be conducted as follows:

(a) *Determine minimum spaces required.* The minimum number of parking spaces that are to be provided and maintained for each use shall be determined by using Table 3, Parking Ratios.

(b) *Calculate occupancy rates.* The minimum number of parking spaces shall be multiplied by the "occupancy rate" (the percentage) provided in Table 4, Parking Occupancy Rates, for each use for the weekday night, daytime and evening periods, and weekend night, daytime and evening periods, respectively.

(iii) *Sum parking spaces.* Sum the parking spaces for the combined uses for each time period. The number of parking spaces from the time period with the highest calculated number of parking spaces shall be the number of spaces required for the shared parking facility

TABLE 4
Parking Occupancy Rates
(Percent of basic minimum needed during time period)

Existing UDC 172.05

Uses	M-F 8am-5pm	M-F 6pm-12am	M-F 12am-6am	Sat & Sun. 8am-5pm	Sat & Sun. 6pm-5pm	Sat. & Sun. 12am - 6am
Land Use Categories						
Residential	60%	100%	100%	80%	100%	100%
Commercial*	90%	80%	5%	100%	70%	5%
Office	100%	20%	5%	5%	5%	5%
Public & Institutional Uses (non-church)	100%	20%	5%	10%	10%	5%
Public & Institutional Uses (church)	10%	5%	5%	100%	50%	5%
Manufacturing/ Industrial	100%	60%	40%	50%	30%	10%
Warehouse/ Wholesale	100%	20%	5%	5%	5%	5%
Recreation	40%	100%	10%	80%	100%	50%
Specific Commercial Uses						
Hotel	70%	100%	100%	70%	100%	100%
Restaurant	70%	100%	10%	70%	100%	20%
Theater	40%	80%	10%	80%	100%	10%
Conference/ Convention	100%	100%	5%	100%	100%	5%

Source: Shared Parking Planning Guidelines, Institute of Transportation Engineers.

*Some specific uses have different occupancy rates. Check under "Specific Commercial Uses" with the rest of the table.

(4) Increases or reductions in excess of those identified herein shall be allowed only as a conditional use and shall be granted in accordance with Chapter 163, governing applications of conditional uses, procedures, and upon the finding that the increase or reduction is needed.

(Ord. 4567, 05-04-04; Ord. 4930, 10-03-06; Ord. 5118, 3-18-08; Ord. 5297, 12-15-09; Ord. 5435, 8-16-11)

Proposed UDC 172.05

172.05 Standards for the Number of Spaces by Use

A. *Required Parking*

1. Non-residential use. There shall be no minimum number of spaces required for non-residential use. The maximum number of spaces shall be limited based on the ratios in Table 3 and the allowable increases over the baseline ratio as described in subsection 172.05. The applicant shall provide a statement or parking analysis indicating how they will provide adequate parking for the proposed non-residential use.

2. Residential. The minimum and maximum number of spaces required for residential use shall conform to the parking ratios listed in Table 3. The minimum and maximum number of spaces required for a use not specifically included in this section shall be as required for the most similar use listed or as otherwise determined by the Planning Division utilizing reference standards.

(a) *Reductions for residential use.* Residential uses may utilize the following reductions to the minimum number required off-street parking ratios listed in Table 3 when the following standards are met:

(i) *Transit stops.* Properties located within a quarter (0.25) mile radius of a transit stop may further reduce the minimum off street parking requirements by up to fifteen percent (15%).

(ii) *Motorcycle and scooter spaces.* Up to 10% of the required automobile parking spaces may be substituted with motorcycle/scooter parking at a rate of one motorcycle/scooter space for one automobile space.

(iii) *Bike racks.* Up to 10% of required automobile parking may be substituted with bicycle parking at a rate of one additional bicycle rack for one automobile space. This reduction shall be allowed in addition to other variances, reductions and shared parking agreements.

(iv) *Shared parking.* Parking requirements may be shared where it can be determined that the peak parking demand of the existing or proposed occupancy occur at different times (either daily or seasonally). Such arrangements are subject to the approval of the Planning Commission.

(1) *Shared parking between developments.* Formal arrangements that share parking between intermittent uses with non-conflicting parking demands (e.g. a church and a bank) are encouraged as a means to reduce the amount of parking required.

(2) *Shared parking agreements.* If a privately owned parking facility is to serve two or more separate properties, then a "Shared Parking Agreement" is to be filed with the city for consideration by the Planning Commission.

(3) *Shared spaces.* Individual spaces identified on a site plan for shared users shall not be shared by more than one user at the same time.

3. Maximum number allowed for residential and non-residential uses. Residential and non-residential developments may utilize the following increases to the required spaces listed in Table 3 when the following standards are met:

(a) Developments may increase the number of off-street parking spaces by 15% above the parking ratios listed in Table 3.

(b) Developments may increase the number of off-street parking spaces by an additional 10% when alternative stormwater treatment techniques are utilized, such as:
  (i) Bioswales
  (ii) constructed wetlands
  (iii) pervious pavement
  (iv) other such techniques that aid in improving water quality and quantity as approved by the City Engineer

(c) Developments may increase the number of off-street parking spaces by an additional 5% when one (1), two-inch (2") caliper tree for every 10 additional parking spaces is planted on-site in addition to all other landscaping requirements.

4. Parking ratio calculation. The number of spaces required for a use not specifically included in Table 3 shall be as required for the most similar use listed or as otherwise determined by the City Planning Division utilizing industry standards. For all parking space requirements resulting in a fraction, the fraction shall be:

a. rounded to the next higher whole number when the fraction is 0.5 or higher.

b. rounded to the next lower whole number when the fraction is less than 0.5.

5. On-street parking. Each permitted on-street parking space adjacent to a project frontage may count toward the parking requirements for all development. The approval of on-street parking is subject to approval by the Zoning and Development Administrator.

6. Motorcycle and scooter parking. (1) Motorcycle and scooter parking. In parking lots containing 25 parking spaces or more, one (1) space for every 25 parking spaces of the required number of parking spaces for a use or combination of uses shall be striped as a motorcycle and scooter parking space.

7. Increases or reductions in excess of those identified herein shall be allowed only by the Planning Commission as a variance and shall be granted in accordance with Chapter 156.03

TABLE 3
PARKING RATIOS
(Use/Required Spaces)

Residential

Single-family, duplex, triplex	2 per dwelling unit
Multi-family or townhouse	1 per bedroom

Commercial

Agricultural supply	1 per 500 sq. ft. of GFA
Amusement	1 per 200 sq. ft. of GFA
Auditorium	1 per 4 seats
Auto/motorcycle service stations	4 per each enclosed service bay
Bank	1 per 200 sq. ft. of GFA
Barber or beauty shop	2 per chair
Building/home improvement supply	1 per 500 sq. ft. of GFA
Coin-operated laundry	1 per 3 machines
Dry cleaning	1 per 300 sq. ft. of retail area and 1 per employee
Hotels and motels	1 per guest room, plus 75% of spaces required for accessory uses.
Furniture and carpet store	1 per 500 sq. ft. of GFA
Plant nursery	1 per 1,000 sq. ft of indoor/outdoor retail area
Restaurants	1 per 100 sq. ft. GFA plus 4 stacking spaces per drive-thru window.
Retail	1 per 250 sq. ft. of GFA

Proposed UDC 172.05

Retail fuel sales with convenience stores	1 per 250 square feet of retail floor area. Owner may count spaces at pump islands as parking spaces.
Retail fuel sales only	1 per employee. Owner may count spaces at pump islands as parking spaces.

Office

Medical/Dental office	1 per 250 sq. ft. of GFA
Professional office	1 per 300 sq. ft. of GFA
Sales office	1 per 200 sq. ft. of GFA

Public and Institutional Uses

Nonprofit Commercial

Art gallery, library, museum	1 per 1,000 sq. ft. of GFA
Auditorium	1 per 4 seats, provided only auditorium space is counted in determining parking
Child care center, nursery school	1 per employee plus on-site loading and unloading spaces at a rate of 1 per 10 children accommodated
Church/religious institution	1 per 4 seats in the main auditorium or 1 per 40 sq. ft. of assembly area, whichever provides more spaces
College auditorium	1 per 4 seats
College dormitory	1 per sleeping room
College or university	1 per 500 sq. ft. of classroom area
Community center	1 per 250 sq. ft. of GFA
Cooperative housing	1 per 2 occupants
Convalescent home, assisted living, nursing home	1 per 2 beds
Detention home	1 per 1,500 sq. ft. of GFA
Elderly Housing	1 per 2 units
Funeral homes	1 per 4 seats in main chapel plus 1 per 2 employees plus 1 reserved for each vehicle used in connection with the business
Government facilities	1 per 500 square feet of floor area
Hospital	1 per bed
Convalescent home	1 per bed
School--elementary and junior high	1 per employee plus 1 space per classroom
School--senior high	1 per employee plus 1 per 3 students based on design capacity, or 1 per 6 seats in auditorium or other places of assembly, whichever is greater
Zoo	1 per 2,000 sq. ft. of land area
All other public and institutional uses (only auditorium space shall be counted for churches, auditoriums, or group occupancy space)	1 per 4 occupants

Manufacturing/Industrial

Manufacturing	1 per 1,200 sq. ft. of GFA or one per employee, whichever is greater
Heavy industrial	1 per 1,200 sq. ft. of GFA
Extractive uses	Adequate for all employees, trucks, and equipment

Recreational Uses

Amusement park, miniature golf	1 per 1,000 sq. ft. of site area
Bowling alley	6 per lane
Commercial recreation	1 per 200 sq. ft. of GFA
Commercial recreation-large sites	1 per 1,000 sq. ft. of site area
Dance hall, bar or tavern	1 per 50 sq. ft. of GFA, excluding kitchen

Proposed UDC 172.05

Golf course	3 per hole
Golf driving range	1 per tee box
Health club, gym	1 per 150 sq. ft. of GFA
Regional or community park	2 per acre of accessible active and passive space
Neighborhood park	None
Private club or lodge	1 per 500 sq. ft. of GFA or 1 per 3 occupants based on the current adopted Standard Building Code whichever is greater
Riding stable	1 per acre; not required to be paved
Tennis court	2 per court
Theater	1 per 4 seats
All other recreational uses	1 per 4 occupants

Warehousing and Wholesale

Warehousing	1 per 2,000 sq. ft. of GFA
Wholesale	1 per 1,000 sq. ft. of GFA
Center for collecting recycled materials	1 per 1,000 sq. ft. of GFA

PROPOSED CODE CHANGES SHOWN IN ~~STRIKEOUT~~-HIGHLIGHT/UNDERLINE

172.05 Standards For The Number Of Spaces By Use

(A) *Required parking.*

~~(1) *Required number of spaces.* A proposed use shall conform to the established parking ratios listed in Table 3. The minimum number of spaces required for a use not specifically included in this section shall be as required for the most similar use listed or as otherwise determined by the Planning Division utilizing reference standards. For all parking space requirements resulting in a fraction, the fraction shall be:~~

~~(a) rounded to the next higher whole number when the fraction is 0.5 or higher.~~

~~(b) rounded to the next lower whole number when the fraction is less than 0.5.~~

~~(2) *Change of use – existing structure.* A change of use in an existing structure may be permitted if the use adequately meets the minimum parking ratio standards herein. A change of use shall not be penalized for existing parking spaces that exceed the required parking ratios included in this chapter.~~

Totally removed this subsection

~~(3) *Change of use – waiver.* In Downtown Core, Main Street Center, and Downtown General zoning districts, parking requirements are waived for any existing structure with a change of use. New construction, razed buildings or enlarged buildings shall conform to the parking requirements of the City of Fayetteville. For enlarged buildings, additional parking spaces will be calculated by the amount of square footage that is added.~~

~~(4) *Building footprint – waiver.* In Downtown Core, Main Street Center and Downtown General zoning districts, parking requirements are waived for the square footage "footprint" of any building which existed and has been removed since October 1, 1995, in order to rebuild.~~

~~(5) *Downtown Core, Main Street Center, and Downtown General Zoning Districts accessory outdoor use areas -* Accessory outdoor patios, balconies, decks, and other similar outdoor use areas for restaurants and bars shall be exempt from meeting off-street parking requirements in the ~~*Downtown Core, Main Street Center, and Downtown General*~~ zoning districts.~~

New code

1. Non-residential use. There shall be no minimum number of spaces required for non-residential use. The maximum number of spaces shall be limited based on the ratios in Table 3 and the allowable increases over the baseline ratio as described in subsection 172.05. The applicant shall provide a statement or parking analysis indicating how they will provide adequate parking for the proposed non-residential use.

2. Residential. The minimum and maximum number of spaces required for residential use shall conform to the parking ratios listed in Table 3.

(a) *Reductions for residential use.* Residential uses may utilize the following reductions to the minimum number required off-street parking ratios listed in Table 3 when the following standards are met:

(i) *Transit stops.* Properties located within a quarter (0.25) mile radius of a transit stop may further reduce the minimum off street parking requirements by up to fifteen percent (15%).

(ii) *Motorcycle and scooter spaces.* Up to 10% of the required automobile parking spaces may be substituted with motorcycle/scooter parking at a rate of one motorcycle/scooter space for one automobile space.

(iii) *Bike racks.* Up to 10% of required automobile parking may be substituted with bicycle parking at a rate of one additional bicycle rack for one automobile space. This reduction shall be allowed in addition to other variances, reductions and shared parking agreements.

(iv) *Shared parking.* Parking requirements may be shared where it can be determined that the peak parking demand of the existing or proposed occupancy occur at different times (either daily or seasonally). Such arrangements are subject to the approval of the Planning Commission.

(1) *Shared parking between developments.* Formal arrangements that share parking between intermittent uses with non-conflicting parking demands (e.g. a church and a bank) are encouraged as a means to reduce the amount of parking required.

This section was cut from the end of this subchapter and pasted here

(2) *Shared parking agreements.* If a privately owned parking facility is to serve two or more separate properties, then a "Shared Parking Agreement" is to be filed with the city for consideration by the Planning Commission.

(3) *Shared spaces.* Individual spaces identified on a site plan for shared users shall not be shared by more than one user at the same time.

3. Maximum number allowed for residential and non-residential uses. Residential and non-residential developments may utilize the following increases to the required spaces listed in Table 3 when the following standards are met:

(a) Developments may increase the number of off-street parking spaces by 15% above the parking ratios listed in Table 3.

(b) Developments may increase the number of off-street parking spaces by an additional 10% when alternative stormwater treatment techniques are utilized, such as:
(i) Bioswales
(ii) constructed wetlands
(iii) pervious pavement
(iv) other such techniques that aid in improving water quality and quantity as approved by the City Engineer

(c) Developments may increase the number of off-street parking spaces by an additional 5% when one (1), two-inch (2") caliper tree for every 10 additional parking spaces is planted on-site in addition to all other landscaping requirements.

This section was cut from the end of this subchapter and pasted here

4. Parking ratio calculation. The number of spaces required for a use not specifically included in Table 3 shall be as required for the most similar use listed or as otherwise determined by the City Planning Division utilizing industry standards. For all parking space requirements resulting in a fraction, the fraction shall be:

(a) rounded to the next higher whole number when the fraction is 0.5 or higher.

(b) rounded to the next lower whole number when the fraction is less than 0.5.

5. On-street parking. Each permitted on-street parking space adjacent to a project frontage may count toward the parking requirements for all development. The approval of on-street parking is subject to approval by the Zoning and Development Administrator.

6. Motorcycle and scooter parking. (1) Motorcycle and scooter parking. In parking lots containing 25 parking spaces or more, one (1) space for every 25 parking spaces of the required number of parking spaces for a use or combination of uses shall be striped as a motorcycle and scooter parking space.

7. Increases or reductions in excess of those identified herein shall be allowed only by the Planning Commission as a variance and shall be granted in accordance with Chapter 156.03

This section was cut from the end of this subchapter and pasted here with minor re-wording

This sentence was changed to allow increase or decrease in number of spaces by variance instead of conditional use

TABLE 3
PARKING RATIOS
(Use/Required Spaces)

Residential

Single-family, duplex, triplex	2 per dwelling unit
Multi-family or townhouse	1 per bedroom

Commercial

Agricultural supply	1 per 500 sq. ft. of GFA
Amusement	1 per 200 sq. ft. of GFA
Auditorium	1 per 4 seats
Auto/motorcycle service stations	4 per each enclosed service bay
Bank	1 per 200 sq. ft. of GFA
Barber or beauty shop	2 per chair

Building/home improvement supply	1 per 500 sq. ft. of GFA
Coin-operated laundry	1 per 3 machines
Dry cleaning	1 per 300 sq. ft. of retail area and 1 per employee
Hotels and motels	1 per guest room, plus 75% of spaces required for accessory uses.
Furniture and carpet store	1 per 500 sq. ft. of GFA
Plant nursery	1 per 1,000 sq. ft of indoor/outdoor retail area
Restaurants	1 per 100 sq. ft. GFA plus 4 stacking spaces per drive-thru window.
Retail	1 per 250 sq. ft. of GFA
Retail fuel sales with convenience stores	1 per 250 square feet of retail floor area. Owner may count spaces at pump islands as parking spaces.
Retail fuel sales only	1 per employee. Owner may count spaces at pump islands as parking spaces.

Office

Medical/Dental office	1 per 250 sq. ft. of GFA
Professional office	1 per 300 sq. ft. of GFA
Sales office	1 per 200 sq. ft. of GFA

Public and Institutional Uses
Nonprofit Commercial

Art gallery, library, museum	1 per 1,000 sq. ft. of GFA
Auditorium	1 per 4 seats, provided only auditorium space is counted in determining parking
Child care center, nursery school	1 per employee plus on-site loading and unloading spaces at a rate of 1 per 10 children accommodated
Church/religious institution	1 per 4 seats in the main auditorium or 1 per 40 sq. ft. of assembly area, whichever provides more spaces
College auditorium	1 per 4 seats
College dormitory	1 per sleeping room
College or university	1 per 500 sq. ft. of classroom area
Community center	1 per 250 sq. ft. of GFA
Cooperative housing	1 per 2 occupants
Convalescent home, assisted living, nursing home	1 per 2 beds
Detention home	1 per 1,500 sq. ft. of GFA
Elderly Housing	1 per 2 units
Funeral homes	1 per 4 seats in main chapel plus 1 per 2 employees plus 1 reserved for each vehicle used in connection with the business
Government facilities	1 per 500 square feet of floor area
Hospital	1 per bed
Convalescent home	1 per bed
School--elementary and junior high	1 per employee plus 1 space per classroom
School--senior high	1 per employee plus 1 per 3 students based on design

	capacity, or 1 per 6 seats in auditorium or other places of assembly, whichever is greater
Zoo	1 per 2,000 sq. ft. of land area
All other public and institutional uses (only auditorium space shall be counted for churches, auditoriums, or group occupancy space)	1 per 4 occupants

Manufacturing/Industrial

Manufacturing	1 per 1,200 sq. ft. of GFA or one per employee, whichever is greater
Heavy industrial	1 per 1,200 sq. ft. of GFA
Extractive uses	Adequate for all employees, trucks, and equipment

Recreational Uses

Amusement park, miniature golf	1 per 1,000 sq. ft. of site area
Bowling alley	6 per lane
Commercial recreation	1 per 200 sq. ft. of GFA
Commercial recreation-large sites	1 per 1,000 sq. ft. of site area
Dance hall, bar or tavern	1 per 50 sq. ft. of GFA, excluding kitchen
Golf course	3 per hole
Golf driving range	1 per tee box
Health club, gym	1 per 150 sq. ft. of GFA
Regional or community park	2 per acre of accessible active and passive space
Neighborhood park	None
Private club or lodge	1 per 500 sq. ft. of GFA or 1 per 3 occupants based on the current adopted Standard Building Code whichever is greater
Riding stable	1 per acre; not required to be paved
Tennis court	2 per court
Theater	1 per 4 seats
All other recreational uses	1 per 4 occupants

Warehousing and Wholesale

Warehousing	1 per 2,000 sq. ft. of GFA
Wholesale	1 per 1,000 sq. ft. of GFA
Center for collecting recycled materials	1 per 1,000 sq. ft. of GFA

~~(B) *On-street parking.* Permitted on-street parking spaces adjacent to a project frontage may count toward the parking requirements for all development, subject to approval by the Zoning and Development Administrator. Each on-street parking space provided may count toward the total required parking spaces for the development.~~

This section was cut from this location and pasted before Table 3

~~(C) *Off-street parking.*~~

~~(1) *Motorcycle and scooter parking.* In parking lots containing 25 parking spaces or more, one (1) space for every 25 parking spaces of the required number of parking spaces for a use or combination of uses shall be striped as a motorcycle and scooter parking space.~~

(2) *Maximum number allowed.* Developments may utilize the following increases to the required spaces listed in Table 3 when the following standards are met:

(a) Developments may increase the number of off-street parking spaces by 15% above the parking ratios listed in Table 3.

(b) Developments may increase the number of off-street parking spaces by an additional 10% when alternative stormwater treatment techniques are utilized, such as:

(i) Bioswales

(ii) constructed wetlands

(iii) pervious pavement

(iv) other such techniques that aid in improving water quality and quantity as approved by the City Engineer

This section was cut and pasted before Table 3

(c) Developments may increase the number of off-street parking spaces by an additional 5% when one (1), two-inch (2") caliper tree for every 10 additional parking spaces is planted on-site in addition to all other landscaping requirements.

(3) *Reductions.* Developments may utilize the following reductions to the required off-street parking ratios listed in Table 3 when the following standards are met:

(a) *Transit stops.* Properties located within a quarter (0.25) mile radius of a transit stop may further reduce the minimum off-street parking requirements by up to fifteen percent (15%).

(b) *Motorcycle and scooter spaces.* Up to 10% of the required automobile parking spaces may be substituted with motorcycle/scooter parking at a rate of one motorcycle/scooter space for one automobile space.

(c) *Bike racks.* Up to 10% of required automobile parking may be substituted with bicycle parking at a rate of one additional bicycle rack for one automobile space. This reduction shall be allowed in addition to other variances, reductions and shared parking agreements.

(d) *Shared parking.* Parking requirements may be shared where it can be determined that the peak parking demand of the existing or proposed occupancy occur at different times (either daily or seasonally). Such arrangements are subject to the approval of the Planning Commission.

(i) *Shared parking between developments.* Formal arrangements that share parking between intermittent uses with nonconflicting parking demands (e.g. a church and a bank) are encouraged as a means to reduce the amount of parking required.

(ii) *Shared parking agreements.* If a privately owned parking facility is to serve two or more separate properties, then a "Shared Parking Agreement" is to be filed with the city for consideration by the Planning Commission.

(iii) *Shared spaces.* Individual spaces identified on a site plan for shared users shall not be shared by more than one user at the same time.

(e) *Reduced parking within mixed use developments.* Parking requirements may be reduced where it can be determined that the peak parking demand of the existing or proposed occupancy occur at different times (either daily or seasonally). Such arrangements are subject to the approval of the Planning Commission.

This section was totally removed

(i) *Request for parking space reduction.* A shared parking plan must be prepared to the satisfaction of the Planning Commission showing that parking spaces most conveniently serve the land uses intended, directional signage is proved if appropriate, and pedestrian links are direct and clear.

(ii) *Calculating parking space reductions.* Parking space reductions can be determined by a calculation using Table 4, Parking Occupancy Rates. If the calculation does show a parking space regulation reduction to be feasible, the applicant shall submit a parking reduction worksheet showing the

process for calculating the reduction as outlined herein. The calculation using Table 4, Occupancy Rates shall be conducted as follows:

(a) *Determine minimum spaces required.* The minimum number of parking spaces that are to be provided and maintained for each use shall be determined by using Table 3, Parking Ratios.

(b) *Calculate occupancy rates.* The minimum number of parking spaces shall be multiplied by the "occupancy rate" (the percentage) provided in Table 4, Parking Occupancy Rates, for each use for the weekday night, daytime and evening periods, and weekend night, daytime and evening periods, respectively.

(iii) *Sum parking spaces.* Sum the parking spaces for the combined uses for each time period. The number of parking spaces from the time period with the highest calculated number of parking spaces shall be the number of spaces required for the shared parking facility

TABLE 4

Parking Occupancy Rates

(Percent of basic minimum needed during time period)

Uses	M-F 8am-5pm	M-F 6pm-12am	M-F 12am-6am	Sat.& Sun. 8am-5pm	Sat. & Sun. 6pm-5pm	Sat. & Sun. 12am-6am
Land Use Categories						
Residential	60%	100%	100%	80%	100%	100%
Commercial*	90%	80%	5%	100%	70%	5%
Office	100%	20%	5%	5%	5%	5%
Public & Institutional Uses (non-church)	100%	20%	5%	10%	10%	5%
Public & Institutional Uses (church)	10%	5%	5%	100%	50%	5%
Manufacturing/ Industrial	100%	60%	40%	50%	30%	10%
Warehouse/ Wholesale	100%	20%	5%	5%	5%	5%
Recreation	40%	100%	10%	80%	100%	50%
Specific Commercial Uses						
Hotel	70%	100%	100%	70%	100%	100%
Restaurant	70%	100%	10%	70%	100%	20%
Theater	40%	80%	10%	80%	100%	10%
Conference/ Convention	100%	100%	5%	100%	100%	5%

Source: Shared Parking Planning Guidelines, Institute of Transportation Engineers.

*Some specific uses have different occupancy rates. Check under "Specific Commercial Uses" with the rest of the table.

(4) Increases or reductions in excess of those identified herein shall be allowed only as a conditional use and shall be granted in accordance with Chapter 163, governing applications of conditional uses, procedures, and upon the finding that the increase or reduction is needed.

(Ord. 4567, 05-04-04; Ord. 4930, 10-03-06; Ord. 5118, 3-18-08; Ord. 5297, 12-15-09; Ord. 5435, 8-16-11)

This section was totally removed

Submitted by Commissioner Tom Brown at the 07-13-2015 meeting

ADM 15-5088 Non-residential Parking Requirements (UDC CH 172.05)

1. We live in a city with an urban form that has historically been influenced by the automobile. Our goal is to transition to a more walk able, bike able, transit orientated urban environment, but it will take time.

2. Eliminating minimum non-residential parking standards (ratios) may help push us to develop a more walk able, bike able, transit orientated urban form. But, what will be the cost of this abrupt transition? More tension between bordering residential and non-residential uses over limited parking resources or the loss of commercial uses because they are not able to adjust their business model to fewer drive in costumers.

3. Minimum non-residential parking standards (ratios) are an important tool in managing the impacts of limited parking resources on the city.

4. Along the urban transact, the minimum non-residential parking standard in the city's Agricultural and Rural Residential areas provide us with a tool to require drainage and vegetation mitigation in response to excess impervious surface conditions that may result when developers request parking in excess of the parking minimum.

5. While at the other end of the transect, in City Neighborhood and Urban Center areas where densities and land values are greater the minimum non-residential parking standards can be used to manage the negative impacts of new developments on existing adjacent residential uses involving the competition for limited parking resources.

6. At this time, I find it difficult to support the complete elimination of existing minimum parking standards (ratios), because we will need all the tools we have as we transition to a more "walk able, bike able, transit orientated city". But, I am ready to listen as we explore the attractiveness of making the proposed change or any other change in Chapter 172 of the UDC.

7. As an alternative, I would like to offer the suggestion to consider expanding Chapter 172 of the UDC to:
    - Add a citywide provision to give future developers the option of paying a fee in lieu of providing onsite parking that meets the minimum-parking standard.
    - Add reference to the existing down town "in lieu fee" detailed in UBC Chapter 156.03.
    - Add a detailed statement describing the objective of making the City more walk able, bike able and transit orientated.
    - Begin an intensive counseling effort by Planning Staff with future applicants to consider how best Chapters 156 and 172 can be applied.

OFFICE OF THE
CITY ATTORNEY

DEPARTMENTAL CORRESPONDENCE

Kit Williams
City Attorney

Blake Pennington
Assistant City Attorney

Patti Mulford
Paralegal

TO: **Mayor Jordan**
City Council

CC: **Jeremy Pate**, Development Services Director
Andrew Garner, City Planning Director

FROM: **Kit Williams**, City Attorney

DATE: **August 25, 2015**

RE: **§ 172.05 (C) (4) *Further administrative reductions/increases* for non-residential parking requirements**

After consultation with Alderman Petty and Developmental Services Director Jeremy Pate, I have made some changes to my proposed alternative code section that would authorize the Planning staff to reduce the minimum required parking requirements for non-residential parking administratively (without requiring Planning Commission action).

This attached ordinance would authorize the City Planning Director to grant reductions to the minimum parking requirements for non-residential developments. This would be a simple administrative procedure that does not require presentation to the Planning Commission to be granted. Nor does it require an "undue hardship" to be proven by the new business, but only a short review by Planning of the parking needs and resources in the neighborhood that could be affected adversely if no minimum parking is required of a new business. In order for this City Council and future City Councils to maintain their authority over minimum parking requirements in the future, I recommend this as a substitute ordinance to the one recommended by the Planning Commission.

ORDINANCE NO. _____

AN ORDINANCE TO AMEND § 172.05 (C) (4) TO PROVIDE CITY PLANNING STAFF THE AUTHORITY TO GRANT FURTHER REDUCTIONS TO THE MINIMUM REQUIRED PARKING FOR NON-RESIDENTIAL DEVELOPMENT

WHEREAS, the City Planning staff and the Planning Commission have recommended that the City Council consider eliminating the required minimum parking requirements for non-residential development; and

WHEREAS, the City Council has determined that City Planning staff should have the authority on a case-by-case basis following an analysis of the existing available public parking near the proposed commercial development to reduce the required minimum parking to an appropriate level.

NOW, THEREFORE, BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF FAYETTEVILLE, ARKANSAS:

Section 1. That the City Council of the City of Fayetteville, Arkansas hereby amends § 172.05 (C) (4) by repealing it in its entirety and enacting a replacement § 172.05 (C) (4) as shown below:

"§ 172.05 (C) (4) *Further administrative reductions/increases.*

(a) The City Planning Director may grant further reductions to the minimum parking requirements for non-residential developments otherwise required by this section after analyzing;

(i) the availability of public parking near the proposed development;

(ii) potential adverse effects on such public parking and neighboring businesses, offices and residences of reducing or eliminating minimum parking requirements for such non-residential development;

(iii) and any other relevant considerations.

(b) Reductions or increases of parking requirements for residential developments and increases in the non-residential maximum parking limits in excess of those identified in this section shall be

allowed only as a Conditional Use upon the finding that the increase or reduction is needed and will not unduly cause an adverse effect upon persons operating, using or residing in any neighboring residential, commercial or office development."

PASSED and **APPROVED** this 1st day of September, 2015.

APPROVED:

By: _____
LIONELD JORDAN, Mayor

ATTEST:

By: _____
SONDRA E. SMITH, City Clerk/Treasurer

OFFICE OF THE
CITY ATTORNEY

DEPARTMENTAL CORRESPONDENCE

Kit Williams
City Attorney

Blake Pennington
Assistant City Attorney

Patti Mulford
Paralegal

TO: **Mayor Jordan**
City Council

CC: **Jeremy Pate**, Development Services Director
Andrew Garner, City Planning Director

FROM: **Kit Williams**, City Attorney

DATE: **August 21, 2015**

RE: **Proposed elimination of all minimum parking requirements for new commercial and office buildings**

I must caution you about the proposed elimination of all minimum parking requirements for all new commercial and office buildings. Act 1002 of 2015 entitled the "Private Property Protection Act" became effective in April 2, 2015. Its "Legislative findings" state that "(w)hen state and local regulatory program reduce the market value of private property . . . it is fair and appropriate that the . . . locality compensate the property owner for the loss in market value of the property caused by the implementation of the regulatory program."

Pursuant to the new A.C.A. § 18-15-1703 **Taking-Application** (a)(3) "To assert a taking has occurred, the regulatory program must have been implemented at the time the owner acquired title or **after the effective date of this subchapter (April 2, 2015)**, whichever is later." (emphasis added).

This provides the City of Fayetteville some protection for regulatory programs already in existence **BEFORE** April 2, 2015. However, all amendments of existing zoning or development ordinances after April 2,

2015 could endanger their viability and present a Takings Claim if a reasonable argument could be made that such regulation could cause a 20% or more reduction in the fair market value of the property regulated.

Minimum parking requirements for both residential and nonresidential developments have long been implemented in Fayetteville (and most other similarly sized cities) in order that new development would pay its own way and would not unduly inflict parking problems on nearby existing commercial, office and residential developments. Without minimum parking requirements, an office building or commercial business could develop its project in an established neighborhood and thrust all of its employees' and customers' parking needs upon available street parking that had accommodated the parking needs of the existing homes, business and offices, but now will be overloaded by the newly created parking needs of the new developments.

Especially in the Walker Park Master Plan Zoning District and other neighborhood rezonings utilizing mixed use zoning, land now being used as low density residential could be developed as restaurants, grocery and hardware stores, sporting goods, pet shops, bail bond offices and many other types of offices. A businessman could save a lot of money by only building his new restaurant, commercial store or office and furnishing no parking lot. Unfortunately, this could have a very bad effect on the surrounding neighborhood as customers and employees are then forced to park on the neighborhood streets taking the parking spaces the neighborhood had been relying upon for its own parking needs.

There are situations where a new business builds in an area in which no additional parking is needed or should be required. This would often be the case in the Entertainment Parking District. Therefore, Planning staff should be granted the authority to reduce current minimum parking requirements (even down to zero) if the situation calls for such reduction. The planners would look at the currently available public parking and determine whether a new business would overwhelm or simply use parking spaces not well utilized now. The key consideration would be to ensure a new influx of commercial workers and customers would not

unduly burden existing public parking resources nor adversely affect the parking needs of the surrounding homes and business.

Granting such authority to Planning staff would require individualized analysis of each request for reduced minimum parking, but it should ensure the proposed relaxed minimum parking regulations will not cause major neighborhood problems. If major neighborhood issues arise from businesses not being required to construct sufficient minimum parking for their employees and customers, the City Council could repeal the increased authority to reduce minimum parking without triggering a takings claim pursuant to A.C.A. § 18-15-1703.

However, if the City Council instead **repeals** the minimum parking requirements and later determines this experiment of no required parking is causing problems for existing neighborhoods, it would be dangerous to reinstate the minimum parking requirements. Minimum commercial parking requirements now require construction of parking lots often utilizing more than 20% of a proposed business's property. 20% is the level which kicks in a takings claim under the **Private Property Protection Act** meaning that **reenactment of minimum commercial parking requirements could force our taxpayers to pay a commercial developer to build his private parking lot**.

CONCLUSION

You can accomplish the Planning Department's goal of eliminating a commercial developer's requirement pursuant to the UDC to build more parking for his employees and customers than actually needed by empowering Planning staff to reduce such minimum parking requirement to what would reasonably needed in the particular situation all the way down to zero in an appropriate situation and location. By requiring Planning staff's review of the current parking situation and needs of the neighborhood where the commercial or office developer is proposing a new business to justify reduction of minimum parking requirements, obvious ill effects on the surrounding neighborhood of not providing any parking should be avoided.

Even more importantly, the City Council will not tie its own hands and the hands of any future City Council to require minimum parking for new commercial developments if this experiment of no required parking causes unforeseen problems in the real world. On the other hand, **if you repeal minimum required parking now, you probably will never again be able to institute required parking**. Once the City Council closes the door on required minimum parking for new businesses, it may be locked forever by the **Private Property Protection Act**. Who is so all – knowing and wise to be certain that Fayetteville will never again need minimum parking requirements for offices, restaurants and other commercial buildings?

Attached is a possible ordinance that would authorize the City Planning Director to grant variances to the minimum parking requirements for non-residential developments. This would be a simple administrative variance procedure that does not require presentation to the Planning Commission to be granted. Nor does it require an "undue hardship" to be proven by the new business, but only a short review by Planning of the parking needs and resources in the neighborhood that could be affected adversely if no minimum parking is required of a new business. In order for this City Council and future City Councils to maintain their authority over minimum parking requirements in the future, I recommend this as a substitute ordinance to the one recommended by Planning.

EXHIBIT 'A'
15-5088

172.05 Standards for the Number of Spaces by Use

A. *Required Parking*

1. Non-residential use. There shall be no minimum number of spaces required for non-residential use. The maximum number of spaces shall be limited based on the ratios in Table 3 and the allowable increases over the baseline ratio as described in subsection 172.05. The applicant shall provide a statement or parking analysis indicating how they will provide adequate parking for the proposed non-residential use to succeed without negatively impacting adjacent properties or creating or compounding a dangerous traffic condition.

2. Residential. The minimum and maximum number of spaces required for residential use shall conform to the parking ratios listed in Table 3. The minimum and maximum number of spaces required for a use not specifically included in this section shall be as required for the most similar use listed or as otherwise determined by the Planning Division utilizing reference standards.

(a) Reductions for residential use. Residential uses may utilize the following reductions to the minimum number required off-street parking ratios listed in Table 3 when the following standards are met:

(i) *Transit stops*. Properties located within a quarter (0.25) mile radius of a transit stop may further reduce the minimum off street parking requirements by up to fifteen percent (15%).

(ii) *Motorcycle and scooter spaces.* Up to 10% of the required automobile parking spaces may be substituted with motorcycle/scooter parking at a rate of one motorcycle/scooter space for one automobile space.

(iii) *Bike racks.* Up to 10% of required automobile parking may be substituted with bicycle parking at a rate of one additional bicycle rack for one automobile space. This reduction shall be allowed in addition to other variances, reductions and shared parking agreements.

(iv) *Shared parking.* Parking requirements may be shared where it can be determined that the peak parking demand of the existing or proposed occupancy occur at different times (either daily or seasonally). Such arrangements are subject to the approval of the Planning Commission.

(1) *Shared parking between developments.* Formal arrangements that share parking between intermittent uses with non-conflicting parking demands (e.g. a church and a bank) are encouraged as a means to reduce the amount of parking required.

(2) *Shared parking agreements.* If a privately owned parking facility is to serve two or more separate properties, then a "Shared Parking Agreement" is to be filed with the city for consideration by the Planning Commission.

(3) *Shared spaces.* Individual spaces identified on a site plan for shared users shall not be shared by more than one user at the same time.

3. Maximum number allowed for residential and non-residential uses. Residential and non-residential developments may utilize the following increases to the required

spaces listed in Table 3 when the following standards are met:

(a) Developments may increase the number of off-street parking spaces by 15% above the parking ratios listed in Table 3.

(b) Developments may increase the number of off-street parking spaces by an additional 10% when alternative stormwater treatment techniques are utilized, such as:
  (i) Bioswales
  (ii) constructed wetlands
  (iii) pervious pavement
  (iv) other such techniques that aid in improving water quality and quantity as approved by the City Engineer

(c) Developments may increase the number of off-street parking spaces by an additional 5% when one (1), two-inch (2") caliper tree for every 10 additional parking spaces is planted on-site in addition to all other landscaping requirements.

4. Parking ratio calculation. The number of spaces required for a use not specifically included in Table 3 shall be as required for the most similar use listed or as otherwise determined by the City Planning Division utilizing industry standards. For all parking space requirements resulting in a fraction, the fraction shall be:

a. rounded to the next higher whole number when the fraction is 0.5 or higher.

b. rounded to the next lower whole number when the fraction is less than 0.5.

5. On-street parking. Each permitted on-street parking space adjacent to a project frontage may count toward the parking requirements for all development. The approval of on-street parking is subject to approval by the Zoning and Development Administrator.

6. Motorcycle and scooter parking. (1) Motorcycle and scooter parking. In parking lots containing 25 parking spaces or more, one (1) space for every 25 parking spaces of the required number of parking spaces for a use or combination of uses shall be striped as a motorcycle and scooter parking space.

7. Increases or reductions in excess of those identified herein shall be allowed only by the Planning Commission as a variance and shall be granted in accordance with Chapter 156.03

TABLE 3
PARKING RATIOS
(Use/Required Spaces)

Residential

Single-family, duplex, triplex	2 per dwelling unit
Multi-family or townhouse	1 per bedroom

Commercial

Agricultural supply	1 per 500 sq. ft. of GFA
Amusement	1 per 200 sq. ft. of GFA
Auditorium	1 per 4 seats
Auto/motorcycle service stations	4 per each enclosed service bay
Bank	1 per 200 sq. ft. of GFA
Barber or beauty shop	2 per chair
Building/home improvement supply	1 per 500 sq. ft. of GFA
Coin-operated laundry	1 per 3 machines
Dry cleaning	1 per 300 sq. ft. of retail area and 1 per employee

EXHIBIT 'A'
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Hotels and motels	1 per guest room, plus 75% of spaces required for accessory uses.
Furniture and carpet store	1 per 500 sq. ft. of GFA
Plant nursery	1 per 1,000 sq. ft of indoor/outdoor retail area
Restaurants	1 per 100 sq. ft. GFA plus 4 stacking spaces per drive-thru window.
Retail	1 per 250 sq. ft. of GFA
Retail fuel sales with convenience stores	1 per 250 square feet of retail floor area. Owner may count spaces at pump islands as parking spaces.
Retail fuel sales only	1 per employee. Owner may count spaces at pump islands as parking spaces.

Office

Medical/Dental office	1 per 250 sq. ft. of GFA
Professional office	1 per 300 sq. ft. of GFA
Sales office	1 per 200 sq. ft. of GFA

Public and Institutional Uses

Nonprofit Commercial

Art gallery, library, museum	1 per 1,000 sq. ft. of GFA
Auditorium	1 per 4 seats, provided only auditorium space is counted in determining parking
Child care center, nursery school	1 per employee plus on-site loading and unloading spaces at a rate of 1 per 10 children accommodated
Church/religious institution	1 per 4 seats in the main auditorium or 1 per 40 sq. ft. of assembly area, whichever provides more spaces
College auditorium	1 per 4 seats
College dormitory	1 per sleeping room
College or university	1 per 500 sq. ft. of classroom area
Community center	1 per 250 sq. ft. of GFA
Cooperative housing	1 per 2 occupants
Convalescent home, assisted living, nursing home	1 per 2 beds
Detention home	1 per 1,500 sq. ft. of GFA
Elderly Housing	1 per 2 units
Funeral homes	1 per 4 seats in main chapel plus 1 per 2 employees plus 1 reserved for each vehicle used in connection with the business
Government facilities	1 per 500 square feet of floor area
Hospital	1 per bed
Convalescent home	1 per bed
School--elementary and junior high	1 per employee plus 1 space per classroom
School--senior high	1 per employee plus 1 per 3 students based on design capacity, or 1 per 6 seats in auditorium or other places of assembly, whichever is greater
Zoo	1 per 2,000 sq. ft. of land area
All other public and institutional uses (only auditorium space shall be counted for churches, auditoriums, or group occupancy space)	1 per 4 occupants

Manufacturing/Industrial

Manufacturing	1 per 1,200 sq. ft. of GFA or one per employee, whichever is greater
Heavy industrial	1 per 1,200 sq. ft. of GFA
Extractive uses	Adequate for all employees, trucks, and equipment

EXHIBIT 'A'
15-5088

Recreational Uses

Amusement park, miniature golf	1 per 1,000 sq. ft. of site area
Bowling alley	6 per lane
Commercial recreation	1 per 200 sq. ft. of GFA
Commercial recreation-large sites	1 per 1,000 sq. ft. of site area
Dance hall, bar or tavern	1 per 50 sq. ft. of GFA, excluding kitchen
Golf course	3 per hole
Golf driving range	1 per tee box
Health club, gym	1 per 150 sq. ft. of GFA
Regional or community park	2 per acre of accessible active and passive space
Neighborhood park	None
Private club or lodge	1 per 500 sq. ft. of GFA or 1 per 3 occupants based on the current adopted Standard Building Code whichever is greater
Riding stable	1 per acre; not required to be paved
Tennis court	2 per court
Theater	1 per 4 seats
All other recreational uses	1 per 4 occupants

Warehousing and Wholesale

Warehousing	1 per 2,000 sq. ft. of GFA
Wholesale	1 per 1,000 sq. ft. of GFA
Center for collecting recycled materials	1 per 1,000 sq. ft. of GFA

Releasing the Parking Brake on Economic Development

Cities flourish with reduced parking requirements.

By **BRIAN CANEPA** and **JOSHUA KARLIN-RESNICK**

THINKSTOCK/GETTY IMAGES

THE COST IS INVISIBLE TO CONSUMERS AND POLICY MAKERS, but every developer knows just how much parking requirements figure into any pro forma. The minimum requirements in place in most municipalities—one to two spaces per residential unit—add an estimated six to 16 percent to per-unit costs through a combination of construction expenses and the opportunity costs of using a limited development envelope on car storage rather than revenue-generating living space. Requirements for retail uses are often much higher. A recent study by the Transportation Research Board found that parking was oversupplied in mixed use districts by an average of 65 percent, meaning that between four and 10 percent of the added costs—likely much more for nonresidential uses—are pure waste. Developers and planners in Petaluma, California, can attest to the power of eliminating this form of forced waste. Fifteen years ago, Petaluma's Theatre District was marked by surface parking, vacant lots, and derelict industrial buildings. Planners considered it a prime opportunity to extend and reinvigorate its downtown with a mixed use district anchored by a multiscreen cinema. In the end, easing parking requirements in the area became crucial to making that vision a reality. Instead of forcing the developer, Basin Street Properties, to provide as much as one space per 50 or 100 square feet of bar or restaurant, the city allowed the company to determine how much parking was reasonable. Considering the on-street parking supply in the area and how the project's different uses might have different periods of peak parking demand, the developer settled on one space per 300 square feet across the project.

Getting parking right might be a more dependable and longer lasting form of economic development.

Vin Smith, a planning consultant who represented Basin Street in the planning and entitlement process, says the project would "absolutely not" have penciled out without the city's flexibility on parking. "We easily saved a floor or two of parking garage construction," Smith says. At a price tag of roughly $20,000 per space, that means the reduced parking requirements saved as much as $3 million.

Little more than a decade later, it's obvious that the now built-out Theatre District provides a compelling argument for that kind of flexibility. The area is alive on Friday night: Residents are arriving home from work, office workers are heading to happy hour, and people are walking to catch a movie at the 12-screen Boulevard Cinemas, a meal at Bistro 100, or to find something sweet at MoYo's Frozen Yogurt Lounge. Smith, who lives in the area, says the parking supply is well used but not overloaded.

A critical time

For the last century or so, cities have been struggling with the paradox of parking: Cars need large amounts of space, but making room for them comes at a direct cost to the vibrancy that makes the people in the cars want to come in the first place.

A 2013 study called "The Effects of Urban Fabric Changes on Real Estate Property Tax," by researchers at the University of Connecticut, estimated that Hartford dedicates 15 percent of CBD land area—more than 7.5 million square feet—to parking. If each office worker needs 250 square feet of building space (a conservative estimate), that means the city could accommodate 30,000 additional sorely needed jobs if that land were dedicated to one-story office buildings rather than car-storage space.

The same study estimated that if the amount of land dedicated to surface parking had stayed the same as it was in 1950, the annual loss to government coffers would equal nearly $22 million in Hartford, $6.5 million in nearby New Haven, and $3 million in Arlington, Virginia.

The story is doubtless the same in many cities across the country, and the lost economic activity is all the more damaging in an era of tight municipal budgets. Even as the economy recovers from the 2008 financial crisis, every underused parcel in a city's downtown represents a costly missed opportunity.

Economic development is a central charge of local elected officials and their appointees, and their strategies often take the form of tax breaks for companies that promise a short-term infusion of jobs. Getting parking right might be a more dependable and longer lasting form of economic development.

Consider the examples of Ann Arbor, Michigan; Columbus, Indiana; and Sacramento, California. These three cities—of different sizes, with different development contexts, and in different parts of the country—have each reduced or eliminated off-street parking requirements downtown and in mixed use areas, yielding a range of benefits.

In some places, lifting onerous parking requirements has made infill development more financially viable, opening the door to projects that renew derelict buildings or activate what were previously inactive hardscapes or garbage-strewn lots. For others, it has simplified the development process, speeding the pace of revitalization.

In no cases have the reduced requirements led to the parking shortages or economic losses that are frequently feared.

Sacramento's sea change

Developer Michael Heller says that for years, Sacramento was a large central city with lofty, progressive ideals but conservative parking practices that more or less matched those in the suburbs, where land was plentiful enough to make it easy to surround a building with a sea of parking at a reasonable cost. Where land was much scarcer, the requirements led to either scaled down ambitions or time-consuming, costly, and highly political efforts to waive parking requirements and make projects viable.

"On one side of their mouths, everyone at the city was espousing green principles and encouraging transit-oriented development, but on the development-application processing side, you had to deal with this antiquated code," Heller says. "You got pulled in two directions."

All that changed in 2012. The city eliminated parking minimums in its Central Business and Arts and Entertainment districts, reduced minimums in some other parts of the city, and allowed developers to reduce those already lower requirements with programs and facilities that encouraged access by non-auto modes. The changes were rooted in a study that found that even at peak times, between 40 and 65 percent of spaces were unoccupied in five focus areas in central Sacramento.

The reforms have led to a sea change in the development process. Under the old regime, most developers found they simply did not have the land to build all the required parking and would instead apply for a waiver. Processing it would take anywhere from four to eight months and often ended up being a "lose-lose situation," says Greg Sandlund, an associate planner for the city who played a key role in the city's parking-requirement overhaul.

The planning commission and city council denied just one parking ratio waiver between 2000 and 2010, which meant that "the community got worked up and the development was delayed," even though the parking that was ultimately provided was far lower than the code required. "It became a game that only the sophisticated knew how to play," Heller says. "It wasn't a genuine process and it took a lot of time and money."

Today, the city's parking code aligns with the visions espoused in the general plan, allowing planners to simply enter "no planning issues" (that is, no planning problems) on applications for projects that are looking to build the amount of parking developers think is needed to compete in the marketplace. Heller points to two developments to explain how the code update changed his business.

In the mid-2000s, his company built the Midtown Art Retail Restaurant Scene, a block-long, mixed use, adaptive-reuse development in a thriving neighborhood just a few blocks east of the California state capitol. Heller says it has 55,000 square feet of retail and office space, which means the parking regulations required roughly 150 dedicated parking spaces on a parcel that was already built lot line to lot line, with no room to add vehicle storage.

Today, Sacramento's parking code aligns with the visions espoused in the general plan, allowing planners to simply enter "no planning issues" (that is, no planning problems) on applications for projects that are looking to build the amount of parking developers think is needed to compete in the marketplace.

Heller cobbled together agreements with five small lots near the building to account for some of that parking and had to go to the planning commission to waive the rest of the requirement. The process was "a lot of work" and ultimately delayed the project by several months, he says.

Today, Heller is moving forward on another adaptive reuse project about a mile to the southwest, next to a light-rail station, called the Ice Blocks. With 60,000 square feet of office space, 50,000 square feet of retail, and 150 housing units, the project would have required more than 500 parking spaces under the old regulations. Instead, Heller is providing two spots for every three residential units and minimal parking for the office and retail space, and he will be implementing a robust transportation demand management program to encourage people to come to the site by other modes. The project is moving forward quickly, spared the expense and delays that had been a part of the previous process.

"The city really listened to us on this topic and took bold measures to embrace true green principles in the new parking code," Heller says. "I tip my hat to staff on this because the city is now teed up for real growth with a framework for progressive, thoughtful infill projects."

Sacramento's development market is still stuck in a post-economic-crisis slump, having built just 200 housing units last year, but Sandlund says that sparing developers from building millions of dollars' worth of unneeded parking has helped move more projects into the pipeline. "I don't think there's been an explosion of development, but if anything, at least the parking code isn't getting in the way of development," Sandlund adds.

There is evidence that larger economic impacts are right around the corner. One proposal that entered the pipeline last year was the i15 project, a proposed eight-story mixed use development with 96 residential units, more than 5,000 square feet of ground-floor retail, and zero on-site parking. The regulatory changes have also had a major impact on things like tenant improvements. Whereas transforming a retail space into one suitable for a restaurant, with higher parking requirements, would have required a lengthy trip through the waiver process, such improvements can be made by right today.

Columbus kicks the rules to the curb

Those unfamiliar with Columbus, Indiana (pop. 45,000), have no reason to suspect this small city would be on the cutting edge of parking policy. But

The i15 multifamily project, now in Sacramento, California's development pipeline, would never have been proposed for a small infill site if on-site parking had been required. Instead, residents with cars will use an adjacent existing public lot; those without cars will have access to Zipcars two blocks away and public transit just a block away.

in 2008, it eliminated parking requirements in its downtown district. The change was part of a larger effort to revitalize the area, and its implementation amounted to a "non-event," rooted in a "shared understanding of where downtown was going," says planning director Jeff Bergman, AICP.

"There was a feeling at the time that the local government, through the zoning ordinance, didn't have nor really could have enough information to accurately regulate parking downtown, not without potentially causing some sort of negative consequence," he says. Without reliable metrics, the city decided to leave these decisions to the market.

Bergman notes that the change has allowed developers and planners to focus on other aspects of projects, instead of getting hung up on whether a project was going to meet its parking requirements. This has led to better developments that reflect the true vision of developers and the needs of their tenants.

As an example, Bergman points to a regional headquarters for the First Financial Bank, in the southwest corner of downtown. The combined bank branch and office building development opened in 2014 with 62 surface parking spaces, built to accommodate the anticipated needs of employees traveling to the office for regular meetings.

Parking was a non-issue during the development approval process. And the limited parking approach has been successful from the developer's perspective.

The Cole, a four-story mixed use residential building across the street, is another development that has gone up since the regulatory change. The project wrapped around a redevelopment authority-sponsored parking garage that was already going up on the same block, and the developer was able to negotiate with the authority to reserve 200 spaces for use by the 146 residential units in the new building.

Developer Matt Griffin, who led the effort for the Buckingham Companies, says the Cole shows that eliminating parking requirements does not mean developers will stint on parking. In the case of the Cole and infill projects in other places, it has simply meant he has had the flexibility to provide only the amount of parking that his company thought was truly needed for the developments to succeed.

"Most jurisdictions are coming around to the point that at least for multifamily projects, it's our business, and if we underpark ourselves, we're going to destroy our primary cash flow," Griffin says.

Ann Arbor at the forefront

Although it is near the epicenter of the auto industry, Ann Arbor was an early trendsetter in minimizing the role of parking in the development equation; it eliminated most of its downtown parking requirements in the 1960s. Coupled with a long-standing commitment to building publicly owned and managed structured parking and pricing it at market rates, the lack of requirements laid the groundwork for what is one of Michigan's most vibrant downtowns. Ann Arbor boasts retail occupancy rates that are among the highest in the state and a mere three percent residential vacancy rate.

According to the city's zoning code, downtown projects that adhere to the letter of the code are not required to provide any parking, and those that exceed floor-area limits are required to provide just one space per 1,000 square feet of additional floor area, far lower than typical requirements.

Susan Pollay, executive director of the city's Downtown Development Authority, says the low requirements have had a direct impact on the city's development environment. "There has been a strategy that from the beginning [eliminated] parking at the heart of our zoning, so we've been able to build a strong downtown core," she says.

Over the years, developers have steadily gobbled up surface parking lots for projects. Of late, the focus has been in the area around East Washington and South Division streets. On that corner, Pollay says, a small building surrounded by surface parking was recently replaced by a 10-story residential building with a grocery store and fast-food restaurant on the ground floor and far less parking than zoning codes typically require.

RENDERING COURTESY D&S DEVELOPMENT INC

BUFFALO, NEW YORK

"People walked around downtown and saw all this surface parking that is ample and underpriced and said, 'We want development here, we want buildings here.'"

DANIEL HESS, associate professor of urban and regional planning, University of Buffalo

Next door, another residential high rise went up on a lot with a low building and surface parking lot. Across Washington, the McKinley Towne Center filled in its driveway with a new retail building to create a steady, active street front along East Liberty Street.

Across downtown, at the corner of Huron and Ashley streets, a recently built mixed use residential high rise with minimal parking will soon be joined by a new hotel that will provide no parking, replacing another low-density development surrounded by a sea of asphalt. There is plenty of parking in a city-owned parking garage down the block.

The University of Michigan's tens of thousands of students, faculty, staff, and supporters provide a sizable and steady market for Ann Arbor businesses, which are located close to the campus. But the city shows that the fears that drive policy makers to err on the side of oversupplying parking are largely unfounded. If a tight parking supply really limited an area's economic potential, Ann Arbor businesses would be struggling, university or not. Instead, despite high parking prices and long wait lists for garage permits, the development market could scarcely be hotter.

"Apartments are filled to the brim," Pollay says. "If parking was the driving factor, that wouldn't be the case because none of them are providing parking at the rates that would typically be required."

An idea spreads

Buffalo, New York, may soon become the next example—and the biggest to date—of what can happen when a city takes parking out of the development-review process. At press time, the city was about to become the first in the country to eliminate parking requirements citywide, in hopes of spurring development on some of its many surface parking lots.

The change was part of a zoning code update that was focused on revitalizing the city's downtown, which today contains two parking spaces for every job. City officials saw those parking spaces as a massive opportunity.

"People walked around downtown and saw all this surface parking that is ample and underpriced and said, 'We want development here, we want buildings here,'" says Daniel Hess, an associate professor of urban and regional planning at the University of Buffalo who has studied the city's zoning code reform process.

That a Rust Belt city like Buffalo has eliminated parking minimums is evidence that we have come a long way in how we think about downtown development. The idea that providing ample parking was the key to economic success has begun to give way to the realization that too much parking can cause economic stagnation. Sacramento, Columbus, Ann Arbor, and, soon, Buffalo are leading examples of how much economic development potential is sitting right under many cities' tires. ■

Brian Canepa is a principal and chief growth officer at Nelson\Nygaard Consulting Associates. Joshua Karlin-Resnick is an associate there. They worked on the Sacramento zoning code update and on Petaluma's Theatre District development.

Parking Requirement Impacts on Housing Affordability, by the Victoria Transportation Policy Institute: vtpi.org/park-hou.pdf.

Parking in Mixed-Use Districts, by Rachel Weinberger and Joshua Karlin-Resnick, presented at the 94th annual Transportation Research Board meeting in 2015.

Putting a Cap on Parking Requirements

A way to make cities function better. By **DONALD SHOUP, FAICP**

Suppose the automobile and oil industries have asked you to devise planning policies that will increase the demand for cars and fuel. Consider three policies that will make cars essential for most trips. First, segregating land uses (housing here, jobs there, shopping somewhere else) will increase travel demand. Second, limiting density will spread the city and increase travel demand. Third, minimum parking requirements will ensure ample free parking almost everywhere, making cars the default way to travel.

American cities have unwisely embraced each of these car-friendly policies, luring people into cars for 87 percent of all their daily trips. Zoning ordinances that segregate land uses, limit density, and require lots of parking create drivable cities but prohibit walkable neighborhoods. Urban historians often say that cars have changed the city, but public policies have also changed the city to favor cars.

Minimum parking requirements are particularly ill-advised. In my book *The High Cost of Free Parking*, I argued that parking requirements subsidize cars, increase traffic congestion and carbon emissions, pollute the air and water, encourage sprawl, raise housing costs, degrade urban design, reduce walkability, exclude poor people, and damage the economy. To my knowledge, no one has argued that parking requirements do not have these harmful effects. Instead, a flood of recent research has shown that parking requirements do have these effects.

The high cost

Planners are put in a difficult position when asked to set parking requirements in zoning ordinances, largely because they do not know the parking demand at every site, or how much the parking spaces cost, or how the requirements increase the cost of development. Nevertheless, cities have managed to set parking requirements for hundreds of land uses in thousands of cities—the Ten Thousand Commandments for off-street parking.

Not knowing how much required parking spaces cost, planners cannot know how much the parking requirements increase the cost of housing. Small, spartan apartments cost much less to build than large, luxury apartments, but their parking spaces cost the same. Because many cities require the same number of spaces for all housing, the cost of required parking can consume the entire subsidy intended for affordable housing.

Minimum parking requirements resemble an Affordable Parking Act. They make parking more affordable by raising the cost of housing and everything else. Using data on the cost of constructing parking spaces and shopping centers, I estimated that the parking requirement of four spaces per 1,000 square feet for a shopping center in Los Angeles increases the cost of building a shopping center by 93 percent if the parking is underground and by 67 percent if the parking is in an aboveground structure.

This cost increase is passed on to all shoppers. Parking requirements raise the price of food for people who are too poor to own a car to ensure that richer people can park free when they drive to a grocery store.

The median is the message

A single parking space can cost far more than the entire net worth of many American families. In recent research, I estimated that the average cost per space for parking structures in the U.S. is about $24,000 for aboveground parking and $34,000 for underground parking. We can compare the cost of a parking space with the net worth of U.S. households (the value of all assets minus all debts). In 2011, this median net worth was $68,828 for all U.S. households, $7,683 for Hispanic households and $6,314 for black households.

Thus one underground parking space can cost five times more than the median net worth for all black households in the country. Nevertheless, cities require several parking spaces (at home, work, shopping, recreation, churches, schools, and many other places) for every household.

Many families have a negative net worth because their debts exceed their assets. Eighteen percent of all households, 29 percent of Hispanic households, and 33 percent of black households had zero or negative net worth in 2011. The only way these families can take advantage of all the parking cities require is to go further into debt to buy a car, which they must then support, often by financing it at a high subprime interest rate on a car loan.

In other words, cities require parking for every building without noticing the high cost of the required spaces or the burden placed on families who have little or no wealth.

Time for reform

Perhaps because of the growing doubts about minimum parking requirements, a few cities have begun to backpedal, at least in their downtowns. They recognize that parking requirements prevent infill redevelopment on small lots, where it is difficult and costly to fit both a new building and the required parking. And they see that parking requirements prevent new uses when older buildings lack the parking spaces required for those new uses.

'A city can be friendly to people or it can be friendly to cars, but it can't be both.'

—ENRIQUE PEÑALOSA, FORMER MAYOR OF BOGOTA, COLOMBIA

According to recent newspaper articles, many cities have reduced or removed their parking requirements. Some of the reasons: "to promote the creation of downtown apartments" (Greenfield, Massachusetts), "to see more affordable housing" (Miami), "to meet the needs of smaller businesses" (Muskegon, Michigan), "to give business owners more flexibility while creating a vibrant downtown" (Sandpoint, Idaho), and "to prevent ugly, auto-oriented townhouses" (Seattle).

Given this policy momentum, I thought the time to reform parking requirements in California had arrived when the legislature considered Assembly Bill 904 (the Sustainable Minimum Parking Requirements Act of 2012). AB 904 would have set an upper limit on how much parking cities can require in transit-rich districts: no more than one space per dwelling unit or two spaces per 1,000 square feet of commercial space. The bill defined these districts as areas within a quarter-mile of transit lines that run every 15 minutes or better.

AB 904 would limit how much parking cities can require, but it would not limit the parking supply. Developers could provide more than the required parking if they thought the demand justified the cost.

Why would a state want to adopt this policy? Federal and state governments give cities billions of dollars every year to build and operate mass transit systems, yet most cities require ample parking on the assumption that almost everyone will drive almost everywhere, even where public transit is available.

Twenty public transit lines serve the UCLA campus in Westwood, with 119 buses per hour arriving during the morning peak (7 to 9 a.m.). Nevertheless, across the street from campus, Los Angeles requires 3.5 parking spaces for every apartment that contains more than four rooms.

Los Angeles is building its Subway to the Sea under Wilshire Boulevard, which already boasts the city's most frequent bus service. Nevertheless, along parts of Wilshire the city requires at least 2.5 parking spaces for each dwelling unit, regardless of the number of rooms.

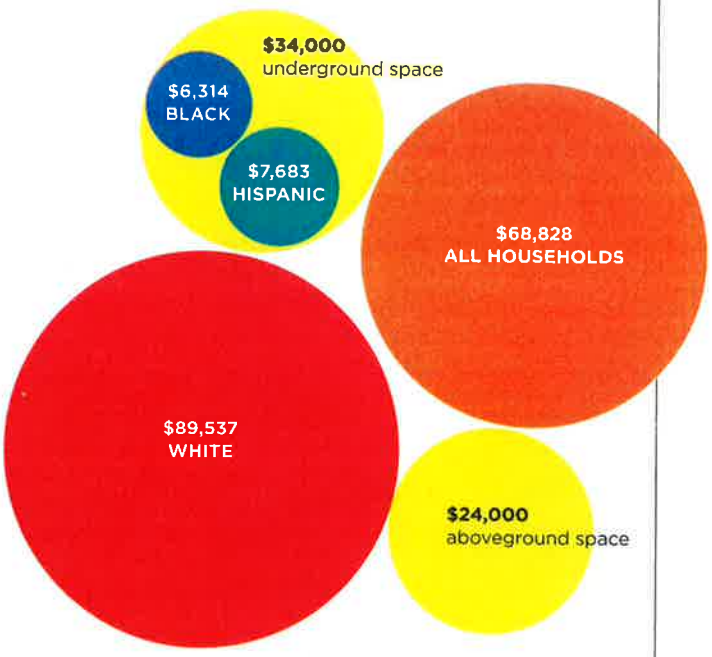
Also on Wilshire Boulevard, Beverly Hills requires 22 parking spaces per 1,000 square feet for restaurants, which means the parking lot is seven times larger than the restaurant. Public transit in this parking environment resembles a rowboat in the desert.

Why limit parking requirements?

The rationale for a limit on parking requirements in transit-rich districts is the same as the rationale for most city planning: The uncoordinated actions of many individuals can add up to a collective result that most people dislike. In this case, minimum parking requirements create an asphalt wasteland that blights the environment and compels people to drive. Limits on the parking requirements in transit-rich neighborhoods can reduce this blight by making redevelopment more feasible near transit stations.

Parking inequity

The cost of one structured parking space far exceeds the median net worth of minority households.



SOURCES: U.S. CENSUS BUREAU, NET WORTH AND ASSET OWNERSHIP, 2011, DONALD SHOUP, IN *PARKING: ISSUES AND POLICIES*, 2014, GRAPHIC BY JOAN CAIRNEY

How will reducing off-street parking requirements affect development? Zhan Guo and Shuai Ren at New York University studied the results when in 2004 London shifted from minimum parking requirements with no maximum to maximum parking limits with no minimum. Comparing developments completed before and after the reform, they found that the parking supplied after the reform was only 68 percent of the maximum allowed and only 52 percent of the previous minimum required.

This result implies that the previous parking minimum was almost *double* the number of parking spaces that developers would have voluntarily provided. The researchers concluded that removing the parking minimum caused 98 percent of the reduction in parking spaces, while imposing the maximum caused only two percent of the reduction. Removing the minimum was far more important than imposing a maximum.

Cities usually require or restrict parking without considering the middle ground of neither a minimum nor a maximum. This

behavior recalls a Soviet maxim: "What is not required must be prohibited." AB 904, however, was something new. It did not restrict parking but simply imposed a cap on minimum parking requirements, a far milder reform.

Aided by lobbying from the California Chapter of APA, opponents succeeded in defeating AB 904 in the legislature, but it has since been resurrected and revised, and will be reintroduced as a new bill in the next session.

There have been precedents for statewide limits on parking requirements. Oregon's *Transportation Systems Plan* requires local governments to amend their land-use and subdivision regulations to achieve a 10 percent reduction in the number of parking spaces per capita. The United Kingdom's transport policy guidelines for local planning specify that "plans should state maximum levels of parking for broad classes of development. . . . There should be no minimum standards for development, other than parking for disabled people."

These attempts to take state and national concerns into account suggest that, when left to their own devices, local governments require too much parking.

An arranged marriage

Many people believe that America freely chose its love affair with the car, but I think there was an arranged marriage. By recommending minimum parking requirements in zoning ordinances, the planning profession was both a matchmaker and a leading member of the wedding party.

Unfortunately, no one provided a good prenuptial agreement. Planners can now become marriage counselors or divorce lawyers where the relationship between people and cars no longer works well. Putting a cap on parking requirements is a good place to start. ■

Donald Shoup is a distinguished professor of urban planning at the University of California, Los Angeles, and the author of *The High Cost of Free Parking*, published in paperback by APA's Planners Press in 2011. He will retire later this year, and UCLA is launching a scholarship in his name. Details are at shoupista.com.

RESOURCES

FROM APA

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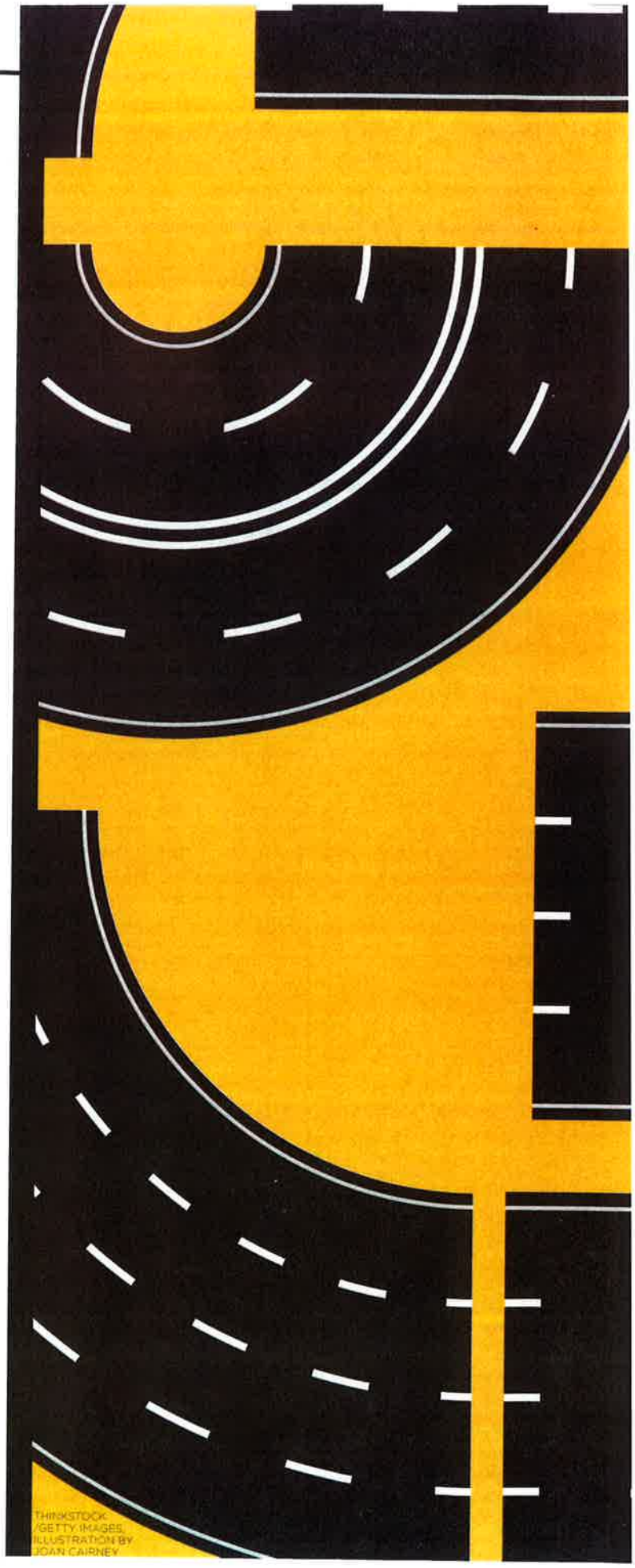

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The trouble with minimum parking requirements

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Abstract

Urban planners typically set the minimum parking requirements for every land use to satisfy the peak demand for free parking. As a result, parking is free for 99% of automobile trips in the United States. Minimum parking requirements increase the supply and reduce the price – but not the cost – of parking. They bundle the cost of parking spaces into the cost of development, and thereby increase the prices of all the goods and services sold at the sites that offer free parking. Cars have many external costs, but the external cost of parking in cities may be greater than all the other external costs combined. To prevent spillover, cities could price on-street parking rather than require off-street parking. Compared with minimum parking requirements, market prices can allocate parking spaces fairly and efficiently.

> How can a conceptual scheme that one generation admiringly describes as subtle, flexible, and complex become for a later generation merely obscure, ambiguous, and cumbersome?
>
> Thomas Kuhn

Urban planners set minimum parking requirements for every land use. These requirements typically ensure that developers will provide enough spaces to satisfy the peak demand for free parking. This article examines: (1) how urban planners set parking requirements, (2) how much the required parking costs, and (3) how parking requirements distort the markets for transportation and land. As a way to eliminate this distortion, I will propose that cities should price on-street parking rather than require off-street parking.

1. The shaky foundation of minimum parking requirements

Where do minimum parking requirements come from? No one knows. The ''bible'' of land use planning, F. Stuart Chapin's *Urban Land Use Planning*, does not mention parking requirements in

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SELECTED LAND USES WITH MINIMUM PARKING REQUIREMENTS

Asylum	Indoor Soccer Facility	Rifle Range
Bingo Parlor	Junkyard	Slaughterhouse
Convent	Kennel	Taxi Stand
Diet Clinic	Landfill	Ultra-Light Flight Park
Exterminator	Massage Parlor	Veterinarian
Fraternity	Night Club	Wastewater Treatment
Gunsmith	Oil Change Shop	Zoo
Horse Stable	Pet Cemetery	

Source: Selected from the minimum parking requirements for 179 land uses in Planning Advisory Service (1991, 3).

Fig. 1. Selected land uses with minimum parking requirements.

any of its four editions.[1] The leading textbooks on urban transportation planning also do not mention parking requirements.[2] This silence suggests that planning academics have not seriously considered – or even noticed – the topic.

This academic neglect has not prevented practicing planners from setting parking requirements for every conceivable land use. Fig. 1 shows a small selection of the myriad land uses for which planners have set specific parking requirements. Without training or research, urban planners know exactly how many parking spaces to require for bingo parlors, junkyards, pet cemeteries, rifle ranges, slaughterhouses, and every other land use.

Richard Willson (1996) surveyed planning directors in 144 cities to learn how they set parking requirements. The two most frequently cited methods were "survey nearby cities" and "consult Institute of Transportation Engineers (ITE) handbooks". Both strategies cause serious problems.

1.1. Survey nearby cities

Although surveying nearby cities seems a sensible way to set parking requirements, the Planning Advisory Service (1971), pp. 1–3) explains a serious problem with this approach:

> Since the establishment of the principle that zoning ordinances may legally require the provision of off-street parking, ordinance drafters have been asking questions like: "How many spaces should be provided for a drive-in restaurant?" – or any other land use for that matter. The question is typically answered by relying upon what ordinances for other jurisdictions require... The implicit assumption is that other areas must know what they are doing (the ordinances were adopted, after all) and so it is a relatively safe bet to adopt a parking standard "close to the average". *This may simply result in a repetition of someone else's mistakes*. Nevertheless, the planner who needs to present a numerical standard by the next planning commission meeting cannot answer the original question by saying, "I don't really know" (italics added).

Setting parking requirements by relying on what other cities require not only risks repeating someone else's mistakes, but also fails to reveal where the requirements came from in the first place.

[1] See Chapin (1957, 1965), Chapin and Kaiser (1979) and Kaiser et al. (1995).
[2] See Dickey (1983), Hanson (1995), Meyer and Miller (1984) and Papacostas and Prevedouros (1993).

1.2. Consult ITE handbooks

To base parking requirements on more objective data, planners consult *Parking Generation,* published by the Institute of Transportation Engineers. For each land use, this publication reports the "parking generation rate", defined as the peak parking occupancy observed in surveys by transportation engineers.

> A vast majority of the data... is derived from suburban developments with little or no significant transit ridership... The ideal site for obtaining reliable parking generation data would... contain ample, convenient parking facilities for the exclusive use of the traffic generated by the site... *The objective of the survey is to count the number of vehicles parked at the time of peak parking demand* (Institute of Transportation Engineers, 1987a, vii–xv, italics added).

The ITE summarizes the survey results and reports the average peak parking occupancy observed at each land use as the parking generation rate for that land use. Half of the 101 reported parking generation rates are based on four or fewer surveys of parking occupancy, and 22% of the parking generation rates are based on a single survey.

Because parking is free for 99% of all automobile trips in the United States, parking must be free at most of the ITE survey sites.[3] Parking generation rates therefore typically measure the peak demand for parking observed in a few surveys conducted at suburban sites that offer ample free parking and lack public transit. Urban planners who use these parking generation rates to set minimum parking requirements are making a big mistake.

Parking Generation is a questionable resource for several reasons. First, parking generation rates are inflated by the ample free parking. Second, no information is provided on several key issues. Why and where were the surveys conducted? How long did the surveys last? How long did the peak parking occupancy last? Finally, nothing is said about off-peak parking occupancy. *Parking Generation* raises more questions than it answers.

Fig. 2 shows the *Parking Generation's* report for one land use, fast-food restaurants. At the 18 survey sites parking generation ranges from 3.55 to 15.92 parking spaces per 1000 square feet of floor area.[4] The R^2 of 0.038 shows that the variation in floor area accounts for less than 4% of the variation in peak parking occupancy. Parking generation is essentially unrelated to floor area in the sample. Nevertheless, the *average* parking generation rate – normally interpreted as *the* relationship between parking demand and floor area for a land use – is reported as *precisely* 9.95 parking spaces per 1000 square feet of floor area.

Urban planners who consult ITE publications act like frightened natives before a powerful totem. For example, the median parking requirement for fast-food restaurants in the US is 10 spaces per 1000 square feet of floor area, the same as the ITE's average parking generation

[3] For all automobile trips made on the previous day, the 1990 Nationwide Personal Transportation Survey (NPTS) asked 48,000 respondents, "Did you pay for parking during any part of this trip"? Ninety-nine percent of the 56,733 responses to this question were "No".

[4] Gross floor area is the building's total floor area, including cellars, basements, corridors, lobbies, stairways, elevators, and storage. Gross floor area is measured from the building's outside wall faces.

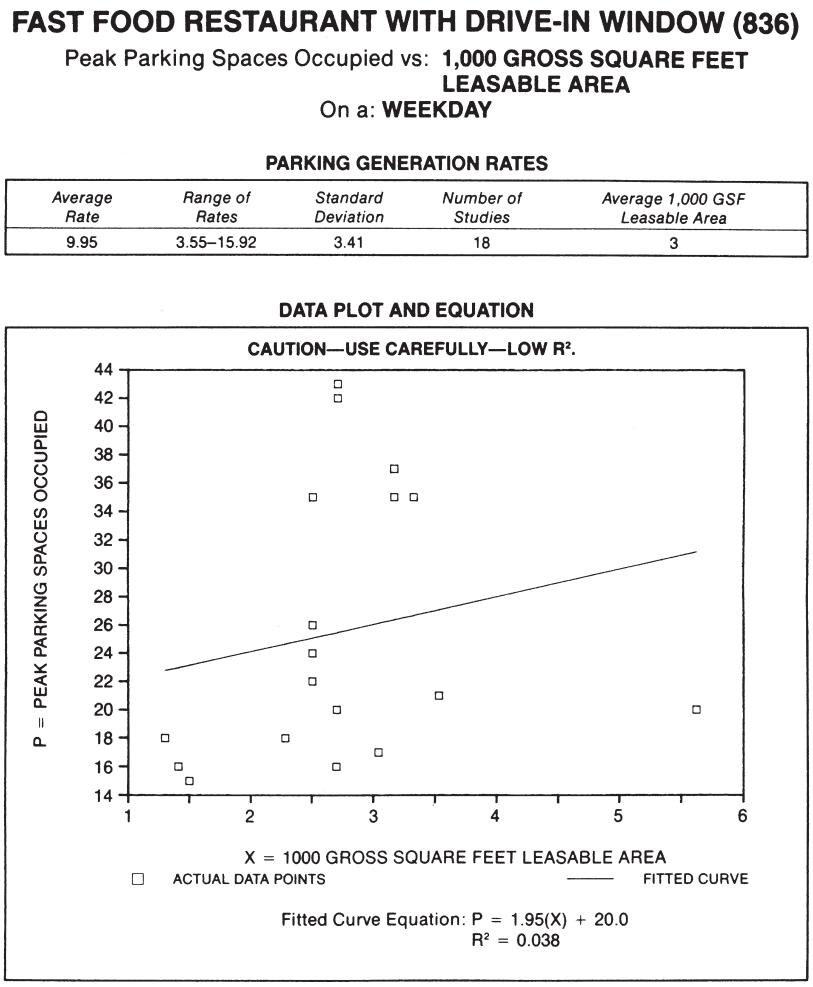

Fig. 2. Parking generation at fast food restaurants with drive-in windows. Source: Institute of Transportation Engineers (1987a, p. 146).

rate.[5] Beyond the ITE's impressive professional reputation, the ITE data appeal to urban planners because minimum parking requirements are intended to meet the peak parking demand, and no one else provides systematic data that relate peak parking demand to land use.

2. Minimum parking requirements inflate trip generation rates

How do minimum parking requirements affect the demand for vehicle trips? The ITE publishes *Trip Generation* to show the demand for vehicle trips associated with various land uses. For each

[5] The Planning Advisory Service (1991) surveyed the parking requirements in 127 cities. The median of 10 spaces per 1000 square feet is for the cities that base their requirements on gross floor area.

land use, this publication reports the "trip generation rate", defined as the number of vehicle trips that begin or end at a land use during a given period. In choosing a survey site the Institute of Transportation Engineers (1987b), p. 23) recommends, "the site should be self-contained with adequate parking not shared by other activities".

Half of the 1533 reported trip generation rates are based on four or fewer surveys, and 26% of the trip generation rates are based on a single survey. As with *Parking Generation*, the survey sites probably offer free parking. The trip generation rates therefore typically measure the number of automobile trips observed in a few surveys conducted at sites with free parking. Free parking inflates the trip generation rates because vehicle trip demand is higher where the price of parking is lower.

Fig. 3 shows *Trip Generation*'s report for fast-food restaurants. It shows the total number of vehicle trips to and from each survey site during a 24-h period from Monday to Friday. Trip

FAST FOOD RESTAURANT WITH DRIVE-THROUGH WINDOW (834)

Average Vehicle Trip Ends vs: **1,000 SQUARE FEET GROSS FLOOR AREA**
On a: **WEEKDAY**

TRIP GENERATION RATES

Average Weekday Vehicle Trip Ends per 1,000 Square Feet Gross Floor Area				
Average Trip Rate	*Range of Rates*	*Standard Deviation*	*Number of Studies*	*Average 1,000 Square Feet GFA*
632.125	284.000–1359.500	*	8	3.0

DATA PLOT AND EQUATION

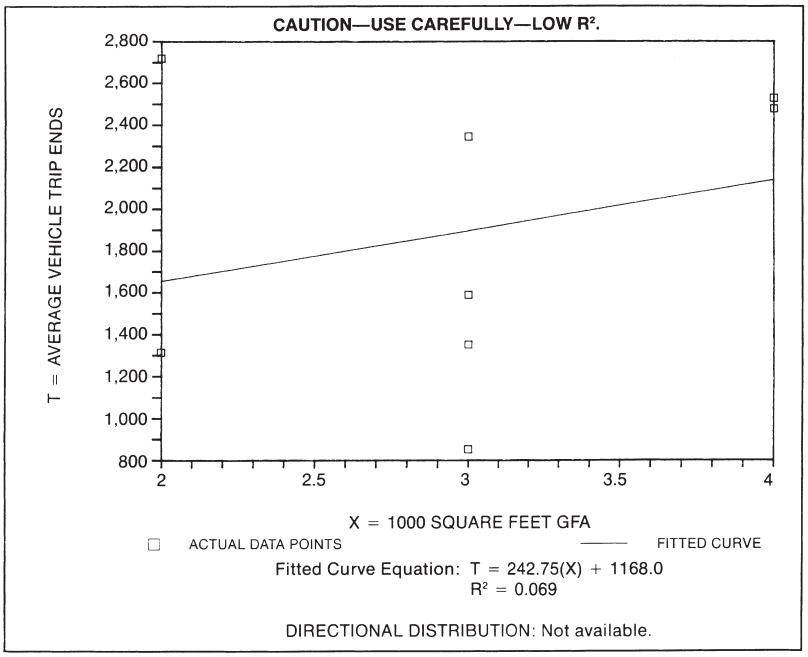

Fig. 3. Trip generation at fast food restaurants with drive-through windows. Source: Institute of Transportation Engineers (1987b, p. 1119).

generation ranges from 284 to 1,359.5 vehicle trips per day per 1000 square feet of floor area among the eight survey sites. The R^2 of 0.069 shows that the variation in floor area accounts for less than 7% of the variation in vehicle trips. Trip generation is essentially unrelated to floor area in the sample. Nevertheless, the *average* trip generation rate – normally interpreted as *the* relationship between vehicle trips and floor area for a land use – is reported as *precisely* 632.125 vehicle trips per day per 1000 square feet of floor area.

2.1. Parking generation compared with trip generation

To test the reliability of parking and trip generation rates, we can compare the number of vehicle trips per day *to* fast-food restaurants with the peak parking demand *at* fast-food restaurants. The number of daily round trips to a site divided by the number of parking spaces at the site can be interpreted as the parking turnover rate, which is the number of different cars that occupy a parking space during the day. Table 1 shows both the trip generation rates (expressed in round trips, or half the number of trip ends) and parking generation rates per 1000 square feet of floor area for all the land uses that are common between the *Trip Generation* and *Parking Generation* editions published in 1987 (the most recent edition of *Parking Generation*).

The final column of Table 1 shows the parking turnover rate. For example, on an average weekday a fast-food restaurant generates 316.1 vehicle-round-trips and a peak parking occupancy of 10 spaces per 1000 square feet of floor area. Therefore, 32 different cars occupy each parking space during an average day (316.1/10).

Table 1
Trip generation rates compared with parking generation rates (per 1000 square feet)

Land use	Trip generation rate (round trips/day)	Parking generation rate (parking spaces)	Trips per parking space per day (round trips/space)
Manufacturing	1.9	1.6	1.2
Furniture store	2.2	1.2	1.8
Industrial park	3.5	1.5	2.4
Residential condominium	2.9	1.1	2.6
Quality restaurant	47.8	12.5	3.8
Warehousing	2.4	0.5	4.9
Motel	5.1	0.9	5.7
Retirement community	1.7	0.3	6.1
Church	3.8	0.4	9.0
Government office	34.5	3.8	9.0
Discount store	35.6	3.6	10.0
Hardware store	25.6	2.4	10.6
Supermarket	62.8	2.9	21.9
Tennis courts/club	16.5	0.7	23.2
Fast food w/ drive-thru	316.1	10.0	31.6
Fast food w/o drive-thru	388.6	11.7	33.3
Bank w/ drive-in	145.6	4.2	34.4
Bank w/ walk-in only	95.0	0.6	150.8
Convenience market	443.5	1.4	314.6

Sources: Institute of Transportation Engineers (1987a, b).

The parking turnover rate at furniture stores is only 1.8 cars per parking space per day, implying slow business. At churches it is a busy nine cars per space per day, heralding a religious awakening. At government office buildings it is also nine cars per space per day, suggesting that the state has not withered away. At tennis courts it is 23.2 cars per space per day, implying very short games but many of them.

These turnover rates are unreliable because the underlying parking and trip generation rates are often based on scant evidence (the parking or trip generation rate is based on only one survey for 4 of the 19 land uses). The surveys of parking generation for each land use were probably conducted at different sites and at different times from the surveys of trip generation. These bizarre turnover rates also suggest a more serious problem: the parking and trip generation rates are misleading guides to transportation and land use planning.

2.2. The tail that wags two dogs

Free parking is an unstated assumption behind both parking generation rates and minimum parking requirements. Transportation engineers do not consider the price of parking as a variable in estimating parking generation rates. Urban planners who set parking requirements make the same mistake. Urban planners interpret the ITE parking generation rates as the demand for parking, neglecting the fact that demand has been observed only where parking is free. The following five steps describe the dysfunctional interaction between transportation engineers and urban planners.

1. Transportation engineers survey parking occupancy at sites that offer ample free parking and lack public transit. The ITE summarizes the peak parking occupancies observed at each land use and reports the parking generation rate.
2. Urban planners use the parking generation rates to set minimum parking requirements for all land uses. Because the required parking supply is so large, the market price of parking is zero, and most new developments offer free parking.
3. Transportation engineers survey vehicle trips to and from sites that offer free parking. The ITE summarizes the data on vehicle trips observed at each land use and reports the trip generation rate.
4. Transportation planners design the roads and highways to satisfy the trip generation rates. Therefore, the transportation system provides enough capacity to satisfy the expected demand for vehicle trips to and from land uses that provide free parking.
5. Urban planners limit land use density so that new development will not generate more vehicle trips than nearby roads and highways can carry.

In this five-step process, the unstated assumption of free parking underpins planning for both transportation and land use. Peak parking occupancy observed at sites that offer free parking becomes the minimum number of parking spaces that all development must provide. Ubiquitous free parking then stimulates the demand for vehicle travel. The observed travel demand becomes the guide for designing the transportation system that brings cars to the free parking. Planners limit development density to prevent traffic congestion around the sites that offer free parking.

Because of this circular reasoning, free parking is the tail that wags two dogs – transportation and land use.

3. The cost of complying with minimum parking requirements

Theory and data play small roles in setting parking requirements, and so we should not be surprised that the requirements often look foolish. This foolishness is a serious problem because minimum parking requirements increase development cost and they powerfully shape land use, transportation, and urban form. While urban planners rarely consider the cost of parking requirements, developers rarely have the luxury of *not* considering this cost.

3.1. The cost of parking spaces

What does it cost a developer to comply with minimum parking requirements? We can estimate this cost by taking into account the number of required parking spaces and the cost per space. Appendix A presents evidence that aboveground structured parking often costs about US$10,000 per space and that underground parking often costs about US$25,000 per space. The most common parking requirement for an office building is four spaces per 1000 square feet of floor area.[6] If aboveground parking costs US$10,000 per space, the cost of providing the required parking is US$40 per square foot of floor area (4 × US$10,000/1000). If underground parking costs US$25,000 per space, the cost of the required parking is US$100 per square foot of floor area (4 × US$25,000/1000).

In Los Angeles the average construction cost of an office building, excluding the cost of parking, is about US$150 per square foot.[7] Therefore, in this example, the cost of four *aboveground* parking spaces per 1000 square feet of office space increases the cost of the office space by 27% (US$40/150). The cost of four *underground* parking spaces per 1000 square feet of office space increases the cost of the office space by 67% (US$100/150).

Because motorists park free for most vehicle trips, they clearly do not pay the cost of providing parking spaces. If motorists do not pay for parking spaces, who does? Minimum parking requirements bundle the cost of parking spaces into the cost of development, and thereby increase the cost of all the goods and services sold at the sites that offer free parking. These requirements "externalize" the cost of parking, so that you cannot reduce what you pay for parking by con-

[6] Two surveys of parking requirements in 117 cities in Southern California suggest that the typical parking requirement for office buildings is 4 spaces per 1000 square feet of floor area. The first survey was conducted in 1975, and it was repeated for the same cities in 1993 (Shoup, 1995). In both years the most frequent parking requirement (the mode) was 4 spaces per 1000 square feet of floor area. Sixty-five percent of the cities that required less than the mode in 1975 had increased their requirement by 1993, and none had reduced it. Eighty percent of the cities that required more than the mode in 1975 had reduced their requirement by 1993, and none had increased it. These changes doubled the percentage of cities requiring 4 spaces per 1000 square feet from 27% in 1975 to 54% in 1993.

[7] The average cost of US$150 per square foot refers to Class A, steel-framed office buildings. This figure includes construction cost, tenant improvement costs, and "soft" costs such as financing, insurance, and real estate taxes during construction, but excludes the cost of parking. This figure was supplied by the Los Angeles County Assessor.

suming less of it. Minimum parking requirements bypass the price system in the markets for both transportation and land.

3.2. The cost of parking spaces compared with the cost of cars

Minimum parking requirements increase the supply and reduce the price – but not the cost – of parking. To reveal the size of the resulting subsidy for parking, we can compare the value of parking and cars with what motorists pay for parking and cars.

Table 2 shows the number of registered vehicles and the capital value (in current dollars) of these vehicles for the years 1985–1995.[8] For example, 202 million vehicles were registered in 1995, and this stock of vehicles was valued at US$1079 billion, or US$5352 per vehicle.[9] How does this value of vehicles compare with the value of parking spaces?

Minimum parking requirements are intended to satisfy the expected peak demand for parking at every land use – at home, work, school, banks, restaurants, shopping centers, movie theaters, and hundreds of other land uses from airports to zoos. Because the peak parking demands at different land uses occur at different times of the day or week, and may last for only a short time, several off-street parking spaces must be available for every motor vehicle. Although no one knows the number of parking spaces per car, Gruen (1973) estimated that for every car there must be at least one parking space at the place of residence and three to four spaces elsewhere.

Suppose there are four parking spaces per vehicle. If the average vehicle is worth US$5352 and if there are four parking spaces per vehicle, the average vehicle value per parking space is US$1338 (US$5352/4). Therefore, if the average land-and-improvement value of a parking space exceeds US$1338, the average value of four parking spaces exceeds the average US$5352 value per vehicle they serve. Because US$1338 is a very modest sum for both the land and construction cost of a parking space, *the total value of all parking spaces probably exceeds the total value of all vehicles*.

Motorists pay for their vehicles (worth US$1.1 trillion in 1995) but they park free for 99% of automobile trips.[10] Motorists pay so little for parking because parking requirements bundle the cost of parking into the cost of development. Parking is free for most automobile trips only because its cost has been shifted in to higher prices for everything else. Everyone pays for parking whether they use it or not. Cars have many external costs, but the cost of parking in cities may be

[8] The US Department of Commerce has estimated the total value of all fixed reproducible tangible wealth in the United States for the years 1929–1995. One category of this wealth is the capital value of all vehicles (cars and trucks). The capital value of an asset in each year is defined as the cumulative value of past gross investment in that asset minus the cumulative value of past depreciation.

[9] Because 65% of all vehicles were more than five years old in 1995, depreciation explains the low average value of US$5352 per vehicle.

[10] The total receipts of all private and public parking operators in the United States was only US$4.4 billion in 1992. Private operators received 83% of this revenue, and municipalities received 17%. The 1992 Census Data on Service Industries reports the revenue for private parking facilities, and the 1992 Census of Governments reports revenue from municipal parking facilities. Parking operators *receive* revenue that motorists do not pay when someone else pays it for them–as with validated and employer-paid parking. On the other hand, the Census data do not include the parking receipts of establishments primarily engaged in activities other than parking (department stores, hospitals, and restaurants, for example). If these two factors cancel each other, motorists paid about US$4.4 billion for parking in 1992.

Table 2
The value of motor vehicles in the United States

Year	Registered vehicles (million)	Capital value of vechicles	
		Total (US$ billion)	Per Vehicle (US$/vehicle)
1985	172	614	3575
1986	176	688	3918
1987	179	731	4085
1988	184	790	4286
1989	187	833	4446
1990	189	868	4595
1991	188	879	4673
1992	190	910	4778
1993	194	961	4952
1994	198	1032	5211
1995	202	1079	5352

Sources: Katz and Herman (1997) for capital values and Federal Highway Administration (1995) for number of vehicles. Values are expressed in current dollars of each year.

far greater than all these other external costs combined. By hiding a huge share of the cost of owning and using cars in cities, minimum parking requirements intensify all the other problems of external cost (such as air pollution and traffic congestion), making an already bad situation far worse.

Minimum parking requirements distort transportation and land use. They are not, however, the first example of an unwise professional practice that has produced unintended consequences. A medical analogy illustrates the problem.

4. An analogy: lead poisoning

Parking requirements in urban planning resemble lead therapy in medicine. Lead has antiseptic properties because it is toxic to microorganisms, and until the 20th century physicians prescribed lead to treat many ailments. One popular medical treatise recommended using lead as a therapy for abscesses, burns, cancer, contusions, gout, gunshot wounds, inflammation, itch, piles, rheumatism, ruptures, sprains, stiffness of the joints, and ulcers.[11]

Early physicians did not realize that lead is toxic to humans, and lead poisoning went largely unnoticed as a medical problem until the end of the nineteenth century. Nevertheless, a few early critics had recognized lead's harmful effects. As a printer, Benjamin Franklin had much contact with lead, and he wrote to a friend in 1786, "The Opinion of this mischievous effect from lead is at least above sixty year old; and you will observe with Concern how long a useful Truth may be known and exist, before it is generally receiv'd and practis'd on."[12]

[11] Goulard (1784), p. 2) says, "when the reader has perused the following treatise he will be inclined to think that this metal [lead] is one of the most efficacious remedies for the cure of most diseases which require the assistance of surgery".
[12] Quoted in McCord (1953), p. 398).

Lead continued to be used as medicine for more than a century after Franklin's warning, and folk remedies continue to use it as an ingredient today. Lead has local antiseptic properties, but any local benefit comes at a high price to the whole person.

4.1. Minimum parking requirements: urban lead therapy

Like lead therapy, minimum parking requirements produce a local benefit – they ensure that every land use can accommodate all the cars "drawn to the site". But this local benefit comes at a high price to the whole city. Minimum parking requirements increase the density of both parking spaces and cars. More cars create more traffic congestion, which in turn provokes calls for more local remedies, such as street widening, intersection flaring, intelligent highways, and higher parking requirements. More cars also produce more exhaust emissions (which until recently included lead). Like lead therapy, minimum parking requirements produce a local benefit but damage the whole system.

Minimum parking requirements resemble other primitive medical practices that were adopted without good theory and careful empirical research. Describing a leading medical text written in 1896, Lewis Thomas (1981), p. 40) says.

> The public expectation then, as now, was that the doctor would *do something*. There was no disease for which a treatment was not recommended... Every other page contains a new, complex treatment always recommended with the admonition that the procedure be learned by rote (since it rarely made any intrinsic sense) and be performed precisely as described. Acute poliomyelitis had to be treated by subcutaneous injections of strychnine; the application of leeches; the administration of belladonna, extract of ergot, potassium of iodide, and purgative doses of mercury; the layering of thick ointments containing mercury and iodine over the affected limbs; faradic stimulation of the muscles; ice-cold shower baths over the spine; and cupping... each of these with a dosage schedule to be followed precisely, some of them singly, others in various combinations... All of this has the appearance of institutionalized folly, the piecing together of a huge structure of nonsensical and dangerous therapy, and indeed it was. The pieces were thought up and put together almost like thin air, but perhaps not quite. Empiricism made a small contribution, just enough in the case of each to launch it into fashion.

I suspect that, looking backward a century from now, urban planners will see minimum parking requirements to have been no better than physicians now see lead therapy: a poison prescribed as a cure. Like many discredited and abandoned medical practices, minimum parking requirements are A "institutionalized folly".

Many parking spaces are provided voluntarily rather than in response to requirements. And far from being a poison, parking is an indispensable part of the transportation system. What *is* poisonous, is for planners to require massive overdoses of parking.

Sometimes a disaster must occur to stimulate the reexamination of customary practices. Minimum parking requirements have produced no single disaster, but evidence of their harm confronts us everywhere – traffic congestion, air pollution, energy imports, the orientation of the built environment around the car, perhaps even global climate change. Although not their sole cause, minimum parking requirements magnify all these problems.

Likening parking requirements to lead poisoning is a criticism of current planning practice, not of individual planners. Physicians who prescribed lead were making an honest mistake. Urban planners who prescribe parking requirements are, I believe, also making an honest mistake. Although many planners may agree with this criticism, they may also feel that it is unhelpful unless the critic can propose a better way to deal with the parking problem. I will propose an alternative: *cities should price on-street parking rather than require off-street parking*.

5. An alternative: let prices do the planning

Minimum parking requirements are a mistake but they do respond to a real problem – spillover parking. If a land use does not provide enough off-street parking, some motorists drawn to the site will park on nearby streets, competing for the scarce curb parking supply. Urban planners know that this spillover parking creates enormous political problems. If spillover parking from a new development congests the adjacent curb parking, everyone nearby will angrily ask planners and politicians, ''How could you let this happen''?

To prevent parking spillover where adjacent curb parking is free, new land uses must provide enough off-street spaces to satisfy the demand for free parking. Free curb parking explains why planners consciously or unconsciously base off-street parking requirements on the demand for free parking. In his survey of planning directors in 144 cities, Richard Willson (1996) asked ''Why does your city have minimum parking requirements''? The most frequent response was the circular explanation ''to have an adequate number of spaces''. In effect, planners treat free parking as an entitlement, and they consider the resulting demand for free parking to be a ''need'' they can measure.

Because parking requirements are so ingrained in planning practice, complaining about them may seem futile, like complaining about photosynthesis or gravity. If free parking were an entitlement and the planner's goal were to prevent parking spillover, requiring enough off-street parking to meet the demand at zero price would make sense. But free parking is *not* an entitlement. As the alternative to requiring off-street parking, consider pricing curb parking.

5.1. The market price for curb parking

The market price for curb parking is the price that matches demand with supply and keeps a few spaces vacant. Traffic engineers usually recommend a vacancy rate for curb parking of at least 15% to ensure easy parking access and egress.[13] If cities priced curb parking to balance supply and demand with a few vacant spaces on every block, motorists could always find a convenient parking space close to their final destination.

Fig. 4 illustrates the policy of market prices for curb parking. Because the supply of curb spaces is fixed, the supply of curb spaces available with a 15% vacancy rate is a vertical line positioned above the horizontal axis at an 85% occupancy rate. The demand curve slopes downward, and the market-clearing price of parking occurs where the demand curve intersects the vertical supply

[13] See Brierly (1972), May (1975) and Witheford and Kanaan (1972).

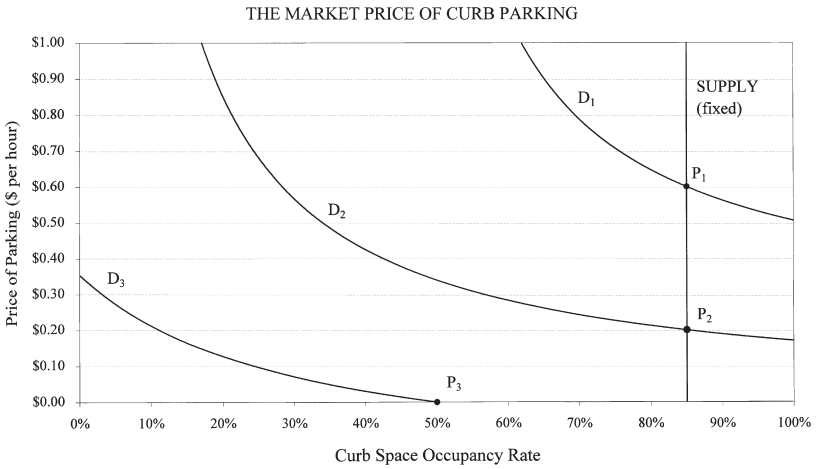

Fig. 4. The market price of curb parking.

curve. For example, when parking demand is high (demand curve D_1), the price that will yield a 15% vacancy rate is high (P_1 is 60¢/h). When demand is lower (demand curve D_2), a price of only 20¢/h will yield a 15% vacancy rate. When parking demand is lowest (demand curve D_3), the vacancy rate will be 50% even when parking is free.

If the price of parking is set too high, many parking spaces remain vacant, and a valuable resource is unused. If the price of parking is set too low, the occupancy rate reaches 100%, and motorists hunting for a vacant space waste time, congest traffic, and pollute the air. Because the demand for parking rises and falls during the day but the supply of parking is fixed, demand-responsive parking prices would necessarily rise and fall to maintain an "inventory" of vacant parking spaces on each block. The lowest price that will yield a vacancy rate of about 15% is the market price of curb parking.

Obviously, prices cannot constantly fluctuate to maintain a vacancy rate of *exactly* 15%, but they can vary sufficiently to avoid chronic over- or under-occupancy. Commercial parking operators always set prices high enough to avoid regularly putting out the "full" sign, and cities could contract with commercial operators to price curb parking properly, if necessary.

5.2. Parking benefit districts

Elsewhere I have argued that market prices can effectively regulate the off-street parking supply, and that the government's chief contribution should be to set market prices for curb parking. I have also argued that, to make this pricing solution politically popular, cities could establish Parking Benefit Districts that dedicate curb parking revenue to pay for public services in the neighborhood where the revenue is collected.[14] If the benefits financed by parking charges were visible and local, residents would want to charge market prices for curb parking for the revenue,

[14] See Shoup (1992, 1994, 1995, 1997) for the proposal to use the revenue from market-priced curb parking to finance neighborhood public services. Several new technologies can charge for curb parking without using conventional parking meters. Cities have also begun to subcontract with private enterprises to collect curb parking revenue.

not because they thought it good public policy. Residents who benefit from parking charges paid by strangers would begin to think like parking lot owners.

The *economic* argument to charge for curb parking is *efficiency* – the benefits would outweigh the costs. The *political* argument to create Parking Benefit Districts is *distribution* – the benefits for neighborhoods would lead residents to vote for the proposal. Parking meters have few friends if their revenue disappears into the city's general fund. Curb parking revenue needs the appropriate recipient – its neighborhood – before residents will recommend market prices for parking. For example, parking revenue could pay to plant street trees, repair sidewalks, or put utility wires underground. Curb parking charges would yield more revenue than the property taxes in many neighborhoods, so many residents could reap enormous benefits. Charging strangers to park in front of your house is like Monty Python's scheme for Britain to tax foreigners living abroad.

Charging for parking does not require a meter at every space. Several payment systems – from high-tech electronic in-vehicle meters and multispace meters to low-tech paper stickers – have eliminated the practical and aesthetic objections to charging for parking. Where the potential revenues are high and the collection costs are low, the transaction costs of charging for parking are not a serious objection. The problem is political, not technical, and dedicating curb parking revenue to its neighborhood can solve the political problem.

6. A model of parking choice

If market prices allocated parking spaces, how would motorists decide where to park? A simple model of parking choice will help to answer this question. To anticipate the results, market prices will allocate the most convenient parking spaces to motorists who: (a) carpool, (b) park for a short time, (c) walk slowly, and (d) place a high value on reducing walking time. Conversely, market prices will allocate the peripheral parking spaces to motorists who: (a) drive alone, (b) park for a long time, (c) walk fast, and (d) place a low value on reducing walking time.

6.1. Variables in the model of parking choice

Suppose the price of parking is highest at the destinations where parking demand is highest, and that the price declines with distance from these destinations. Since the price of parking increases as you drive toward your destination, you will pay more money to park closer to your destination but you will also spend less time walking from your car to your destination. Given the trade-off between money spent on parking and time spent on walking, where should you park your car and walk the rest of the way?

To find the optimal parking space, consider the following variables (and their dimensions): d is the distance from parking space to final destination (miles), $p(d)$ is the price of parking at distance d from the final destination (US$/hour), t is the parking duration (hours), w is the walking speed from parking space to final destination (miles/hour), n is the number of persons in the car (persons) and v is the average value of time spent walking ($/hour/person).

The total cost associated with parking at any location is the money cost of parking plus the time cost of walking from the parking space to the final destination and back. The money cost of

parking equals the parking duration multiplied by the price per hour, or $tp(d)$.[15] The time to walk from the parking space to the final destination and back is $2d/w$, the distance walked divided by the walking speed. To convert this time cost of walking into its money equivalent we can multiply the walking time by the dollar value of time, v. Because everyone in the car, n, experiences this time cost, the (monetized) cost of time spent walking equals $2nvd/w$.[16] At distance d from the final destination the total cost of parking and walking is therefore

$$tp(d) + 2nvd/w. \quad (1)$$

The first term of the expression is the money cost of parking, and the second term is the (monetized) time cost of walking from the parking space to the final destination and back.

6.2. The optimal parking space

What parking location minimizes the total cost of parking and walking? As you drive toward your destination the cost of parking increases and the cost of walking decreases. The minimum total cost of parking *and* walking occurs where the increase in the money cost of parking balances the decrease in the time cost of walking. If the money cost of parking increases *less* than the time cost of walking decreases as you approach your destination, you should keep driving. If the money cost of parking increases *more* than the time cost of walking decreases, you have driven too far.[17]

Differentiating equation (1) with respect to d and setting the result equal to zero gives the distance from a final destination that minimizes the total cost of parking and walking.

$$t\partial p/\partial d + 2nv/w = 0 \text{ and } -t\partial p/\partial d = 2nv/w. \quad (2)$$

The changes in the money cost of parking ($t\partial p/\partial d$) and the time cost of walking ($2nv/w$) are equal in value and opposite in sign for any small movement from the location that minimizes the total cost of parking *and* walking. A parking space substantially *closer* to your final destination will increase the money cost of parking by more than it reduces the time cost of walking. A parking space substantially *farther* from your destination will increase the time cost of walking by more than it reduces the money cost of parking. The optimal parking space perfectly balances greed and sloth.

[15] I assume that you know how long you want to park. Alternatively, you may know only the expected value of how long you want to park. In either case, you pay only for the exact time that you park. The parking charge is a linear function of the number of minutes you park, with no advance commitment to how long you will park.

[16] The value of time is the price you are willing to pay to reduce the time spent walking between your parking space and your final destination. It will depend on whether you are in a hurry, how tired you are, packages you are carrying, the weather, and many other circumstances that can vary greatly from trip to trip.

[17] This parking location model resembles the Alonso-Mills-Muth housing location model. Muth (1969), p. 22) explains that the equilibrium housing location is where "the reduction in expenditure necessary to purchase a given quantity of housing that results from moving a unit distance away from the market (equals) the increase in transport costs occasioned by such a move". If we substitute the words "parking" for "housing" and "walking" for "transport" in this extract, Muth is describing the equilibrium parking location. The quantity of space occupied is variable in the housing decision but fixed in the parking decision, while the time that space is occupied is fixed in the housing decision but variable in the parking decision.

6.3. An example

Suppose the price of parking is US$1/h at your destination, and that the price declines with distance from your destination according to the negative exponential formula

$$p(d) = \$1e^{-2d}. \tag{3}$$

Eq. (3) implies that the price of parking, p, declines with distance, d, from the center, and that the slope of the curve relating price to distance also declines with increasing distance from the center (see Fig. 5). A negative exponential curve is typical of the relationship between commercial parking prices and the distance from activity centers.

Suppose that you want to park for 4 h ($t = 4$), you are alone ($n = 1$), your time is worth US$8/h ($v =$ US$8), and you walk 4 miles an hour ($w = 4$). Fig. 5 shows the cost of parking and of walking as a function of parking d miles from your destination. The money cost of parking 4 h is US4e^{-2d}$, which declines with distance from your destination.[18] The time cost of walking is $(2 \times 1 \times$ US$8/4)$d$, which increases with distance from your destination. The total cost of parking and walking (the upper curve in Fig. 5) reaches its minimum value of US$3.35 at a distance somewhere between 0.3 and 0.4 miles from your destination. To minimize the total cost of parking and walking you should park about a third of a mile from your destination and walk the rest of the way.[19]

Solving Eq. (2) gives the exact distance that minimizes the total cost of parking and walking. Substituting Eq. (3) into Eq. (2) and solving for the optimal distance from a final destination, denoted as d^*, gives

$$d^* = [-\log_e(nv/tw)]/2. \tag{4}$$

Given the values of $n = 1$ person, $v =$ US$8 h, $t = 4$ h and $w = 4$ miles an hour, the value for d^* in Eq. (4) is 0.34 miles. At this distance the price of parking is 50¢/h, so the cost of parking four hours is US$2. Walking the round trip of 0.68 miles from parking space to final destination and back at four miles an hour will take about 10 min. If time costs US$8/h, 10 min will cost US$1.35. The minimum total cost of parking and walking to your destination is thus US$3.35 for the trip (see Fig. 5).[20]

[18] The exponential relationship implies that the parking price gradient gets steeper as you approach your destination (the absolute value of $\partial p/\partial d$ increases as d approaches 0).

[19] Automobile speed and operating cost have been neglected but are easily added to the model. Parking closer to your destination increases driving time and automobile operating cost. Therefore, the total time-and-money cost of driving, parking, and walking is minimized where the total value of driving and walking time saved by parking closer equals the total parking and automobile operating cost added by parking closer. If a denotes automobile operating cost (US$/mile), and s denotes driving speed (miles/hour), total cost is minimized where $t(\partial p/\partial d) = -2nv(1/w - 1/s) + 2a$. If a is low and s is high, they are negligible parts of the decision, and the solution for d^* reduces to Eq. (4).

[20] If you want to spend 4 h at your destination, the 10 min walking time must be added to the time at your destination, so the total parking duration will be 4 h and 10 min. The additional parking duration will add another 8.54¢ to the parking cost. This result suggest that you should park a bit closer to your destination when you consider the effect of walking time on the total parking cost. To simplify the discussion, this factor has been neglected. A negative value of d^* implies that you should park at your destination.

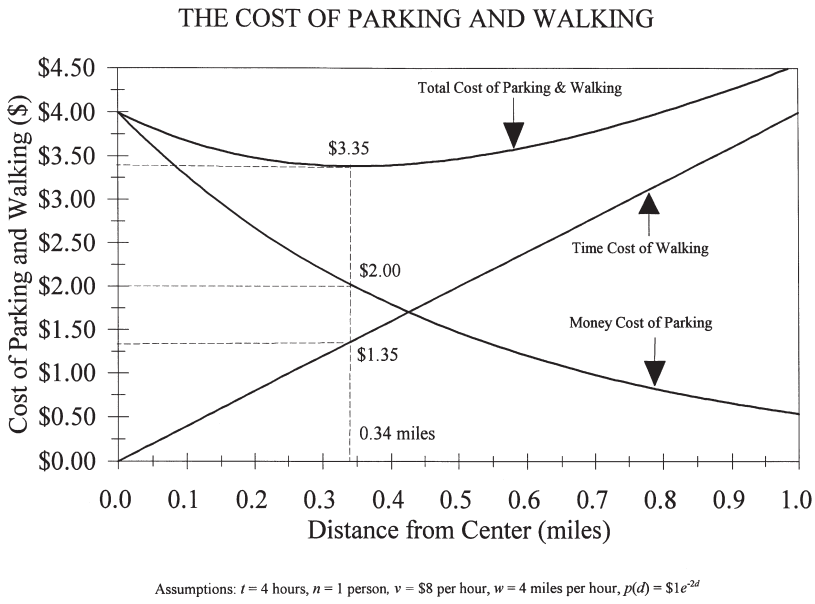

Fig. 5. The cost of parking and walking.

The total money-and-time cost curve is flat between 0.25 and 0.5 miles from the destination because the slopes of the money-parking-cost and monetized-time-cost curves are about equal in absolute value but opposite in sign within this range.[21] The total cost of parking and walking is about US$3.35 anywhere between 0.25 and 0.5 miles from your destination. Parking less than 0.25 miles or more than 0.5 miles from your destination increases the total cost of parking and walking. For example, the total cost of parking and walking is US$4 both *at* your destination and also at 0.8 miles *from* your destination.

6.4. Implications of the model

Motorists do not use calculus when choosing where to park. The proposed parking location model merely expresses in mathematical form some of the various factors that motorists surely consider when they pay to park. The model confirms common sense, but several of its predictions are not immediately obvious.

First, the number of persons in a car is as important as the value of their time in determining parking location. For example, a carpool of four people who each value time at US$5/h ($nv = 4 \times 5$) will choose the same location as a solo driver who values time at US$20/h

[21] The monetized time cost of walking from your parking space to your destination and back increases with distance from your destination at a constant rate of US$4 per mile. The money cost of parking decreases with distance from your destination at a rate of US$4 per mile at 0.34 miles from your destination. At parking locations closer than 0.34 miles from your destination, the money cost of parking decreases with increasing distance from your destination at a rate of more than US$4 per mile. At parking locations farther than 0.34 miles from your destination, the money cost of parking decreases with increasing distance from your destination at a rate of less than US$4 per mile.

Table 3
Elasticity of d^* with respect to parking choice variables

Variable	Partial derivative of d^*	Elasticity of d^* with respect to variable i
t (parking duration)	$\partial d^*/\partial t = +1/(2t) > 0$	$\epsilon_t = +1/(2d^*) > 0$
w (walking speed)	$\partial d^*/\partial_w = +1/(2w) > 0$	$\epsilon_w = +1/(2d^*) > 0$
n (number of persons)	$\partial d^*/\partial n = -1/(2n) < 0$	$\epsilon_n = -1/(2d^*) < 0$
v (value of time)	$\partial d^*/\partial v = -1/(2v) < 0$	$\epsilon_v = -1/(2\mathrm{d}^*) < 0$

Note: $d^* = [-\log_e(nv/tw)]/2$ and $\epsilon_i = (\partial d^*/\partial i)/(d^*/i)$.

($nv = 1 \times 20$), all else equal. A higher vehicle occupancy and a higher value of time justify parking closer to the final destination.

Second, parking duration is as important as the value of time in determining parking location. For example, a solo driver who values time at US$10/h and parks for one hour ($v/t = 10/1$) will choose the same location as another solo driver who values time at US$20/h and parks for two hours ($v/t = 20/2$), all else equal. A shorter parking duration justifies parking closer to the final destination.

Third, the number of persons in a car is as important as parking duration in determining parking location. For example, a solo driver who parks for 1 h ($n/t = 1/1$) will choose the same location as a three-person carpool who park for 3 h ($n/t = 3/3$), all else equal.

Table 3 shows the derivatives and elasticities of the optimal distance, d^*, with respect to the variables that determine it. The derivative of d^* is positive with respect to t and w, which implies that the longer you park and the faster you walk, the farther away you should park. The derivative of d^* is negative with respect to n and v, which implies that the more people in your car and the higher value of their time, the closer in you should park.

The elasticities of d^* with respect to the variables that determine it decrease with increasing distance from the center (see Fig. 6). For example, the elasticity of d^* with respect to the parking duration, t, is $+1/(2d^*)$. At $d^* = 0.25$ miles from the center, the elasticity of d^* with respect to t is +2, so a 10% decrease in the length of time you want to park will shift your optimal parking location 20% closer to your final destination.[22]

These predictions are consistent with previous research on parking choices. David Gillen (1978) developed a model of parking location choice similar to the one expressed in Eq. (4), although he did not consider the number of persons in a car. Using data from Toronto, Gillen found that motorists who pay for parking by the hour are willing to trade a shorter parking duration for a closer parking location.

Using trip data from Vancouver, Brown and Lambe (1972) showed that allocating parking spaces by market prices will minimize the total walking time from parking spaces to final destinations. A linear programming model that minimizes total walking time predicted commercial off-street parking prices with an average error of only 20%. The price of curb parking was well below the level that would minimize total walking time.

[22] This result follows from the assumed functional relationship between p and d. In this particular case, the same relative increase in t, w, n, or v will always produce the same absolute change in d^*. As d^* approaches zero, the elasticities approach infinity.

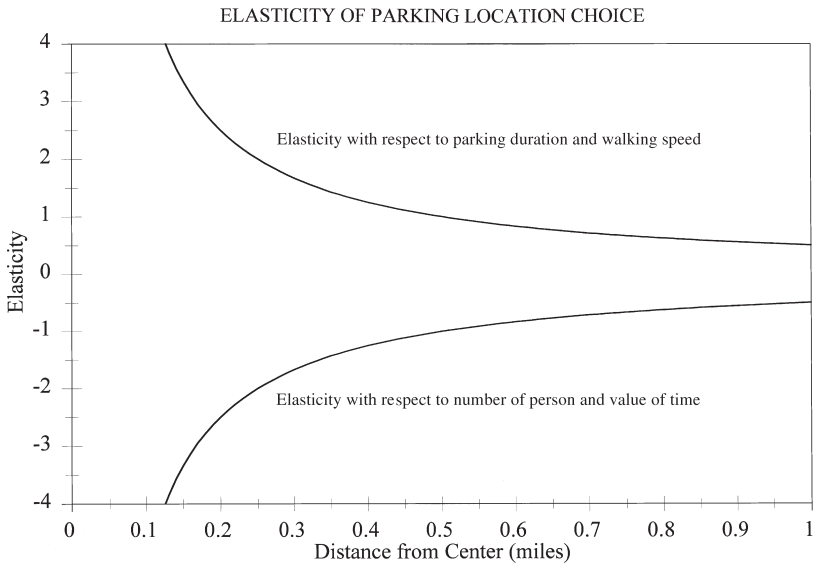

Fig. 6. Elasticity of parking location choice.

Naturally, a simple model of parking prices like the one presented here does not describe most current parking decisions because parking is free for 99% of all automobile trips. The model is a simplified description of parking choice, but its assumptions are far more sensible than the assumptions behind minimum parking requirements.[23]

7. Efficiency and equity of charging for curb parking

If curb parking were priced to yield a minimum vacancy rate of about 15% in every location, the resulting price gradients would shift predictably throughout the day as demand shifts. The peak parking prices might occur at employment centers during the day, at entertainment centers during the evening, and in high-density residential areas during the night. Many overlapping price gradients would form a three-dimensional parking price surface whose height at any point is the vertical summation of all the individual gradients. The individual gradients would form around many dispersed centers, like anthills covering a terrain that itself has peaks (the central business districts) and valleys (low density neighborhoods). The price of parking at any location would rise

[23] Several relevant variables and interactions between variables have also been left out of the model. For example, parking closer to your destination incurs additional driving time and automobile expense. How long you want to park depends on the price of parking because you can reduce the parking cost by staying a shorter time at your final destination. How long you want to park also depends on how much time you spend walking because the parking duration is the sum of the time at the final destination and the time walking to and from it. A further complication is that the value of time spent driving can be different from the value of time spent walking.

and fall during the day, and the local peaks would shift around like kittens fighting under a blanket.

7.1. Efficiency

Market prices would allocate parking spaces among motorists in a logical way. The more convenient parking spaces would go to carpoolers, those in a hurry, those who want to park for only a short time, those who have difficulty walking, and those more willing to spend money. The best parking spaces could always be reserved for those with physical disabilities. The more distant parking spaces would go to solo drivers, those with time to spare, those who want to park a long time, those who enjoy walking, and those more eager to save money.

Even if market prices can efficiently allocate a fixed stock of parking spaces, can market forces alone supply enough spaces to meet the demand for parking? If minimum parking requirements are eliminated, the ratio of parking spaces to cars will decline, and the price of parking will rise. This price rise will have two effects on demand and supply.

First, motorists will economize on parking by changing their travel behavior. Shifting to higher occupancy vehicles to spread the cost of parking among more people will reduce the demand for parking. Shifting to walking, cycling, or public transit will also reduce the demand for parking. Shifting vehicle trips to off-peak will reduce the demand for parking at peak hours. Finally, citizens can choose to own fewer cars, and this will reduce the demand for parking.

Second, freed from minimum parking requirements, developers will supply parking spaces in response to parking prices. The higher price of parking will encourage developers to voluntarily supply more parking in places where the resulting revenue will cover the cost of providing the parking. Parking will tend to become unbundled from other transactions, and firms that specialize in providing parking will manage more of the parking supply. Off-street parking prices will tend to cover the cost of providing parking spaces, including the cost of land, and these off-street prices will put a ceiling on the price of adjacent curb parking.

Flexible market prices can equate demand with the fixed supply of parking in the short run, and these prices will signal where the supply can profitably be increased in the long run. The proper role for the government is to price curb parking to maintain a minimum vacancy rate so that parking will always be available if motorists are willing to pay for it.

Market prices for parking resemble a spot market for land. Demand-responsive parking prices would reveal what parking spaces are really worth, and how motorists are willing to change their travel choices to save money on parking. Motorists could choose parking spaces according to how long they want to stay, how many people are in the car, how they value walking time (are they in a hurry? are they carrying heavy packages? are they tired? are they short of money?) and many other circumstances of time and place that only the individual motorists can know.

In contrast to the "spontaneous" order created by market prices and individual choices, urban planners require almost every land use to provide at least enough parking spaces to satisfy the peak demand for free parking. As a result, parking is free for almost every automobile trip because the cost of parking is shifted into higher prices for almost everything else. Minimum parking requirements in zoning ordinances are a disastrous substitute for millions of individual evaluations of what a parking space is worth.

7.2. Equity

The proposal to price curb parking rather than require off-street parking raises a serious political question. Is it fair to charge motorists for parking? To judge whether charging for parking is fair, it must be compared with the alternative–minimum parking requirements. Minimum parking requirements force everyone to pay for parking through higher prices for all other goods and services, but everyone does not benefit equally from free parking.[24] On average, households with incomes below US$10,000 a year own only one car, while households with incomes above US$40,000 a year own 2.3 cars. Eight percent of non-Hispanic White households, 19% of Hispanic households, and 30% of African-American households do not own a car. In total, 10.6 million American households do not own a car, yet even these households indirectly pay the costs imposed by minimum parking requirements.[25] Because cars are not distributed equally in the population, charging motorists only for the parking they use is fairer than requiring everyone to pay for parking whether they use it or not.

Market prices would *not* allocate the best parking spaces only to the rich. With market prices, motorists can pay less for parking if they carpool, stay for a shorter time, or park farther away, and they will pay nothing for parking if they walk, bicycle or ride public transit. Even those who cannot regularly afford to park in the best spaces can park in them on occasions when time is very important. Because income is only one factor that determines the value of time on a particular trip, and because the value of time is only one factor that determines parking location, income is only one of many factors that determine parking location.

Given the eternal debate on the merits of markets versus planning, many skeptics will distrust using prices to allocate parking spaces. But even those who doubt the ability of markets to allocate resources fairly may agree that relying on prices to allocate curb parking spaces and using the revenue to fund public services will contribute to a host of social, economic, and environmental goals they support.

8. Conclusion: time for a paradigm shift

Although it would be presumptuous to call urban planning a science, minimum parking requirements in planning resemble a paradigm in science. According to Thomas Kuhn (1996), a paradigm is a conceptual scheme that has gained universal acceptance throughout a profession, and each profession's practices embody its ruling paradigms.

Kuhn argued that scientific education inculcates in students an intense commitment to the existing scientific paradigms. But planning education ignores parking requirements, and therefore does not inculcate in students any commitment to them. Instead, motorists have come to expect the free parking that the requirements produce. The planning profession's commitment to parking requirements is based not on education and science but on motorists' yearning to park free.

[24] Shoup (1997) explains how parking requirements increase the price of housing, and Willson (1995) explains how they increase the price of office space.

[25] The 1990 NPTS reports the distribution of vehicle ownership by household income (Pisarski, 1995, pp. 3–24). The 1990 Census reports the distribution of households that do not own a car (Pisarski, 1996, p. 36).

Discussing the difficulty of paradigm shifts in science, Kuhn asks, "How can a conceptual scheme that one generation admiringly describes as subtle, flexible, and complex become for a later generation merely obscure, ambiguous, and cumbersome"?[26] Without doubt, minimum parking requirements are obscure, ambiguous, and cumbersome. In addition, minimum parking requirements impose enormous hidden costs, and they impede our progress toward important social, economic, and environmental goals. Planning for parking deserves a new paradigm.

Minimum parking requirements are based on two highly unreasonable assumptions: (1) the demand for parking does not depend on its price, and (2) the supply of parking should not depend on its cost. This neglect of price and cost stems from a belief that planners can assess community needs and can regulate the land market to meet these needs. Regulation *is* justified in many cases where market prices fail to communicate social costs. But market failure does *not* justify minimum parking requirements.

Letting prices determine the number of parking spaces will transfer to the market an important function that urban planners now perform. But this does not mean an end to planning for parking because planners should regulate many other features of parking that affect the community, such as aesthetics, landscaping, layout, location, pedestrian access, provisions for the handicapped, setback, signage, and stormwater runoff.

Pricing curb parking rather than requiring off-street parking will improve urban design, reduce traffic congestion, restrain urban sprawl, conserve natural resources, and produce neighborhood public revenue. Eliminating parking requirements will also reduce the cost of housing and of many other goods and services. In conclusion, deregulating the quantity and increasing the quality of parking will improve transportation, land use, and the environment.

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Appendix A. The cost of parking spaces

How much does a parking space cost? This question has no easy answer because the cost of parking depends on the value of land, which varies greatly among sites. But in the case of structured parking we can account for the value of land as its opportunity cost for surface parking. The number of spaces a parking structure adds to the parking supply is the number of

[26] Kuhn (1957), p. 76) was describing how latter-day astronomers looked back at the Ptolemaic, earth-centered concept of the universe.

parking spaces in the structure minus the number of surface parking spaces lost as a result of building the structure. The structure's construction cost (excluding land value) divided by the number of parking spaces added to the parking supply gives the structure's *cost per parking space added*, which accounts for land value as the opportunity cost of the surface parking spaces lost (Shoup, 1997).

This methodology was used to calculate the construction cost per parking space added by twelve parking structures built on the UCLA campus between 1961 and 1991.[27] Each structure's original cost was converted into dollars of 1998 purchasing power by adjusting for construction cost inflation since the structure was built.

The average cost of the six structures built in the 1960s was US$13,400 per space added, while the average cost of the six structures built since 1977 was US$25,600 per space added. The newer parking structures are more expensive because they are smaller and partly or entirely underground, compared with the larger, aboveground structures built earlier. That is, the type of parking structure–not an increase in the real cost of parking spaces (above the rate of inflation of general construction costs)–can explain the higher real cost of new parking spaces.

We can test this hypothesis that the type of parking structure explains the increase in cost after 1977. Since the initial study of the twelve structures built between 1961 and 1991, UCLA has built two new campus parking structures as additions to existing parking structures. The first is a 1995 aboveground addition to the aboveground structure built in 1964. The second is a 1998 underground addition to the underground structure built in 1983. Table 4 compares the cost per parking space added by the two original structures and their subsequent additions. The ENR Construction Cost Index is used to convert the original construction costs to 1998 dollars.

The cost was US$12,214 per space for the original aboveground structure built in 1964, and US$14,725 per space for the addition built 31 yr later.[28] The cost was US$28,540 per space for the original underground structure built in 1983, and US$26,300 per space for the addition built 15 yr later.[29] The close match between the cost of each original parking structure and the cost of its later

[27] See Shoup (1997) for the details of the cost per parking space added by the twelve parking structures. The 20-city average of the *ENR* Construction Cost Index for 31 March 1998, was divided by the average *ENR* Construction Cost Index for the year in which the parking structure was built. This ratio was then multiplied by the original construction cost to yield the construction cost expressed in dollars of 1998 purchasing power.

[28] The original aboveground structure contains 39% more parking spaces than the aboveground addition, and its footprint is twice as large as that of the addition. Economies of scale help to explain the original structure's lower cost per space. The UCLA parking structures built in the 1960s look like the aboveground parking structures built in suburban areas where vacant land is abundant. In case studies of suburban office developments in Southern California in 1994, Willson (1995), p. 39) found "the average combined land and construction cost for structure parking in the case study sites was US$12,300 per space". This cost is almost identical to the average cost of US$12,400 (in 1994$) per parking space added by the aboveground parking structures built at UCLA in the 1960s.

[29] The underground addition is almost three times the size of the original underground structure, and economies of scale help to explain the newer structure's lower cost per space. The UCLA parking structures built since 1977 are typical of the parking structures built in dense areas where vacant land is scarce. The higher cost of recent parking structures at UCLA thus reflects the higher cost of building parking structures in dense urban areas.

Table 4
Cost of aboveground and underground parking spaces (cost per space added by parking structures in Los Angeles)

	Aboveground (UCLA)		Underground (UCLA)		Underground (Pershing Square)
	1964 Structure	1995 Addition	1983 Structure	1998 Addition	1950 Structure
Current US$	1946	13,712	19,752	26,300	2500
1998 US$	12,214	14,725	28,540	26,300	28,800

The original portion of Structure 3, built in 1964, contains 1168 spaces in five aboveground levels; the addition built in 1995 contains, 840 spaces in seven aboveground levels. The original portion of Structure 4, built in 1983, contains 448 spaces in two underground levels; the addition built in 1998 contains 1263 spaces in two underground levels. The Pershing Square Garage in downtown Los Angeles contains 2150 spaces in three underground levels. The ENR Construction Cost Index is used to convert original construction costs to 1998 values.

addition suggests that, after correcting for inflation, the cost of building parking structures has changed little in recent decades.

To test this finding of cost stability, Table 4 also shows the cost of an underground garage constructed beneath Pershing Square in downtown Los Angeles in 1952.[30] When the original cost of US$2500 per space is converted to its equivalent in 1998 purchasing power, the cost of the Pershing Square garage is US$25,700 per parking space, very close to the cost of the two underground garages built at UCLA in 1983 and 1998. In real terms, the cost of building underground parking has not changed in half a century.

If these high costs are surprising, it is only because the cost of parking is rarely calculated. Nevertheless, there is other evidence about cost because some cities allow developers to pay a fee in lieu of providing required parking spaces. To justify the in-lieu fees, some of these cities carefully document their cost of providing public parking spaces.[31] In Palo Alto, California, the cost is US$17,848 per space added by a municipal parking structure. In Lake Forest, Illinois, the cost is US$18,000 per space for the land and construction cost of surface parking lots. In Walnut Creek, California, the cost is US$32,400 per space added by a municipal parking structure. In Beverly Hills, California, the average cost was US$37,000 per space for the estimated land and construction cost of municipal parking structures. The cost of parking spaces at UCLA is thus in line with the cost of parking spaces in cities that allow developers to pay in-lieu fees.

The cost of many surface parking spaces is less than the cost of structured parking spaces, but land values understate the cost of surface parking because developers who are required to provide parking spaces will bid less for land. Therefore, the market value of land subject to a minimum parking requirement will understate the cost of surface parking spaces. For example, when Oakland, California, introduced its parking requirement of one space per 1000 square feet for apartment buildings, land values fell by 33% (Shoup, 1997). Willson (1995) estimated that increasing the parking requirement for office buildings in Southern California by 1.3 spaces per 1000

[30] Klose (1965), p. 190) gives the original cost of constructing the Pershing Square garage.

[31] See Shoup, forthcoming. These costs refer to the values that were used to justify the cities' in-lieu fees in 1996. In Beverly Hills the cost refers to the average estimated land and construction cost of municipal parking spaces for projects that applied to pay the in-lieu fees between 1978 and 1992; the highest cost was US$53,000 per parking space.

square feet would reduce land values by 32%. Because minimum parking requirements depress land values, low land values do not necessarily imply that minimum parking requirements have a low cost.

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