CITY OF NORMAN, OKLAHOMA

CITY COUNCIL COMMUNITY PLANNING AND TRANSPORTATION COMMITTEE AGENDA

Municipal Building Multi-Purpose Room
201 West Gray

Monday, May 13, 2013

5:30 P.M.

1. CART RIDERSHIP REPORT INCLUDING SAFERIDE AND EXTENDED SERVICE.

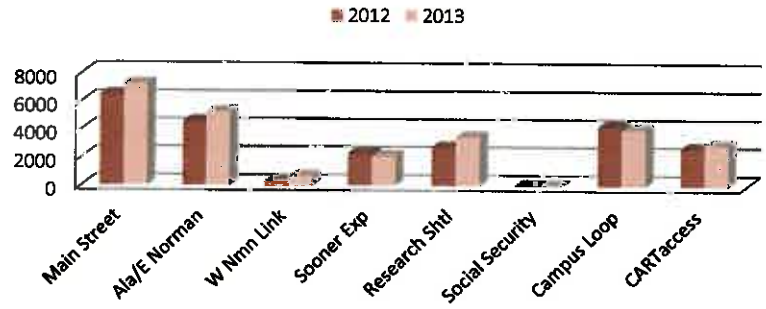
2. CONTINUED DISCUSSION REGARDING A DRAFT ORDINANCE ESTABLISHING A HIGH DENSITY RESIDENTIAL ZONING DISTRICTS.

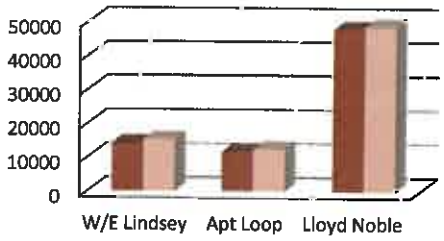
3. MISCELLANEOUS DISCUSSION.

ITEM 1:

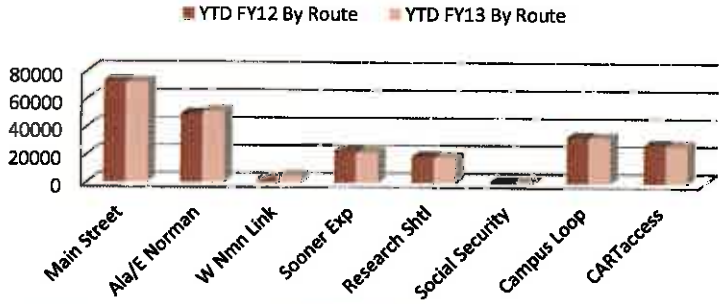
C.A.R.T.

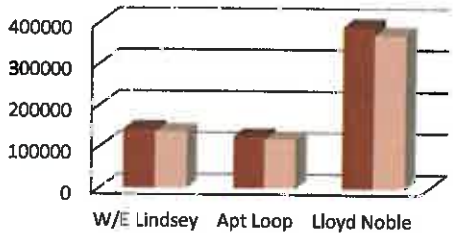
April Ridership by Route





Year-to-Date Ridership by Route

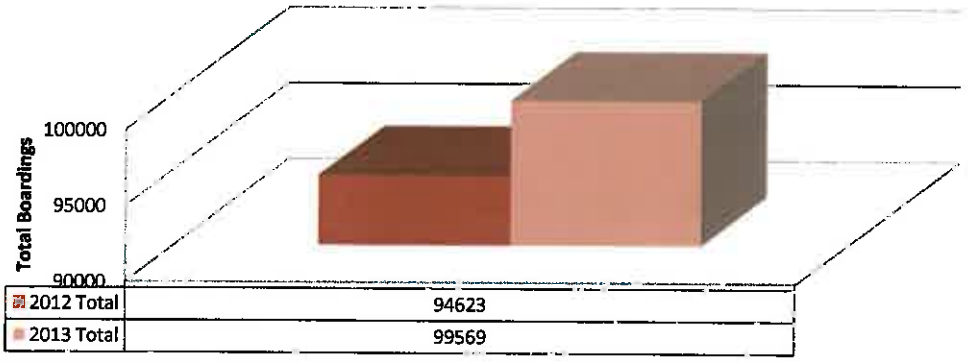




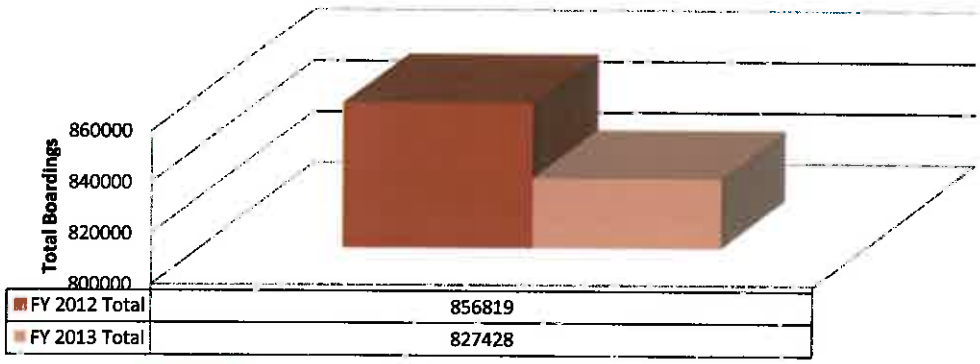
	Apr-12	Apr-13	% Change
Main Street	6468	7222	12%
Ala/E Norman	4535	5247	16%
W Nmn Link	307	642	109%
Sooner Exp	2293	2092	-9%
Research Shtl	2735	3478	27%
Social Security	34	41	21%
Campus Loop	4257	4034	-5%
CARTaccess	2700	2909	8%
W/E Lindsey	14182	15448	9%
Apt Loop	11675	12471	7%
Lloyd Noble	48137	48894	2%

	YTD FY12	YTD FY13	% Change
Main Street	72803	72220	-1%
Ala/E Norman	49201	51591	5%
W Nmn Link	3394	5009	48%
Sooner Exp	22928	21837	-5%
Research Shtl	18615	18228	-2%
Social Security	498	747	50%
Campus Loop	32963	32797	-1%
CARTaccess	27577	27261	-1%
W/E Lindsey	141587	135824	-4%
Apt Loop	124391	117933	-5%
Lloyd Noble	390439	371242	-5%

April Fixed-Route Total Ridership



Year-to-Date Fixed-Route Total Ridership



	Apr-12	Apr-13	% Change		YTD FY12	YTD FY13	% Change
Monthly Total	94623	99569	5%	Annual Total	856819	827428	-3%
Days of Service	25	26	4%		247	245	-1%

ITEM 2:

High Density Residential Zoning Districts

office memorandum

TO: Chairman and Members of the Community Planning and Transportation Committee

FROM: Susan F. Connors, AICP SFC
Director of Planning and Community Development

RE: Development of High Density Zoning District

DATE: May 13, 2013

BACKGROUND

At the April 22, 2013 Community Planning and Transportation (CPTC) Committee meeting, members continued discussion of the draft high density residential (HDR) zoning district that staff is developing at the committee's request.

In response to committee requests from the March 11 meeting, staff presented slides depicting major and minor arterial roads throughout Urbanized Norman. Staff also presented a map showing a smaller area in the Core Area where high density land uses could be feasible. This map also depicted the arterial and collector roads in the area. Lastly, staff presented a map depicting locations within this smaller area where draft ordinance requirements for location could be met. These proposed requirements include:

- Sites located on arterial road
- Site located on collector road within two blocks of an arterial road as long as all intervening land uses between the proposed site and the arterial road are non- residential

After committee discussion of progress-to-date, Mayor Rosenthal suggested that the ordinance should be divided into three categories of density: low, medium and high. After some discussion nearly everyone supported this idea and agreed on specific definitions of height, density and different ways of providing parking for each of the three categories. Members reaffirmed their agreement that a traffic study should be required for all three categories and that all three categories would be reviewed by the Design Review Committee. They also acknowledged that parking requirements would be different for each of the three categories, with the possibility of developing a fee-in-lieu of parking option for the middle category. Staff was directed to revise the draft ordinance to reflect these expanded categories and bring this back to the committee in three weeks on May 13, 2013.

DISCUSSION

Attachment A is the draft ordinance revised to include the three categories the committee requested. The idea of three categories within the ordinance is intended to provide options for intensities of use depending on the neighborhood context of a proposed development site. We are presenting the three categories in table format

to highlight the differences. The proposed density categories and their conditions are described below:

HDR-1

The lowest intensity option, HDR-1, is designed to allow development of a lower height and density that could be compatible with predominantly single family land use or other lower intensity uses. HDR-1 could accommodate mixed uses in some locations but could also be residential use only. Appropriate setbacks for HDR-1 would be determined by the setting.

Height	Density	location	Parking	Application Options
Up to 45 feet	40 du/ac	Arterial or collector street	Surface	Allows increased density while minimizing the impact on surrounding neighborhood character

HDR-2

The middle intensity option, HDR-2 would allow the option of mixed use development and would be located on arterial streets or collector streets as long as intervening land uses are not residential.

Height	Density	location	Parking	Application Options
Up to 55 feet	75 du/ac	Arterial or collector street within 2 blocks of arterial, provided intervening land uses are non-residential	Structured parking	Could be appropriate for neighborhoods edges, higher intensity commercial districts such as downtown or for commercial retrofits

HDR-3

The highest intensity option, HDR-3, would require mixed use development and would be located on arterial streets only.

Height	Density	location	Parking	Application Options
Up to 75 feet	unlimited	Arterial street	Structured parking	Could be appropriate for higher intensity commercial districts such as downtown or for commercial retrofits.

Parking

At the committee's request, staff researched the possibility of creating a fee-in-lieu of parking option for the HDR-2 category as a way to provide flexibility for developers and to build a funding base for the construction of public parking facilities in the future.

What is a Fee-in-Lieu?

Some cities offer developers the option of paying a fee-in-lieu of providing required parking. Cities then use that revenue to replace the private parking spaces that developers would have provided. In lieu-fees do not impose a cost on developers. Minimum parking requirements impose the cost in the form of initial land purchase, construction, maintenance, taxes, etc. In-lieu fees merely give developers an alternative to providing the required parking.

Internet searches on the subject of in-lieu-of fees for parking yielded few sources of information with one notable exception. UCLA urban planning professor Donald Shoup has written extensively on the subject of the economics of parking. Attachment B, "In Lieu of Required Parking" was appended to a Downtown Parking Study Phase II created for the City of Ann Arbor, Michigan in 2007.

Shoup's findings were gleaned from a survey of 46 cities throughout North America, the UK, Europe, Iceland and two cities in South Africa that have fee-in-lieu parking programs. Survey results were organized in three sections: 1) advantages and disadvantages 2) how cities establish fees and 3) issues that arise administering the programs.

How Would a Fee-in-Lieu System Work?

Shoup describes two approaches to setting fees-in-lieu of parking for private development.

- Calculate the appropriate fee per parking space on a case-by-case basis for each project
- Have a uniform fee-per-space for all projects

Both methods require a realistic, market-based approach to establishing market value of the space used for parking with the assumption that these fees will be used to provide public parking elsewhere. Of the 46 cities Shoup surveyed, 37 of them set uniform fees. Shoup theorizes this is because set fees offer certainty, simplicity and equity. He also observes that most cities' in-lieu fees *do not* cover the full cost of providing a public parking space. Instead, cities seek to set fees high enough to pay for public parking but low enough to attract development. In the cities Shoup surveyed in the 1999 study, in-lieu fees ranged from $2000 to $27,520 per parking space.

Fees-in-Lieu vs. Impact Fees
Parking impact fees are related to fees-in-lieu and are another approach used to offset the impacts of development. An impact fee is a charge on new development that is used to pay for the construction or expansion of off-site capital improvements that are necessitated by and benefit the new development. Both in-lieu fees and impact fees are legally justified by the nexus between the fees and providing public parking spaces. Shoup writes that most American cities (a few foreign cities were used in the study) offer the fee-in-lieu option only when they are prepared to spend the fee revenue to provide new public parking facilities.

Shoup also describes cases where fees-in-lieu are employed to reduce parking demand, making other transportation improvements such as public transit, improved pedestrian and cycling infrastructure. He observes that this approach can cost far less than increasing parking supply and also provides far-reaching benefits to the entire community.

As illustrated by Shoup's research, a fee-in-lieu of parking strategy can be an effective means to achieve defined community objectives or strategies with respect to parking, particularly if the strategy includes expansion of identified public parking options or conversely, if the strategy is to reduce traffic by eliminating the parking option in favor of increased public transportation options or bike paths. At present Norman's objectives in this regard are not clear. Development of Norman's community objectives with respect to parking may require more research and time and community dialogue to devise and identify community objectives and then to implement a system that is equitable and achieves those community objectives with respect to parking. However, staff does believe the HDR Ordinance can move forward by addressing parking with the following parking requirements to accompany HDR 1-3:

category	mode	number
HDR -1	surface	1 space/BR
HDR-2	structured	1 space/BR
HDR-3	structured	1 space/BR

RECOMMENDATION:
Staff believes the attached draft addresses the comments made at the last CP&T Committee meeting. Staff will be present to address additional questions or concerns as needed.

Questions before the CPT Committee on May 13:

1. Does the committee support the three HDR categories as presented?

2. Is the committee ready to recommend that the HDR ordinance move forward in the process which would conclude with public hearings at Planning Commission and City Council?

ATTACHMENTS

Attachment A:
Revised draft ordinance of High Density Residential to include HDR-1, HDR-2, and HDR-3

Attachment B:
Article: "In Lieu of Required Parking" written by Donald C. Shoup

SEC. - HDR-1-3, HIGH DENSITY RESIDENTIAL DISTRICTS-1-3

1. General Description. The High Density Residential (HDR) zones are a series of multi-dwelling zones that allow increased residential density within or adjacent to residential neighborhoods or commercial districts but with height and intensity limitations that preserve surrounding neighborhood character and sense of place. Generally, HDR-1-3 zones will be located on arterial or collector streets that can support residential, commercial or mixed land uses.

This creates three districts, HDR-1, HDR-2, and HDR-3. General regulations refer to all three categories and specific regulations for each district are listed.

HDR-1-3 zones are intended to allow some increased density in multifamily residential uses or mixed uses that present durable, high quality, compatible, architectural facades that are close to the street, with parking, private open space, and service uses internally located to minimize their impact on the surrounding neighborhoods.

2. Permitted Uses—HDR-1

(a) Apartments
(b) Condominiums
(c) Townhouses
(d) Mixed Use Buildings
(e) Restaurants with no drive-through service
(f) Retail sales and service operated completely within enclosed building

Permitted Uses—HDR 2

(g) Apartments
(h) Condominiums
(i) Townhouses
(j) Mixed Use Buildings
(k) Restaurants with no drive-through service
(l) Retail sales and service operated completely within enclosed building
(m) Parking garages

Permitted Uses—HDR-3

(a) Apartments
(b) Condominiums
(c) Townhouses
(d) Mixed Use Buildings
(e) Restaurants with no drive-through service
(f) Retail sales and service operated completely within enclosed building
(g) Parking garages

3. Density, Area, Height, Bulk and Coverage Standards.

(a) Density. The number of dwellings per unit of land, also called the density, is controlled so that housing can be compatible with surrounding residential land uses and can match the availability of public services, nearby commercial areas and the carrying capacity of the land.

Density—HDR-1
Maximum density in HDR-1 is 40 dwelling units per acre (du/ac)

Density—HDR-2
Maximum density in HDR-2 is 75 du/ac.

Density—HDR-3
There is no maximum density/du/ac in HDR-3.

(b) Building Height. Refer to the Zoning Ordinance 22:450(16) for definition of building height. Height standards serve several purposes:

(1) They promote a reasonable building scale and relationship of one building to another;
(2) They promote options for privacy for neighboring properties; and
(3) They reflect the general building scale of multi-dwelling development in the city's neighborhoods.
(4) The following regulations apply:

Building Height—HDR-1: up to 45 feet.

Building Height—HDR-2: up to 55 feet.

Building Height—HDR-3: up to 75 feet.

(5) Allowable Height Exceptions. Architectural features, such as pitched roofs, gable roofs, elevator over-runs, and similar features may exceed the maximum building height by six (6) feet, but not for more than 50% of any one façade.

(c) Setback from a Public Right of Way or Property Line to Building Face.

(1) Purpose. Building setback regulations serve several purposes:
(i) They maintain light, air, and separation for fire protection, and access for fire fighting;
(ii) They reflect the general building scale and placement of multi-dwelling development in the City's neighborhoods;
(iii) They promote options for privacy for neighboring properties;
(iv) They provide adequate flexibility to site a building so that it may be compatible with the neighborhood, fit the topography

of the site, allow for required outdoor areas, and allow for architectural diversity; and

(2) Standards.

(i) Minimum Setback from public right-of-way or property line: zero or 10 feet, provided the 10 feet is used for pedestrian amenities.

(ii) Balconies, porches and main building entrances may penetrate the building setback without meeting the 10-foot setback requirement.

(iii) Awnings may extend over the public-right-of way on the ground floor at a minimum height of seven (7) feet.

(iv) Balconies above the first floor may extend over the public right-of-way.

(v) Minimum Setback from adjacent non-residential zoning districts: zero

(vi) Minimum Setback from adjacent residential zoning districts buildings: ten (10) feet.

Setbacks—HDR-1
Maximum Front Yard Setback in HDR-1 shall not exceed the prevailing residential setback on the block or 25 feet, whichever is greater.

4. Architectural Standards.

(a) Purpose. There is no particular architectural style proposed for high-density multifamily residential structures. The primary focus should be on constructing a quality residential environment which encourages high quality design that contributes to the overall community character of the area.

(b) General Standards. The design standards will assist the designer in understanding the city's goals and objectives for high quality, higher density residential development. The design standards are general and may be interpreted with some flexibility in their application to specific projects. Important defining elements include the following:

(1) Compatibility. It is desirable that high density building and site design provide features that are compatible within the context and character of the neighborhoods in which they will be constructed.

(2) Architectural compatibility. New multifamily development in existing neighborhoods should incorporate architectural characteristics and maintain a compatible scale with surrounding structures, including similar window and door types and detailing, facade detail, ornamentation, and decoration, materials, color, roof style and pitch and porches.

(3) Scale. Because multifamily projects are taller than one story, their bulk can impose on surrounding uses. The scale of such projects should be considered within the context of their surroundings.

(c) Building Exterior Walls and Facades, and Materials.

(1) Building Massing, Exterior Walls and Street-Facing Facades.

(i) Building exteriors should create the feeling of permanence.

(ii) Long, unbroken facades, with no offsets or articulations are not allowed.

(iii) Buildings shall reflect the materials, massing, forms of the area they are built in, and should be reflective of, but not identical to, the traditional character of the surrounding development.

(iv) Buildings with flat roofs should have projecting cornices to provide a strong cap to the building.

(v) Building forms should emphasize the vertical structure of the building through the use of piers and columns. Building piers shall extend from the ground to the cornice. Windows shall not interrupt the vertical piers. The floor lines shall be expressed on the façade.

(vi) Building corners should be emphasized with architectural forms and architectural detailing, changes of material, or changes in the vertical face of the building. Corners shall be detailed from both sides.

(vii) Wall and roof lines shall be broken to avoid continuous planes. Breaks in wall planes and roof lines shall vary **depending on the zoning category as follows:**

[a] HDR-1: every 25 feet.

[b] HDR-2: every 50 feet

[c] HDR-3: every 50-100 feet

(viii) Building massing and facades shall be broken up with articulation, setbacks, and protrusions that reflect the internal structure and make linkages to the street.

(ix) Walls shall be articulated on all sides of a building using different wall planes, material changes, color differentiation, and architectural details.

(x) Building main entries should be visible and accessible from the primary pedestrian right-of-way and intersect with the street to form community oriented space.

(xi) The ground floor of buildings should be scaled to the pedestrian. This can be done with the addition of glazing, roof forms, awnings, cornices, porches, and other elements to create a human-scaled environment at the base of the building.

(xiii) Individual units should be recognizable within the façade of the building. This can be accomplished with the use of balconies, setbacks and projections which help articulate individual dwelling units or collections of units and by the pattern and rhythm of windows and doors

(xiv) Window air conditioner units of any kind are not allowed.

(d) Materials.

(1) Purpose. Buildings shall be attractive, durable and be compatible with the character of the surrounding neighborhood. To ensure this compatibility, buildings shall be constructed of high-quality materials and require minimum maintenance. In addition, all sides of the building should be designed as a whole, in terms of materials usage, quality and level of design. This is referred to as 'four-sided architecture'.

(2) Allowable Exterior Materials. Building materials such as brick, stone, stucco or manufactured materials such as synthetic stone or cement board are required. Wood siding may be considered for use in limited applications, but not as a primary building material.

(3) Required Masonry. At least 80% of the total exterior wall area of each building elevation, excluding windows, doors and related trim, shall be brick, stone, stucco, or synthetic stone. The balance of the building façade can be lighter materials such as stucco, EIFS, cement board or wood. In addition to the required 80% referenced above, a masonry base on the ground level where the structure contacts grade shall be established on each façade of at least 36 inches. This base may be penetrated by windows, doors, storefronts, or accent materials only. Materials for the base shall be brick, stone, stucco, or synthetic stone.

(4) Prohibited Exterior Materials. The following building materials are prohibited for exterior use:

(i) Rough sawn wood
(ii) Board and batten wood
(iii) Vinyl siding
(iv) Barrier-type EIFS
(v) Tilt-up concrete panels

(vi) Painted concrete block
(vii) Pre-finished or painted corrugated metal siding
(viii) Standard single or double-tee concrete systems
(ix) Smooth-faced gray or stained concrete block
(x) Translucent, Plexiglas, glossy metal or backlit vinyl awnings or illumination of such awnings
(xi) Reflective or mirrored glass

(5) Building Rehabilitation. The rehabilitation of existing buildings shall comply with the requirements for exterior building materials. Use of alternate exterior materials for the rehabilitation of existing buildings is subject to approval by the Design Review Committee.

(e) Roofs, Cornice Lines, Parapets.
(1) General Requirements. Roof styles, shapes, and materials are a defining image for a neighborhood and can contribute to the unique visual character of a neighborhood.
(2) Roofs
(i) Roof elements should be used to break up masses of buildings and for screening of roof top mechanical units.
(ii) Wall and roof lines shall be broken to avoid continuous planes.
(iii) Structural roof framing elements are encouraged to be expressed on the building's exterior.
(iv) Roof forms shall utilize single, double, and/or asymmetrical (salt box) gable and hip roofs. Hip and shed roofs are permitted on smaller secondary roofs. Gambrel and mansard roofs are prohibited.
(v) Flat roofs are acceptable, but must be concealed with a parapet. Parapets must have layered cornice treatments along their entire length. Parapet walls of varying heights shall return to the interior of the building to provide the appearance of substantial building depth, avoiding the appearance of two dimensional facades.
(vi) Roof forms should be designed as to denote building elements and functions such as pedestrian entrances, arcades and porches; overhanging eaves and sloped roofs. Three or more roof planes are encouraged.
(vii) Pitched Roof Materials shall be concrete, slate, heavy composition or asphalt shingles, terra cotta glazed or unglazed, or sheet metal which are in character and are currently being utilized in the existing neighborhood as a traditional roofing material. All roofing colors shall be muted

or natural colors. The use of bright or primary colors is prohibited. Wood shake shingle roofing is prohibited.

(viii) Exposed roof drains and downspouts are not allowed, except where they match the architectural style and traditional character of the building architectural style. When they occur, downspouts will be integrated architecturally with the design of the building.

(ix) Sloped roofs should be designed to prevent snow and ice buildup and prevent ice melt occurring over building entries.

(f) Windows, Doors, Porches, Decks and Balconies.

(1) General Requirements. Window and door standards are a key aesthetic consideration in creating a quality and authentic façade.

(2) Windows

(i) Windows on the ground floor may be punched, or banded (maximum (3) before separated by pier on façade)

(ii) Windows on the second and above floors must be punched windows. Grouping of windows is acceptable provided that defined mullions which emphasize the vertical proportion of the window are used.

(iii) The windows on the ground floor shall use trellises, awnings, and canopies or overhangs to provide shade and weather protection along the façade, and to create a pleasing streetscape experience.

(iv) Window proportions should be based on a vertical or square unit.

(v) Openings, divisions, supports, and trim are to be appropriately scaled to the structural expression of the wall on which they are located.

(vi) Window designs are to be applied throughout all elevations of a building through the use of consistent proportions, modular elements and/or similar pane designs. Approved windows types include:

[1] Fixed
[2] Single-hung
[3] Double-hung
[4] Awning
[5] Casement

(vii) Clad wood windows are recommended. Cladding should be maintenance free metals.

(viii) Prohibited windows include:

[1] Glass block

[2] Jalousie

[3] Hopper

(ix) Clear or fretted glass shall be used.

(x) Shutters used as an accent element to the windows and trim must be sized to actually cover half or all of the window, depending on the style used, and must appear to be a fully functioning shutter. Actual working shutters are allowed. Shutters must be painted a trim or accent color different than the wall color.

(g) Doors.

(1) Front entries shall be a prominent feature on the façade. Building entrances should conform to all applicable ADA accessibility requirements, be well lit, and convey a sense of welcoming and friendliness. This can be achieved with the detailing, color of doors and adjacent frames, slightly recessed lights to highlight the entrance, and quality hardware.

(2) Door Massing and size should be appropriately scaled to the wall where they are located.

(3) Front Building Entry Doors shall be solid core if wood and should be wood, metal clad wood, or steel. Clad doors shall be painted. Glass doors and doors with glass lights shall be acceptable.

(h) Porches, Decks, Balconies.

(1) Balconies, porches, and patios are to be used to strengthen the connection between the indoor private living space and the outdoor, public neighborhood environment, including both the ground level and floors above.

(2) Ground level and floors above are encouraged to have balconies and porches and shall be incorporated into the architectural façade as integrated elements.

(3) The design of the porches, decks, and balconies shall take into consideration shade, sun, wind, snow, ice, and other climatic considerations.

(4) Floors of balconies and porches that are visible from off-site are to be carefully finished using appropriate materials including wood, stone, or colored, patterned, or stamped concrete. In addition, all ground level

patios and porches shall provide landscape and partial screening for each porch or patio.

(5) Balconies, porches and patios. The incorporation of balconies, porches and patios within multifamily structures is encouraged for both practical and aesthetic value.

(6) Balcony, deck, porch and railing designs are to be designed to create a sense of distinction between buildings within a neighborhood, but they should take into account the design of other accents within their buildings.

5. Screening for Exterior Mechanical Equipment, Electrical Equipment, Service Area, and Trash.

(a) Screening Requirements. All mechanical and electrical equipment, whether ground mounted or roof mounted, service areas, loading docks, trash areas, recycling and solid waste disposal area shall be screened from view utilizing landscaping, architectural screen walls, roof enclosures, parapets, or other full screening materials.

(1) Architectural screen walls shall consist of masonry or stucco walls which reflect the architectural character of the building(s). Enclosures shall be a minimum of 2'-0" above equipment to be screened.

(2) Deciduous and evergreen layered plantings of varying height (trees and shrubs) shall be used to soften and screen service and mechanical areas where possible. Landscape screening shall be a compliment to the architectural screen walls. All landscape materials shall meet the landscape standards in this ordinance.

(3) Solid waste container enclosures shall meet applicable standards in the City of Norman Engineering Standards and Design Criteria and the requirements of utility providers.

(4) All free standing enclosures require gates for access. All gates shall be constructed of durable materials with 90% or greater opacity. Gates shall be architecturally compatible with the building and enclosure design. Chain link, vinyl slats or wood materials are not permitted.

(5) Heavy pavements and pavement sections shall be provided as necessary to prevent damage from trucks with heavy wheel loads.

(6) Mechanical equipment on the roof shall be screened from the center of the right-of-way on all adjacent streets. All mechanical equipment shall be painted the same unobtrusive color and be non reflective.

6. Open Space.

(a) General Requirements. Open space is required to be a minimum of 20% of the total gross site area within the project property lines.

(1) Areas allowed to be counted as open space include: walks, trails, plazas, gathering places, landscaped areas, pedestrian amenities, and other pedestrian oriented paving areas within project property lines.

(2) Open space areas with pedestrian access, paths and gathering spaces shall follow the Americans with Disabilities Act (ADA) Accessibility Guidelines.

(3) Required open space areas may be provided as individual, private outdoor areas, such as patios or balconies, or as common, shared outdoor areas, such as courtyards and play areas. There also may be a combination of individual and common areas.

(4) Areas used for pedestrian circulation to more than one dwelling unit do not count towards meeting the open space standard.

(5) Minimum Size Requirement. At least forty-eight (48) square feet of outdoor area is required for each dwelling unit on the site.

(i) Upper floor balconies. These areas need to be useable, taking care to minimize overlook to adjacent private space below.

(ii) Individual unit areas. Where a separate outdoor area is provided for each individual unit, it must be a minimum of thirty (30) square feet. The outdoor area must be directly accessible to the unit.

(iii) Common areas. Where outdoor areas are common, shared areas, each must be designed so that it contains at least 500 square feet in area and so that a 15-foot x 15-foot square will fit entirely within it.

(6) User amenities. User amenities, such as tables, benches, trees, shrubs, planter boxes, garden plots, drinking fountains, spas, or pools, may be placed in an outdoor area. Common, shared outdoor areas may also be developed with amenities such as play areas, plazas, roof-top patios, picnic areas, and open recreational facilities.

(7) Enclosure. Required outdoor areas may be covered, such as a covered patio, but they may not be fully enclosed.

7. Landscape.

(1) Purpose. The standards for landscaped areas are intended to enhance the overall appearance of residential developments in high density multi-dwelling zones. Landscaping is intended to improve the residential character of the area, break up large expanses of paved areas and structures, provide privacy to the residents, provide separation from streets, reduce heat island effects, and reduce stormwater run-off.

(2) Minimum Landscaped Areas. A minimum of 10% of the project site area shall be a landscaped area which is included in the 20% required open space. This area shall include all site areas that contain landscaped beds and turf areas. Water features may be counted in the landscape areas. Roof top gardens, rain gardens, and green roofs may also be counted as landscaped areas.

a. All landscape areas shall be designed to provide relief, scale, interest and overall quality to the living environment for the site.
b. Landscaping should follow Xeriscaping Design as much as possible. This landscaping model utilizes native plant species that are drought tolerant and adapted to our regional climate. Acceptable plant materials may be found in the Appendix F of the Zoning Ordinance.
c. Irrigation shall be required for all landscape areas. All irrigation shall be automatic drip/spray, with a programmable program controller with wind and rain sensor shut-off. All plants shall be grouped into similar water zones. Potable and/or non-potable irrigation water may be used.
d. The overall tree requirement shall be a minimum of 1 tree per 500 SF of minimum required landscaped area. The overall shrub requirements shall be a minimum of 10 shrubs per each tree required.
e. All street or drive frontages shall be required to have deciduous shade trees planted an average of 1 per 50 lineal feet of frontage per side. Trees shall be a minimum 2-1/2" caliper. Tree locations may be modified to take into account site distances and easements, per code requirements, signage, lighting, or other obstructions. This requirement shall be credited toward the overall minimum required tree count.
f. All shrubs shall be located in edged and mulched landscape beds. All shrubs should be massed in as few beds as is practical. A minimum of eleven (11) shrubs per bed is required.
g. Turf areas shall be allowed.

8. Pedestrian Standards.

(a) General Requirements.

(1) Pedestrian connections are required throughout the project to connect internal pedestrian areas to the public sidewalk system.

(2) Pedestrian walkways should be separate and distinct from parking areas and drive aisles and include landscaping/trees, lighting and decorative paving at crossings.

(3) Future connections to adjacent development parcels shall be provided for future connectivity if appropriate.

(4) Coordinated site furnishings will be used to unify the development. Additional amenities may be used to help add to the overall quality of the experience of the development.

(b) Pedestrian Paving.

(1) Pedestrian areas shall encourage and facilitate the ease of use of pedestrians through the use of paved walks, plazas, and other amenity areas.

(2) Pedestrian paving materials shall be a minimum of concrete. Pavers, stamped, colored or enhanced pedestrian paving is encouraged.

(3) All pedestrian areas shall be designed to be accessible in accordance with ADA requirements.

(4) All internal sidewalks shall be a minimum of five (5) feet in width.

9. Site Development Standards.

(a) General Requirements.

(1) Location of High Density Uses.

Location of HDR-1
HDR-1 zones must be located on an arterial or collector street.

Location of HDR-2
HDR-2 zones must be located on an arterial street or located on a collector street within two blocks of an arterial street as long as all intervening land uses between the development site and the arterial street are non-residential. All parking drive access shall be at a minimum onto a collector street.

Location of HDR-3
HDR-3 zones must be located on an arterial street.

(b) All HDR zones must provide direct access to sidewalks from all non-emergency building entrances that connect to the public circulation system.

(c) Primary pedestrian circulation and access shall be at grade. Pedestrian entry routes that are interrupted by driveways shall be distinguished from the driveway surface by decorative paving.

(b) Streets and Vehicular Access. The development must provide improvements in the public right-of-way along all public streets adjacent to any side of the development. A minimum of a six (6)-foot planting strip and a ten (10)-foot sidewalk is required from the property line out to the back of curb. A transition must be provided from these improvements to existing adjacent sidewalks. Planting strips can have an average minimum width of six (6) feet to accommodate a meandering sidewalk where applicable. These requirements are in addition to the minimum open space and landscaping requirements.

(d) Parking and Vehicular Access

(1) Parking Standards.

(a) Development in all HDR zones shall provide one (1) off-street parking space per bedroom.

Parking Standards—HDR-1

(a) Off-street parking may be provided by surface parking. Off-street parking shall not penetrate the front setback.

(b) Surface parking lots constructed with developments in the HDR-1 zoning district shall comply with Section 431.8, Landscaping Requirements for Off-Street Parking Facilities in the Zoning Ordinance.

Parking Standards—HDR-2

(a) Structured parking is required.

Parking Standards—HDR-3

(a) Structured parking is required.

(3) The following standards shall apply to structured parking:

(i) Parking structures shall be architecturally integrated into the buildings they serve, with architectural finishes that match the residential portion of the building. They shall be designed to match the

overall architectural theme of the development while providing a visually engaging environment for the pedestrian.

(ii) For buildings with parking accessed from the front of the building, no more than 25% of the site frontage facing a street or pedestrian walkway should be devoted to garage openings.

i. Architectural screening shall be used for all exposed areas of the garage to screen cars, head lights, ramps, ramping levels, interior of the garage, and other elements that indicate the structure and operations of the garage.

ii. Garage entrance designs shall reflect the architectural style of the buildings.

iii. Interior drainage systems shall be designed as part of the storm water system.

iv. Lighting to achieve adequate levels for safety. Full cut-off lighting shall be used rather than lamps that create point source glare.

v. Signage shall clearly indicate entrances, exits, elevators, and parking restrictions.

vi. Minimum overhead clearance for the parking structure shall be eight feet six inches (8'-6").

(4) For non-residential uses, requirements of Section 22:431.5, Off-Street Parking Requirements, of the Zoning Ordinance shall be followed.

(5) Streets and Alleys. Streets and alleys should not only connect internally but should also be publicly accessible and connect to adjacent streets and neighboring development.

(d) Utilities.

(1) All site utilities shall be underground.

(2) All site utility boxes, structures, etc., shall be located in screened areas or shall be screened from view, while maintaining required access for the utility providers.

(3) All meters, air conditioning units, etc., shall be screened per the requirements of Section 5 of these guidelines.

(e) Site Furnishings and Amenities. Site amenities shall be included in the project. Site amenities may include, but are not limited to, seating, bike racks, benches, tables, trash receptacles, specialty lighting, freestanding planters, fountains, swimming pools, specialty paved areas, trellis and overhead

structures. Bike racks, benches, tables, and trash receptacles shall be the same for manufacturer make, model, and color for the entire project.

10. Lighting Standards.

(a) As required and regulated by the Zoning Ordinance.

11. Signage Standards.

(a) As required and regulated by the Sign Code.

12. Storm Water

(a) As required and regulated by the Engineering Standards and Specifications.

13. Traffic.

(a) A Traffic Study shall be required with all proposals for HDR-1, HDR-2, and HDR-3 zoning, regardless of estimated vehicle trips per day (VPD) associated with development. Traffic studies for HDR-1, HDR-2, and HDR-3 shall conform to current Engineering and Design Criteria for Traffic Impact of Developments.

14. High Density Design Review Committee.

(a) Establishment. There is hereby created the High Density Design Review Committee.

(b) Powers. The High Density Design Review Committee shall have the following powers:

(i) To administer the design review process for the HDR-1-3 zoning district.

(ii) To issue Certificates of Approval for property located within a HDR-1, HDR-2, and HDR-3 zoning districts.

(iii) To comment upon and provide recommendations to Planning Commission and City Council regarding the design of a high density project.

(c) Membership, Terms and Organization.

(i) Membership. The High Density Design Review Committee shall consist of five (5) members. These members shall be appointed by the Mayor with the approval of the City Council, and shall be composed as follows:

(1) Two (2) members shall be a combination of registered architects, landscape architects, urban planners or licensed civil engineers.

(2) Two (2) members shall be licensed real estate professionals, with demonstrated knowledge of urban design principles.

(3) One (1) member shall be resident citizens of the City of Norman.

(4) All members of the Committee shall serve without compensation..

(ii) Terms of Membership.

(1) The term of each Committee member shall be for three (3) years, or until his or her successor takes office. Members may be appointed to fill the remainder of vacant terms. No member shall serve more than three (3) consecutive terms. Members who have served three (3) consecutive terms may be reappointed after having rotated off the Commission for at least one (1) full three (3) year term.

(2) Members shall serve staggered three (3) year terms in accordance with their initial appointments. At the on-set of the Committee creation, two (2) members shall serve one (1) year, two (2) members shall serve two (2) years, and three (3) members shall serve three (3) years.

(3) Removal of Members. Members may be removed by the Mayor with the consent and approval of the City Council, for inefficiency, neglect of duty, or malfeasance in office. The Mayor shall file a written statement of the reason for the removal. Members may resign with the Mayor's acceptance of a letter of resignation.

(4) Staff Assistance. The Planning Director and Staff shall assist the Committee in discharging its duties. The Planning Director or designee shall attend and keep written findings and records of all meetings. Staff shall act in an advisory capacity only and may participate in the Committee's discussions, but shall have no vote.

(iii) Meetings and Procedures

(1) Organization and Rules. The Committee shall hold meetings as required when an application for a high density project is submitted. Staff shall keep a record of the Committee's transactions, findings and determinations.

(2) Quorum. Three (3) members of the Committee shall constitute a quorum for the transaction of business, unless there is a vacancy in the membership, in which case, it shall be a majority of the active members. Action taken by the Committee at any meeting shall require the affirmative vote of a majority of members present, less those members who recuse themselves, stated for the record, for any reason, in a matter before the Committee.

(3) Chair. The High Density Design Review Committee shall elect a Chair, and create and fill other offices it deems as necessary. The term of the Chair shall be one (1) year.

(d) High Density District Design Review

(i) The Design Review Committee shall consider applications for a Certificate of Approval for High Density Development in accordance with this Ordinance.

(1). The High Density Design Review Committee shall have the opportunity to comment upon and provide recommendations to the Planning Commission and City Council regarding the design of high density projects.

(2). High density projects that are located in locally designated historic districts are subject to the preservation guidelines and standards of the Historic District Overlay and such projects shall be reviewed by the Historic District Commission according to the provisions of Chapter 22:429.3. This includes proposed demolition of structures in historic districts.

(aa) For projects where demolition in a historic district is sought, the Historic District Commission will conduct a preliminary review of the proposed demolition prior to the project's review by the High Density Design Review Committee.

(bb) In cases proposing demolition in locally designated historic districts, the Historic District Commission shall appoint one of its members to participate as an ex officio member of High Density Design Review Committee for the review of that project to help ensure that proposed infill development designs maintain consistency with the historic preservation guidelines.

(cc) After a project involving demolition in a historic district receives a Certificate of Approval from the High Density Design Review Committee, said project shall submit a formal application for a Certificate of Appropriateness to the Historic District Commission.

(ii) Expirations for Certificates of Approval. Any Certificate of Approval granted by the High Density Design Committee or staff shall expire two (2) years from date of issuance, including projects reviewed by the Historic District Commission.

(e) Revisions to Certificates of Approval

(i) Staff may approve minor revisions to existing Certificates of Approval that impact less than 20% of the site or building, provided

that the revisions maintain conformance with regulations and meet the intent of the Design Criteria and any conditions associated with the approval and provided the following conditions are satisfied:

(1). Revisions do not significantly alter the work previously approved;

(3). Revisions are in conformance with regulations and meet the intent of the guidelines; and

(4). Revisions are consistent with any conditions associated with the original Certificate of Approval.

(f). Preliminary Review. In order to facilitate the timely approval of projects applicants are encouraged to request a preliminary staff review prior to formal submittal. Preliminary review is most effective at the conceptual design phase so that siting, building material and design, and other contextual impacts of the proposal may be evaluated for conformance with the regulations and guidelines of the High Density Residential District ordinance.

ATTACHMENT B

In Lieu of Required Parking

Donald C. Shoup

> No version of the system ever quite withstoothe test of additional refined observations. - Thomas Kuhn

Americans learn about free parking early, when they play Monopoly. Players buy property, build houses and hotels, pay rent, or go to jail at a toss of the dice – but in one toss out of 40 they land on "Free Parking."[1] When they grow up and drive cars, the odds of landing on fee parking increase dramatically; American motorists park free for 99 percent of all their trips.[2]

If motorists don't pay for parking, who does? Initially, developers pay for parking. Providing all the spaces necesary to meet minimum parking requirements in zoning ordinances raises the cost and reduces the density of development. The cost of parking is then shifted into higher prices or lower values for everything else -- so everyone pays for parking indirectly. Residents pay for parking through higher prices for housing. Consumers pay for parking throughhigher prices for goods andservices. Employers pay for parking through higher office rents. Workers pay for parking through lower cash wages. Property owners pay for parking throughlower landvalues. Because motorists park free for 99 percent of all trips, only in our role as motorists do we not pay for parking. Everyone but the motorist pays for parking.

Minimum parking requirements in zoning ordinances collectivizethe cost of parking, while market prices for parking individualize this cost. Unless the price of parking gives motorists an incentive to economize, the cost ofparking does not influence decisions on whether to own or drive a car. With the cost of parking hidden in the prices of other goods and services, peoplecannot choose to pay less for parking by using less of it.

Parking requirements generally hide the cost of parking within the cost of development, butin one case this costis explicit: Some cities offer developersthe option of paying a fee in lieu of providing the required parking.For example, Palo Alto, California, allows developes to pay the city a fee of $17,848 for each required parking space thatis not provided. The city then uses the revenue for public paking spacesto replace the private parking spaces that developerswould have provided.

In this paper, I use cities' in-lieu fees to estimate the developers' costof complying with parking requirements. I then examine another promising in-lieu option:allow developers to reduce parking demand rather than increase the parking supply. Examination of an Eco Pass program in California shows that payingthe transit fare for commuters who arrive by bus costs far less than providing the parking required for commuters who arrive bycar.

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ABSTRACT

Some cities allow developers to pay a fee in lieu of providing the parking spaces required by zoning ordinances, and use this revenue tofinance public parking spaces to replace theprivate parking spaces the developers would have provided. This paper presents a survey of in-lieu programs in 46 cities in the United States, Canada, the United Kingdom, South Africa, Germany, and Iceland. These in-lieu programs reduce the cost of development, encourage shared parking, improve urban design, and supportthistoric preservation. The in-lieu fees also reveal that the cost of complying with minimum parking requirements is more than four times the cost of the impact fees that cities levy for all other public purposes combined. The high cost of required parking suggests another promising in-lieu policy: allow developers to reduce parking demand rather than increase the parking supply. Examination of an Eco Pass program in California shows that reducing parking demand can cost far lessthan increasing theparking supply.

Donald C. Shoup is a professor of urban planning and the director of the Institute of Transportation Studiesat the Schoolof Public Policy and Social Research, University of California, Los Angeles; shoup@ucla.edu.

■ A Survey of In-Lieu Parking Programs

I have surveyed the in-lieu parking programs in 46 cities: 24 in the United States, seven in Canada, six in the United Kingdom, six in Germany, two in South Africa, and one in Iceland (see Table 1)[3]. The ordinances and supporting documents for the in-lieu programs were examined, and officials who administer the programs were interviewed. The survey results are summarized in three sections: (1) the advantages and disadvantages of in-lieu fees, (2) how cities set the fees, and (3) issues that arise in administering the programs.

Advantages of In-Lieu Fees

Officials in the surveyed cities reported that in-lieu fees have five major advantages for both cities and developers.

1. *A new option.* In-lieu fees give developers an alternative to meeting the parking requirements on sites where providing all the required parking spaces would be difficult or extremely expensive.
2. *Shared parking.* Public parking spaces allow shared use among different sites where the peak parking demands occur at different times. Shared public parking is more efficient than single-use private parking because fewer spaces are needed to meet the total peak parking demand. Shared parking also allows visitors to leave their cars parked while making multiple trips on foot, and is one of the easiest ways to make better use of scarce urban land.
3. *Better urban design.* Cities can put public parking lots and structures where they have the lowest impact on vehicle and pedestrian circulation. Less on-site parking allows continuous storefronts without "dead" gaps for adjacent surface parking lots. To improve the streetscape, some cities dedicate the first floor of the public parking structures to retail uses. Developers can undertake infill projects without assembling large sites to accommodate on-site parking, and architects have greater freedom to design better buildings.
4. *Fewer variances.* Developers often request parking variances when providing the required parking would be difficult. These variances create unearned economic windfalls, granted to some but denied to others. If developers can pay cash rather than provide the required parking, cities do not have to grant parking variances and can therefore treat all developers consistently.
5. *Historic preservation.* In-lieu fees allow adaptive reuse of historic buildings where the new use requires additional parking that is difficult to provide. The in-lieu policy therefore makes it easier to preserve historic buildings and rehabilitate historic areas.

Disadvantages of In-Lieu Fees

Officials in all the surveyed cities recommended in-lieu fees, but some reported that developers were at first skeptical of them. The following four points summarize the potential disadvantages mentioned by developers.

1. *Lack of on-site parking.* Parking is a valuable asset for any development. A lack of on-site, owner- controlled parking can reduce a development's attractiveness to tenants and customers. While a lack of on-site parking is a real disadvantage, developers who are concerned about this problem can always provide the parking rather than pay the fee.
2. *High fees.* Cities may not construct and operate parking facilities as efficiently as the private sector. For example, cities may pay extra to improve the architectural design of parking lots and structures. The resulting in-lieu fees may be high. Although some cities charge high in-lieu fees, most set their in-lieu fees lower than the cost of providing a public parking space. Because the fixed cost for ramps, elevators, stairwells, and curb cuts can be spread among more spaces in large public parking structures, economies of scale in building these structures can further reduce the in-lieu fees.
3. *No guarantees.* Cities may intend to use the in-lieu fee revenue to finance public parking, but they do not guarantee when or where the parking spaces will be provided. To address this concern, some cities build public parking structures before receiving the in-lieu fees. The in-lieu fees are then used to retire the debt incurred to finance the structures. Other cities return the in-lieu fees if they do not provide the parking within a certain time. A city can also

United States		**United Kingdom**
Berkeley, Calif.	Palo Alto, Calif.	Brent
Beverly Hills, Calif.	Pasadena, Calif.	Harrow
Carmel,Calif.	San Francisco, Calif.	Kingston upon Thames
Chapel Hill, N.C.	San Rafael, Calif.	Redbridge
Claremont, Calif.	State College, Penn.	Sutton
Concord,Calif.	Walnut Creek, Calif.	Waltham Forest
CulverCity, Calif.		
Davis, Calif.	**Canada**	**Germany**
Hermosa Beach, Calif.	Burnaby, B.C.	Dresden
Kirkland,Wash.	Calgary,Alberta	Frankfurt
Lafayette, Calif.	Hamilton, Ontario	Hamburg
Lake Forest, Ill.	Kitchener, Ontario	Munich
Manhattan Beach, Calif.	Ottawa, Ontario	Nuremberg
Montgomery County, Md.	Toronto, Ontario	Würzburg
Mountain View, Calif.	Vancouver, B.C.	
Mill Valley, Calif.		**South Africa**
Orlando, Fla.	**Iceland**	Johannesburg
Palm Springs, Calif.	Reykjavik	Port Elizabeth

Table I Surveyed cities with in-lieu parking fees.

delay collecting the in-lieu fees until the revenue is needed to construct the public parking.

4. *Fewer parking spaces*. In-lieu fees will reduce the parking supply if cities provide fewer than one public parking space for each in-lieu fee paid. A smaller parking supply can put an area at a competitive disadvantage. Cities may not provide one public parking space for each in-lieu fee paid, but if a city uses in-lieu fees to build public parking spaces rather than grant variances to reduce parking requirements, the in-lieu policy will increase rather than decrease the parking supply. Even if an in-lieu policy does reduce the parking supply, shared public parking reduces the parking supply needed to meet the sum of all individual peak parking demands.

While the developers' concerns cannot be ignored, officials in most of the surveyed cities said that the fees had become a form of administrative relief for developers who do not want to provide the required parking spaces. In practice, the in-lieu fees have benefitted developers by offering them an alternative to building expensive parking spaces.

How Cities Set the Fees

Cities use two basic approaches to set their in-lieu fees. The first is to calculate the appropriate fee per space on a case-by-case basis for each project. The second is to have a uniform fee per space for all projects.

One city has employed both methods. Until 1994, Beverly Hills used the first approach – a specific fee for each project. The in-lieu fee for a project was the estimated land-and-construction cost per space to build a nearby public parking structure. Between 1978 and 1992, developers paid in-lieu fees for 52 parking spaces. The per-space fee set for each project was the sum of (1) the value of 60 square feet of land within a 300 foot radius of the site, and (2) the average construction cost per space in municipal parking structures. The average fee was $37,000 per space, and the highest was $53,000 per space. Therefore, in the extreme case, a developer was willing to pay the city $53,000 for the right not to provide a parking space (Beverly Hills 1992).

This case-by-case procedure required a land-value appraisal to estimate the cost of public parking near each project that applied to pay the fee. After waiting four to six months to be notified of the fee, applicants usually appealed to the City Council to reduce it. Developers complained that not knowing the fee until after the appraisal created uncertainty in project planning. The case-by-case approach was complicated, time-consuming, and expensive.

To address these problems, Beverly Hills adopted the second approach in 1994 – it set uniform fees for all projects. These new fees are easier for the city to administer and for developers to use. Developers can easily incorporate the fee in a financial analysis and decide whether to provide the required parking or pay the fee. Thirty-seven of the 46 surveyed cities set uniform fees, probably because of their certainty, simplicity, and equity.[4]

Most cities' in-lieu fees do not cover the full cost of providing a public parking space.[5] Cities aim to set their fees high enough to pay for public parking, yet low enough to attract development. Most cities have no explicit policy regarding how often to revise their fees, and some cities' fees have not changed for many years. A few cities automatically link their fees to an index of construction costs. For example, Beverly Hills and Palo Alto adjust their fees annually by the ENR Construction Cost Index, a measure of cost inflation in the construction industry.

Kirkland has two unusual in-lieu options. Developers can pay $6,000 per parking space not provided, and the subsequent owners must purchase one parking permit in a public lot for every three spaces not provided (because the city estimates that employees use one-third of the required parking spaces). Alternatively, developers pay no initial in-lieu fee but subsequent owners must purchase a parking permit in a public lot for each space not provided. This annual option reduces the capital cost of development and encourages the use of public parking. A property owner may cancel the annual agreement at any time by providing the required on-site parking.

German cities often have a graduated schedule of in-lieu fees *(Ablösebeträge)*. The fees are highest in the city center and decline with distance from the center. For example, Hamburg's fee is $20,705 per parking space in the city center, and $11,300 in the area surrounding the center.

Vancouver has the most sophisticated method for calculating its in-lieu fee ($9,708 per space). This fee is the parking subsidy implicit in constructing a new public parking space, as measured by: (1) the land-and-construction cost per space in a public parking structure, minus (2) the present discounted value of the net operating income per space during the expected 30-year life of the structure, minus (3) the present discounted value of the residual property value of the structure, per space, after 30 years. The in-lieu fee is thus the expected net present cost per space – all parking costs minus all parking revenues – over the structure's life. Developers who pay the fees do not subsidize the city, and the city does not subsidize developers. Instead, developers subsidize parking.

To summarize, some cities set the fees on a case-by-case basis, but most set uniform fees for all development. Cities use a wide variety of methods to set their in-lieu fees, which range from $2,000 to $27,520 per parking space not provided.

Who Decides Whether to Provide Parking or Pay Fee?

Most cities allow developers to choose whether to pay the fee or provide the parking, but a few cities *require* developers to pay the fee rather than provide the parking. Officials in these latter cities cited several reasons for requiring developers to pay the fees: to centralize parking facilities, put more of the parking supply under public management, encourage shared parking, discourage the proliferation of surface parking lots, emphasize continuous shopfronts, improve pedestrian

circulation, reduce traffic congestion, and improve urban design.[6]

Some cities allow property owners to remove existing required spaces by paying in-lieu fees. This option consolidates scattered parking spaces, facilitates reinvestment in older buildings, and encourages more efficient use of scarce land previously committed to surface parking.

Most American cities reduce their parking requirements in the central business district (CBD). In contrast, German cities often have uniform parking requirements throughout the city, but allow developers in the CBD to provide only part of the required parking, and require them to pay fees for the rest. For example, developers may provide at most 25 percent of the parking required for land uses in the center of Hamburg, and must pay fees in lieu of providing the rest of the parking.

In-lieu fees in the United States are legally justified by the nexus between the fees and the cost of providing public parking spaces. American cities therefore offer the in-lieu option only where they are prepared to spend the fee revenue to provide new public parking facilities. The nexus argument does not necessarily imply that the in-lieu revenue must be used to provide public parking, however, because a variety of transportation improvements can substitute for more parking. For example, British and German cities often use the in-lieu revenue to improve public transportation.

■ The Impact Fees Implicit in Minimum Parking Requirements

Parking requirements resemble impact fees. Many cities require developers to pay impact fees to finance public infrastructure – such as roads and schools – that development makes necessary. In *Regulation for Revenue,* Alan Altshuler and José Gómez-Ibáñez (1993) define these impact fees as "mandated expenditures by private land developers, required as a price for their obtaining regulatory permits, in support of infrastructure and other public services" (vii).

Parking requirements resemble impact fees because developers provide the required infrastructure – parking spaces – to obtain building permits. In-lieu parking fees also resemble impact fees because developers pay the fees to obtain building permits, and cities then use the revenue to pay for public infrastructure – parking spaces– that the development makes necessary. When cities require developers to pay the fees rather than provide the parking, the in-lieu fees *are* impact fees.

We can use the in-lieu fees to estimate the impact fees implicit in parking requirements. Impact fees are usually levied per square foot of building area, while in-lieu fees are levied per required parking space not provided. To compare in-lieu fees with impact fees, we must first convert the in-lieu fees into a cost per square foot of building area. We can do this because cities usually require parking spaces in proportion to building area (on the assumption that building area determines parking demand). The in-lieu parking fees per square foot of building area reveal the impact fees implicit in the parking requirements themselves.

Impact Fees for Office Buildings

The parking impact fee for a land use depends on (1) the parking requirement and (2) the in-lieu fee. Table 2 presents the in-lieu fees and parking requirements for one land use – office buildings in the CBD – for 29 cities in the United States, Canada, the United Kingdom, Germany, South Africa, and Iceland.[7] The last column shows the parking impact fees implicit in the parking requirements for office buildings in these cities.[8]

The first row shows that Palo Alto's in-lieu fee is $17,848 per required parking space not provided. Palo Alto requires four parking spaces per 1,000 square feet of gross floor area for office buildings, so the in-lieu fee is equivalent to an impact fee of $71 per square foot of office space (4x $17,848 ÷1,000). A developer who does not provide any parking must pay the city a parking impact fee of $71 per square foot of office space.

The parking impact fees range from $71 per square foot in Palo Alto to $2 per square foot in Waltham Forest. The median parking impact fee is $25 per square foot of office space in the U.S. cities and $10 per square foot in the Canadian cities. U.S. cities have higher parking impact fees because they require more parking, not because they have higher in-lieu fees. The median parking requirement is 2.9 spaces per 1,000 square feet in the U.S. cities but only one space per 1,000 square feet in the Canadian cities. The median in-lieu fee is $9,125 per space in the U.S. cities and $9,781 per space in the Canadian cities.

The parking impact fees outside North America range widely. Three British cities have high impact fees ($33 to $48 per square foot) because their in-lieu fees are high. Another British city has the lowest impact fee in the table ($2 per square foot) because both its in-lieu fee and its parking requirement are low.[9] The impact fees in Germany ($32 per square foot) and Iceland ($28 per square foot) are high because their in-lieu fees are high. The parking impact fee in South Africa ($4 per square foot) is low because its in-lieu fee is low.

Do planners consider the cost of a parking space when they decide how many spaces to require? If they do, cities with higher in-lieu fees should require fewer parking spaces. But the coefficient of correlation between in-lieu fees and parking requirements in Table 2 is only 0.06, which suggests a random relationship between the cost of a parking space and the number of spaces required. Cost is no concern, it seems, when planners set parking requirements.

The average parking impact fee for the U.S. cities in Table 2 is $31 per square foot, which dwarfs the impact fees levied for all other public purposes. A 1991 survey of 100 U.S. cities found that the impact fees for all purposes (roads, schools, parks, water, sewers, flood control, and the like) averaged $6.97 per square foot of office buildings (see Altshuler and José Gómez-Ibáñez 1993, 40).[10] The average

CITY	IN-LIEU PARKING FEE ($/space)	LAND USE	PARKING REQUIREMENT (spaces per 1,000 square feet)	PARKING IMPACT FEE ($/square foot)
(1)	(2)	(3)	(4)	(5)=(2)X(4)/1,000
Palo Alto, Calif.	$17,848	Offices	4.0	$71
Beverly Hills, Calif.	$20,180	Offices	2.9	$59
Walnut Creek, Calif.	$16,373	Offices	3.3	$55
Kingston upon Thames, U.K.	$20,800	Offices	2.3	$48
Carmel, Calif.	$27,520	Offices	1.7	$46
Mountain View, Calif.	$13,000	Offices	3.0	$39
Sutton, UK	$13,360	Offices	2.7	$36
Harrow, UK	$14,352	Offices	2.3	$33
Hamburg, Germany	$20,705	Offices	1.5	$32
Lake Forest, Ill.	$ 9,000	Offices	3.5	$32
Mill Valley, Calif.	$ 6,751	Offices	4.4	$30
Palm Springs, Calif.	$ 9,250	Offices	3.1	$28
Reykjavik, Iceland	$13,000	Offices	2.2	$28
Claremont,Calif.	$ 9,000	Offices	2.9	$26
Concord, Calif.	$ 8,500	Offices	2.9	$24
Davis, Calif.	$ 8,000	Offices	2.5	$20
Orlando, Fla.	$ 9,883	Offices	2.0	$20
Kitchener, Ontario	$14,599	Offices	1.3	$19
Chapel Hill, N.C.	$ 7,200	Offices	2.5	$18
Kirkland, Wash.	$ 6,000	Offices	2.9	$17
Hermosa Beach, Calif.	$ 6,000	Offices	2.6	$16
Berkeley, Calif.	$10,000	Offices	1.5	$15
Burnaby, British Columbia	$ 7,299	Offices	2.0	$15
Vancouver, British Columbia	$ 9,708	Offices	1.0	$10
State College, Penn.	$ 5,850	Offices	1.3	$ 8
Ottawa, Ontario	$10,043	Offices	0.7	$ 7
Calgary, Alberta	$ 9,781	Offices	0.7	$ 7
Port Elizabeth, South Africa	$ 1,846	Offices	2.3	$ 4
Waltham Forest, U.K.	$ 2,000	Offices	0.9	$ 2
MEAN	$11,305		2.3	$26
MEDIAN	$ 9,781		2.3	$24

In-lieu fees and parking requirements are for the city center in 1996. In-lieu fees and impact fees are expressed in US$.
To obtain the parking requirement in spaces per 100 square meters, multiply the required spaces in Column 4 by 1.076.
To obtain the parking impact fee in dollars per square meter, multiply the impact fee in Column 5 by 10.76.

Table 2. *Minimum parking requirements considered as impact fees (for office buildings).*

CITY	IN-LIEU PARKING FEE	LAND USE	PARKING REQUIREMENT	PARKING IMPACT FEE
	($/space)		(spaces per 1,000 square feet)	($/square foot)
(1)	(2)	(3)	(4)	(5)=(2)x(4)/1,000
Beverly Hills, Calif.	$20,180	Restaurant	22.2	$448
Palm Springs, Calif.	$ 9,250	Cabaret	28.6	$264
Mountain View, Calif.	$13,000	Assembly Hall	18.0	$234
Kingston upon Thames, U.K.	$20,800	Food Superstore	7.7	$160
Davis, Calif.	$ 8,000	Funeral Home	20.0	$160
Sutton, U.K.	$13,360	Food Superstore	8.5	$114
Kitchener, Ontario	$14,599	Manufacturing	7.7	$112
Calgary, Alberta	$ 9,781	Billiard Parlor	10.3	$101
Ottawa, Ontario	$10,043	Church	9.8	$ 98
Claremont, Calif.	$ 9,000	Theater	10.0	$ 90
Hermosa Beach, Calif.	$ 6,000	Theater	13.0	$ 78
Burnaby, British Columbia	$ 7,299	ArtGallery	10.3	$ 75
Palo Alto, Calif.	$17,848	All Uses	4.0	$ 71
Mill Valley, Calif.	$ 6,751	Assembly Hall	10.0	$ 68
Harrow, U.K.	$14,352	Garden Center	4.6	$ 67
Hamburg, Germany	$20,705	Garden Center	3.1	$ 64
Walnut Creek, Calif.	$16,373	Nonresidential	3.3	$ 55
Kirkland, Wash.	$ 6,000	Restaurant	8.0	$ 48
Carmel, Calif.	$27,520	Commercial	1.7	$ 47
Concord, Calif.	$ 8,500	Restaurant	4.0	$ 34
Port Elizabeth, South Africa	$ 1,846	Recreation Hall	18.6	$ 34
Reykjavik, Iceland	$13,000	Nonresidential	2.2	$ 28
Lake Forest, Ill.	$ 9,000	Restaurant	2.5	$ 23
Orlando, Fla.	$ 9,883	Nonresidential	2.0	$ 20
Chapel Hill, N.C.	$ 7,200	Offices	2.5	$ 18
Berkeley, Calif.	$10,000	Nonresidential	1.5	$ 15
Vancouver, British Columbia	$ 9,708	Nonresidential	1.0	$ 10
Waltham Forest, U.K.	$ 2,000	Shops	4.5	$9
State College, Penn.	$ 5,850	All Uses	1.3	$8
MEAN	$11,305		8.3	$ 88
MEDIAN	$ 9,781		7.7	$ 67

In-lieu fees and parking requirements are forthe city center in 1996. In-lieu fees and impact fees are expressed in US$.
To obtain the parking requirement in spaces per 100 square meters, multiplythe required spaces in Column 4 by 1.076.
To obtain the parking impact fee in dollars per square meter, multiply the numbers in Column 5 by 10.76.
The land uses are those with the highest minimum parking requirements in each city.

Table 3 Minimum parking requirements considered as impact fees (for land uses with the highest parking requirements).

parking impact fee for office buildings is thus 4.4 times the average impact fee for all other public purposes combined. If impact fees reveal a city's priorities for public services, many cities' highest priority is free parking. [11]

The 1995 Nationwide Personal Transportation Survey found that the average round-trip distance traveled to work in the United States was 23.2 miles.[12] Because new cars averaged 28.6 miles per gallon of gasoline in 1995, the average commute in the average new car consumed 0.81 gallons of gasoline a day, or 17.8 gallons a month for commuting 22 days a month. The average price of gasoline in the United States was $1.21 a gallon in 1995.[13] At this combination of commute distance, fuel efficiency, and fuel price, the fuel cost of commuting by car is $22 a month. In this case, a parking subsidy of more than $22 a month is worth more than free gasoline for commuting.

The average in-lieu parking fee in the United States in Table 2 is $11,305 per space. At an interest rate of 4 percent

amortized over 30 years, this in-lieu fee is equivalent to a capital cost of $54 per parking space per month. This cost estimate is conservative because the interest rate is low and operating expenses are ignored. Nevertheless, it shows that parking requirements based on the demand for free parking double the cost of the gasoline used for driving to and from the required parking.

Impact Fees for Land Uses with the Highest Minimum Parking Requirements

Table 3 shows each city's parking impact fee for the land use with the highest parking requirement. The in-lieu fees in Table 3 are the same as those in Table 2 for office buildings because each city uses the same in-lieu fee for all land uses. The first row shows that Beverly Hills' in-lieu fee is $20,180 per required parking space not provided, and that Beverly Hills requires 22.2 parking spaces per 1,000 square feet of restaurant space (one space per 45 square feet). Therefore, the parking requirement and the in-lieu fee together impose a parking impact fee of $448 per square foot of restaurant space (22.2 x $20,180÷1,000). A developer who does not provide any parking must pay the city an impact fee of $448 per square foot of restaurant space.

The impact fees in Table 3 are higher than in Table 2 because the parking requirements for the land uses in Table 3 are higher. For example, Mountain View's highest parking requirement (for assembly halls) is six times its parking requirement for office buildings, so its parking impact fee increases from $39 per square foot in Table 2 to $234 per square foot in Table 3.

The parking impact fees range from $448 per square foot of restaurant space in Beverly Hills to $8 per square foot for any land use in State College, Pennsylvania. The great variation in the cities' minimum parking requirements explains most of this variation in the parking impact fees.[14] For example, Palm Springs and Vancouver have similar in-lieu fees, but Palm Springs' parking impact fee is 27.1 times Vancouver's because Palm Springs' highest parking requirement is 28.6 times Vancouver's highest parking requirement.

If a parking requirement is high, reducing the in-lieu fee does not make the parking impact fee low. For example, to encourage the expansion of restaurants that have been in business for at least two years, Beverly Hills offers a reduced in-lieu fee of $6,265 per space, which is 35 percent of the construction cost per space for municipal parking structures, excluding land cost. Beverly Hills requires one parking space per 45 square feet of restaurant area, so this reduced in-lieu fee is equivalent to an impact fee of $139 per square foot of restaurant area ($6,265÷45). The in-lieu fee is far below the cost of providing a public parking space; but the parking impact fee is still high.[15]

Do In-Lieu Fees Impose a Cost on Developers?

In-lieu fees do not impose a cost on developers. Minimum parking requirements impose the cost, and in-lieu fees merely give developers an alternative to providing the required parking. If the in-lieu fee equals the cost of providing a parking space, the parking impact fee shows the cost of complying with the parking requirement.

Parking requirements would not impose a cost if developers voluntarily provided all the parking that zoning requires. But if developers voluntarily provided all the parking that zoning requires, parking requirements would be pointless. Some developers may provide more parking than required, but studies in the Los Angeles and Chicago regions have found that developers generally provide only enough parking to satisfy the zoning requirements. City officials, developers, lenders, leasing agents, and tenants all assume that planners know how much parking each land use needs (see Willson 1995; Chicago Regional Transportation Authority 1998).

In my own experience as a member of a Design Review Board in Los Angeles, I have reviewed the plans for all development projects in one part of the city, Westwood, for the past six years. I have seen many cases where the required parking limited a project's density or disfigured its design, but I have never seen a project that provided more parking than required.[16]

The impact fees in Tables 2 and 3 underestimate the cost of complying with parking requirements because developers who provide the required parking must also pay property taxes and operating costs for the privately owned spaces. The impact fees also understate the cost of complying with parking requirements if cities set their in-lieu fees below the cost of providing a parking space. Hamilton, Lake Forest, and Toronto set their fees at half the estimated land-and-construction cost of providing parking spaces.[17] Mountain View, Orlando, and Walnut Creek set their fees at the construction cost per space in parking structures, excluding land cost.[18]

When asked why they set the in-lieu fee below the cost of providing a parking space, city officials typically answered that the fee would be "too high" if the city charged the full cost. When the cost of required parking is hidden in the cost of development, cost does not seem to matter, But when the cost of required parking is made explicit in cash, everyone can see that it is "too high."

Parking Requirements, In-Lieu Fees, and Impact Fees

We can use the data in Tables 2 and 3 to show the relationships among parking requirements, the cost of parking spaces, and impact fees, as seen in Figure 1, which uses the data for office buildings. The horizontal axis shows the parking requirement in spaces per 1,000 square feet of gross floor area, and the vertical axis shows the fee per parking space not provided. Each equal-impact-fee (isocost) curve

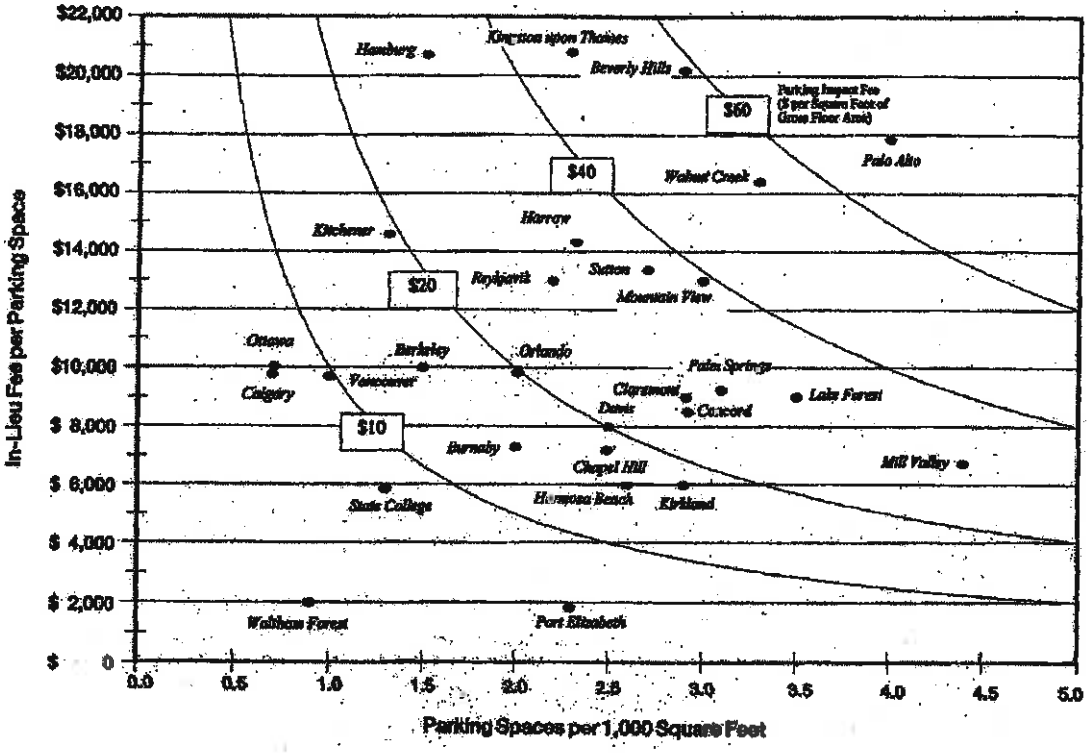

Figure 1. *Parking impact fees as a function of parking requirements and in-lieu fees (for office buildings).*

shows combinations of parking requirements and in-lieu fees that produce the same impact fee. For example, the lowest curve shows that a requirement of one space per 1,000 square feet and an in-lieu fee of $10,000 per space together create an impact fee of $10 per square foot of floor area, as do all other combinations of parking requirements and in-lieu fees along the same curve.[19]

A horizontal band of cities have similar in-lieu fees ranging from $6,000 to $10,000 per parking space, but their parking impact fees differ greatly because their parking requirements differ greatly. For example, Lake Forest and Calgary have similar in-lieu fees, but Lake Forest's parking impact fee is more than four times Calgary's because Lake Forest requires 3.5 spaces per 1,000 square feet while Calgary requires only 0.7 spaces per 1,000 square feet.

Cities with dissimilar in-lieu fees can have similar parking impact fees. For example, Mill Valley's in-lieu fee is less than a third of Hamburg's; but its parking impact fee is similar to Hamburg's because Mill Valley requires 4.4 spaces per 1,000 square feet while Hamburg requires only 1.5 spaces per 1,000 square feet.

Figure 2 arrays cities according to their in-lieu fees and parking requirements in Table 3 (i.e., for land uses with the highest parking requirements). Because the coefficient of correlation between the cities' impact fees in Tables 2 and 3 is only 0.43, the cities' relative positions shift substantially from Figure 1 to Figure 2. In more ways than one, parking impact fees are all over the map.

This all-over-the-map aspect of parking impact fees should not surprise us, given the haphazard nature of parking require-ments. Explaining how planners set parking requirements, Robert Weant and Herbert Levinson (1990) say:

> Most local governments, through their zoning ordinances, have a parking supply policy that requires land uses to provide sufficient off-street parking space to allow easy, convenient access to activities while maintaining free traffic flow. The objective is to provide enough parking space to accommodate recurrent peak-parking demands .... For the purpose of zoning ordinance applications, parking demand is defined as the accumulation of vehicles parked at a given time as the result of activity at a given site (35-37).

That is, planners count the cars parked at existing land uses, define the maximum number of parked cars as parking

demand, and then require new land uses to supply at least enough parking spaces to satisfy this demand. Without considering either the cost or the price of parking, urban planners set minimum parking requirements to satisfy the peak parking demand.

Because high parking requirements increase development costs, they might be interpreted as a tacit way for cities to control growth. But if the goal is growth control, high parking requirements have a serious unintended consequence. All new development will have plenty of free parking, which will increase trip generation and the associated traffic. If growth control is intended to limit traffic, high parking requirements are a perverse way to control growth.

High parking requirements might also be explained as a response to high parking demand. But demand depends on price, and the high cost of providing parking should cause planners to ask, "At what price is demand being estimated?" Parking requirements based on the observed demand for parking typically require enough parking spaces to satisfy the demand for *free* parking.

■ AN ANALOGY: PTOLEMAIC ASTRONOMY

As experience has accumulated, planners have made progress in predicting the peak demand for parking at different land uses. This progress in planning resembles the progress made in astronomy from the time of Ptolemy through the medieval period. Astronomers gradually became more accurate in predicting the motion of stars and planets, but they fundamentally misunderstood what they were trying to explain. Thomas Kuhn (1957) says:

> accuracy was invariably achieved at the price of complexity ... and the increased complexity gave only a better approximation to planetary motion, not finality. No version of the system ever quite with-stood the test of additional refined observations (74).

Ptolemaic astronomers believed that the earth was at the center of the universe, and that everything else rotated about the earth. This theory explained the motion of stars, but the motion of planets was a puzzle. The word *planet* stems

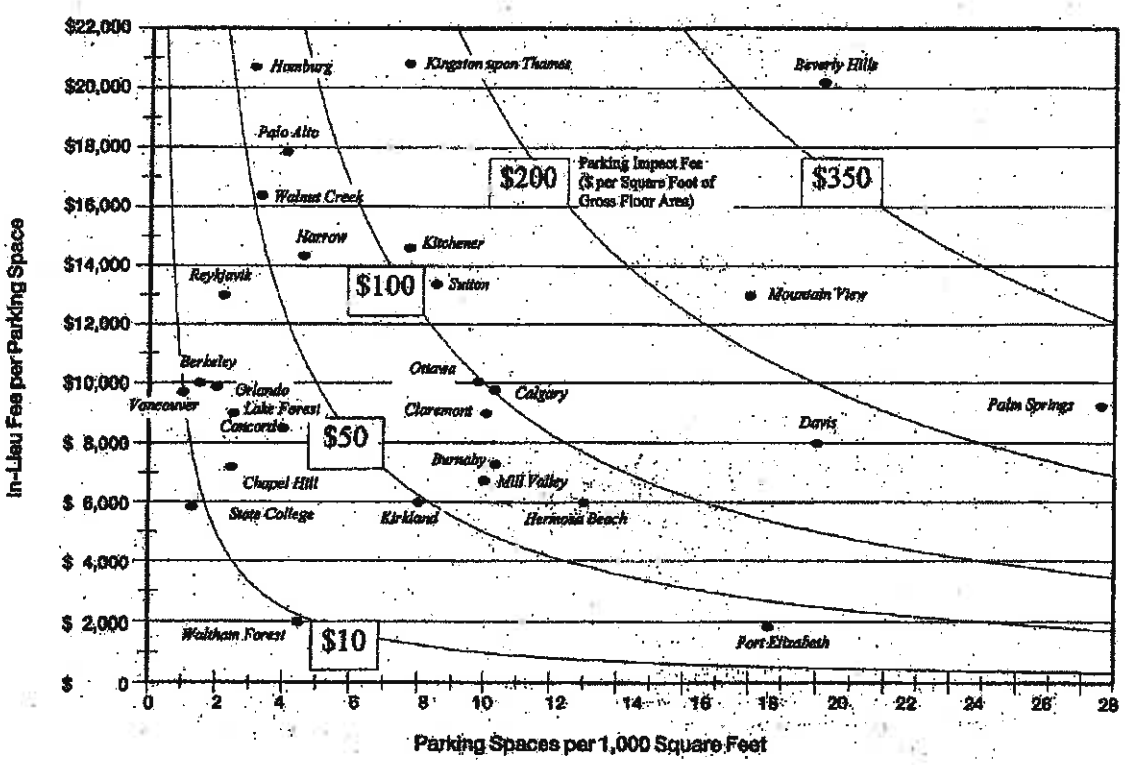

Figure 2 *Parking impact fees as a function of parking requirements and in-lieu fees (for land uses with the highest parking requirements).*

from the Greek word meaning *wanderer*, and astronomers developed complex mathematical devices-such as epicycles-to explain the planets' wandering behavior. But the fundamental theory was faulty, and more accurate observations of planetary motion always showed that the theory's predictions were wrong.

Similarly, many planners seem to believe that parking is at the center of urban development. Planners have gradually become more accurate in predicting parking demand as a function of land use, but this greater accuracy has invariably been achieved at the price of complexity. For example, the Planning Advisory Service of the American Planning Association has published three surveys of parking requirements in American cities. The 1964 survey reported 368 different requirements for 30 different land uses. The 1971 survey reported 609 different requirements for 83 different land uses. The 1991 survey reported 648 different requirements for 179 different land uses.[20] Despite this growing complexity, no one can accurately predict how many parking spaces any land use needs without considering the price of parking. For the same land use, the parking requirements in Table 3 vary between one and 28.6 parking spaces per 1,000 square feet.[21]

The growing complexity extends well beyond more requirements for more land uses. Some cities allow shared parking for a combination of land uses when the peak parking demands occur at different times. Some cities allow valet and tandem parking to increase parking capacity. All cities grant variances from parking requirements to accommodate special circumstances. Adding to the complexity, urban planners have invented many pseudo-scientific terms to describe observed but poorly understood phenomena: parking deficit, parking generation, parking need, parking overflow, parking ratio, parking spillover, parking turnover, peak parking factor, shared parking, and underparked.

Confusion reigns, and planners cannot even agree on whether to require or restrict parking. Consider the diametrically opposed approaches in Los Angeles and San Francisco. Los Angeles requires a minimum number of spaces, while San Francisco restricts the maximum number of spaces. For an auditorium in the CBD, Los Angeles requires as a minimum 50 times more parking spaces than Sara Francisco allows as the maximum.[22] These minimums and maximums exemplify the Soviet planning slogan, "What is not made compulsory must be prohibited."

Planners usually require a minimum number of parking spaces, and they sometimes restrict the maximum number of parking spaces, but they almost never take a hands-off approach to the number of parking spaces. Perhaps some planners unconsciously fear that critics may ask, "If planners don't even know how many parking spaces to require, what *do* they know?" Or perhaps parking requirements are simply a professional confidence trick that planners have played not only on others but also on themselves,

Parking requirements stem from a belief that urban planners know how many parking spaces every land use needs, Planners *can* rationally regulate many dimensions of parking that affect the public, such as curb cuts, guidance, handicapped access, landscaping, layout, location, pedestrian amenity, setback, signage, stormwater runoff, and urban design. Planners can and should regulate the *quality* of parking. But planners *cannot* rationally regulate the *number* of parking spaces without considering the price and cost of parking and the wider consequences for transportation and land use.

By comparing urban planners to Ptolemaic astronomers, I am not questioning planners' abilities. Ptolemaic astronomers were diligent scientists, but in considering the earth to be the center of the universe they were making a fundamental mistake. Similarly, in requiring a minimum number of off-street parking spaces for all land uses, urban planners are making a fundamental mistake. The high impact fees implicit in minimum parking requirements reveal the high cost of this mistake.

■ An Alternative: Reduce Demand Rather Than Increase Supply

Minimum parking requirements lack a theoretical basis, and even their empirical basis is weak, But reform will be difficult because parking requirements are entrenched in planning practice and legislated in zoning ordinances, Nevertheless, the emergence of in-lieu fees suggests that change is possible. In-lieu fees also suggest another promising option: *allow developers to reduce parking demand rather than increase the parking supply.*

An Example: Transit Passes in Lieu of Parking Spaces

Offering free transit passes to commuters will reduce the demand for parking at work. Therefore, a city could reduce the parking requirements for developments where the developer commits to provide transit passes far commuters who do not drive to work.

Suppose that providing free transit passes to the employees at a site would reduce parking demand at the site by one parking space per 1,000 square feet, In this case, a covenant to provide free transit passes to employees at the site is an appropriate alternative to providing one required parking space per 1,000 square feet.[23]

The in-lieu transit option would be simplest where firms can buy a blanket transit pass for all employees, For example, some transit agencies offer employers the option to buy "Eco Passes" that allow all their employees to ride free on all local transit lines, A city could therefore reduce the parking requirements for a building where all employees are offered Eco

LOCATION	ANNUAL PRICE PER EMPLOYEE 1-99 Employees	100-4,999 Employees	5,000+ Employees
Downtown San Jose	$80	$60	$40
Areas with bus & light rail	$60	$40	$20
Areas with bus only	$40	$20	$10

Table 4. *Eco Pass price schedule, Santa Clara Valley Transportation Authority.*

Passes. The Eco Pass is a tax-deductible expense for employers and a tax-free benefit for employees.

Transit agencies price Eco Passes according to probability of use. The price per employee is low because many employees do not ride transit even when it is free. Employers can therefore buy transit passes for all employees at a low cost. For example, as shown in Table 4, the Santa Clara Valley Transportation Authority (SCVTA) in California's Silicon Valley charges from $10 to $80 per employee per year for the Eco Passes, depending on an employer's location and number of employees.[24]

An example can explain Eco Pass pricing. Suppose (1) the price of a conventional transit pass is $400 a year, (2) employers offer free passes to commuters who ride transit, and (3) 20 percent of commuters ride transit. Per 100 employees, employers would pay $8,000 a year for 20 conventional transit passes (20 x $400), or $80 per employee per year ($8,000÷100). The transit agency can therefore sell Eco Passes for 100 employees at a price of only $80 per employee per year, carry the same number of riders, and receive the same $8,000 a year in total revenue that it would receive from the sale of conventional transit passes at $400 a year for 20 employees.

Because frequent riders often buy transit passes, transit agencies must price these passes on the assumption of frequent use. And because transit agencies price transit passes to cover the cost imposed by frequent riders, infrequent riders will not buy them. In contrast, Eco Passes are priced like employer paid insurance that covers every member of a defined population. Adverse selection does not occur when all employees receive Eco Passes, and the price of an Eco Pass is therefore much lower than the price of a conventional transit pass.[25] For example, the SCVTA's price for its Eco Pass ($10 to $80 per employee per year) is only 2 percent to 19 percent of the price for its conventional transit pass ($420 a year).

Providing Eco Passes for employees – a demand-side subsidy – is different from subsidizing the transit system as a whole – a supply-side subsidy. Providing Eco Passes for all employees at a site increases transit use to that site and reduces parking demand at that specific site. This reduction in parking demand justifies a smaller parking supply at the site that provides the Eco Passes. In contrast, subsidizing the system as a whole would improve transit service but would not significantly reduce parking demand at any specific site, Therefore, subsidizing the system would not justify a smaller parking supply at the site that pays the subsidy.

Providing Eco Passes instead of required parking spaces converts a supply-side subsidy for parking into a demand-side subsidy for transit. The appropriate rate of substitution between Eco Passes and parking spaces depends on how shifting subsidies from parking to transit will reduce parking demand. Cities can offer a greater reduction in parking requirements in the CBD) and other transit-oriented districts because Eco Passes will reduce parking demand more at sites that have better transit service. Providing Eco Passes instead of parking spaces will benefit these transit-oriented districts by allowing higher density without more vehicle traffic.

The Cost of Reducing Parking Demand

Reducing parking demand can cost much less than increasing the parking supply. Employers in Silicon Valley pay $10 to $80 per employee per year for Eco Passes. If there are four employees per 1,000 square feet of office space, Eco Passes would cost from 4 cents to 32 cents per square foot of office space per year.[26] How does this cost of offering Eco Passes to all employees compare with the resulting reduction in the capital cost of providing the required parking spaces?

A survey of commuters whose employers offer Eco Passes found that the solo-driver share fell from 76 percent before the passes were offered to 60 percent afterward (Santa Clara Valley Transportation Authority 1997). The transit mode share for commuting increased from 11 percent to 27 percent. These mode shifts reduced commuter parking demand by approximately 19 percent.

The SCVTA serves two of the surveyed cities that have in-lieu parking fees (Mountain View and Palo Alto). As Table 2 shows, the parking impact fee for office buildings is $39 per square foot of office space in Mountain View and $71 per square foot of office space in Palo Alto. If the Eco Passes reduce parking demand by 19 percent, they will reduce the capital cost of providing the required parking spaces by $7.41 per square foot of office space in Mountain View and by $13.49 per square foot of office space in Palo Alto.[27]

If spending between 4 cents and 32 cents a year to provide Eco Passes will reduce the capital cost of required parking by between $7.41 and $13.49, the annual cost of the Eco Passes ranges from 0.3 percent to 4.3 percent of the reduction in the capital cost of parking. That is, spending $1 every year for transit will save between $23 and $337 for the initial capital cost of parking. Eco Passes will also reduce the operating and maintenance costs for parking because fewer spaces are required. The low cost of reducing parking demand compared with the high cost of increasing the parking supply shows that Eco Passes are a cost-effective fringe benefit. Eco Passes can greatly reduce the high cost of offering free parking.

Administering the Eco Pass option should be simpler than administering conventional in-lieu fees because cities would not need to construct, operate, and maintain parking structures. A property's transit-pass obligation could be

enforced by a covenant or conditional use permit for as long as the required parking is not provided. Monitoring compliance should be simple because public transit operators would have a strong financial incentive to ensure that property owners pay for the required transit passes.

The Benefits of Reducing Parking Demand

Providing Eco Passes instead of parking spaces can yield benefits for developers, property owners, employers, commuters, and cities.

Benefits to Developers and Property Owners

Developers who pay conventional in-lieu parking fees receive no individual benefit beyond permission to build without providing the required parking. But developers who provide in-lieu Eco Passes also receive the individual benefit of free public transit for all tenants. If a developer provides fewer than the required number of parking spaces, the compensating amenity of free transit should increase a project's marketability.

Providing Eco Passes in lieu of parking spaces can also reduce the risk and improve the feasibility of project finance. The capital cost of parking is fixed regardless of building occupancy, and it is a heavy burden for a new building that is not fully leased. In contrast, the cost of Eco Passes varies according to the number of employees in the building, and the cost will be low if the building is not fully leased. Providing Eco Passes instead of parking spaces converts an up-front capital cost for parking into an annual cost for transit, and many developers may want to make this trade if offered the option.

Benefits to Employers

Eco Passes will save employers some of the money they now spend to subsidize parking. Suppose that Eco Passes cost $40 per employee per year and that they reduce the demand for commuter parking by 19 percent (as found in the Silicon Valley). The Eco Passes will save more than $40 per employee per year on parking subsidies if the employer had been spending more than $211 per employee per year to subsidize parking, because reducing a parking subsidy of $211 a year by 19 percent saves $40 a year. Many employers spend far more than $211 per year ($17.60 per month) per employee to subsidize parking.[28] These employers can therefore offer free transit passes, continue to offer free parking, *and* save money.

Benefits to Commuters

Eco Passes clearly benefit commuters who ride transit to work, and they can also benefit commuters who usually drive to work. Drivers can consider the Eco Passes a form of insurance for days when their cars are not available. Eco passes offer commuters day-to-day flexibility in commuting and the choice between riding transit or driving to work is not a long-term either-or commitment.

Employees can also use their Eco Passes for non-work trips. In the Silicon Valley survey, 60 percent of employees reported using their Eco Passes for trips other than commuting, with an average of four non-work trips a month.

Benefits to Transit Operators

Using unbuilt parking spaces to finance Eco Passes would increase transit ridership and transit revenue. Although Eco Pass programs are new, in 1997 employers purchased Eco Passes for 38,000 employees in Denver and 40,000 employees in Silicon Valley. If developers could provide Eco Passes instead of parking spaces, Eco Pass sales would undoubtedly increase. Permanent demand-side subsidies for transit financed by a reduction in the capital cost of supply-side subsidies for parking would provide a reliable revenue source for transit agencies.

If developers make long-term commitments to purchase Eco Passes, transit planners can improve service to the sites where they know transit demand will be strong. This service improvement will benefit all riders, not just Eco Pass holders, and it can attract additional riders who pay a full fare.

Benefits to Cities

As with conventional in-lieu fees, providing Eco Passes in lieu of parking spaces will improve urban design, reduce the need for variances, and help to preserve historic buildings and rehabilitate historic areas. Beyond these advantages, reducing the demand for parking rather than increasing the supply of parking will reduce traffic congestion, air pollution, and energy consumption -- all at no cost if the existing transit has excess capacity.

Other In-Lieu Options to Reduce Parking Demand

Cities could also allow in-lieu options for land uses other than employment sites. For example, some universities contract with their local transit agencies so their student identification cards serve as public transit passes, and these transit pass programs reduce the demand for parking on campus (Brown, Hess, and Shoup 1998). Cities could therefore allow a university to offer a transit pass program instead of required parking spaces.

A city could allow theaters and stadiums to offer free transit to all ticket holders instead of providing required parking spaces. For example, the University of Washington contracts with Seattle Metro so that ticket holders can show their game tickets to ride on any Metro transit service on the day of a game The share of ticket holders arriving at Husky Stadium by transit increased from 4.2 percent in 1984 (the year before the transit agreement) to 20.6 percent in 1997 (University of Washington Transportation Office 1997).

A city could allow apartment developers to offer free transit passes for residents instead of providing some required parking spaces. In State College, Pennsylvania, one of the

cities with in-lieu fees, the Centre Area Transportation Authority contracts with apartment developers and owners to give all residents passes for the transit lines that serve the apartments. The passes are priced at approximately $100 per apartment per year. Participating developers are encouraged to build transit amenities into their site designs (bus shelters and bus pull-off lanes). Apartment owners advertise these transit passes as a benefit they offer to tenants. The apartment transit passes should attract a niche market of those who are less likely to own cars, and should be especially appropriate for transit-oriented districts with good transit service and a reduced parking supply.

A city could allow hotels to offer free transit for guests instead of providing some required parking spaces. Beyond saving money on constructing parking spaces, offering free transit could help a hotel to attract a niche market of guests without cars. If hotels that offer free transit attract guests without cars, this would justify the smaller parking supply. Some hotels already offer free shuttles to popular destinations, or offer guests free tokens on public transit, and cities could reduce parking requirements in exchange for these policies.

Beyond offering transit passes, a city could allow developers and employers to take other measures to reduce parking demand. For example, offering employees the option to cash out employer-paid parking has been found to reduce parking demand by an average of 11 percent, at almost no added cost to employers.[29] Therefore, a city could reduce the parking requirement for sites where developers commit to a parking cash-out program.

Some cities allow property owners to remove existing parking spaces if they pay an in-lieu fee per required space removed. Cities could also allow owners to remove existing parking spaces if they offer transit passes and/or a parking cashout program. This in-lieu option would assist infill development, improve urban design, and increase urban density without increasing traffic.

Finally, a city could require the provision of transit passes and/or parking cash out at a site if the developer wished to provide more than the required number of parking spaces. That is, a developer would have to take steps to reduce parking demand in order to receive permission to increase the parking supply above what the zoning requires.

Allowing developers to reduce parking demand instead of increasing the parking supply is a logical extension of in-lieu fee programs. Nevertheless, none of the surveyed cities allows parking demand management as an alternative to providing parking spaces.

■ Conclusion: The High Cost of Minimum Parking Requirements

In-lieu fees unveil the high cost of parking requirements. The impact fees implicit in parking requirements dwarf the impact fees for all other public purposes combined. These high parking impact fees should make it hard for planners to ignore the cost of parking requirements. Given the high cost of providing the required parking, planners should not uncritically assume that the demand for parking automatically justifies parking requirements. Viewed skeptically, minimum parking requirements subsidize cars and distort urban form.

In-lieu fees mitigate the damage caused by parking requirements. The in-lieu fees assist development on difficult sites, encourage shared parking, reduce the demand for variances, improve urban design, and support historic preservation. Beyond allowing developers to finance public parking spaces in lieu of private parking spaces, cities can allow developers to reduce parking demand rather than increase the parking supply. This further development of in-lieu fees will reduce traffic congestion, air pollution, and energy consumption. The option to reduce parking demand rather than increase the parking supply will benefit developers, property owners, employers, commuters, transit agencies, cities, and the environment.

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■ Notes

1. *Monopoly*® is the trademark of Hasbro, Inc. for its real estate trading game. "Free Parking" is one of 40 spaces on the game board.
2. In 1990, the U.S. Department of Transportation conducted the Nationwide Personal Transportation Survey. For all automobile trips made on the previous day, the survey 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*." The responses outnumbered the respondents because some respondents made more than one automobile trip per day (Shoup 1995, 15).
3. The survey includes every in-lieu parking fee program found after searching the literature on parking requirements, sending e-mail requests to parking listservers, and asking the representatives of each city with in-lieu fees for additional leads (a "snowball" sample). Additional cities in Germany have in-lieu fees *(Ablösebeträge)*, but as explained later most of these cities' fees are calculated on a case-by-case basis and therefore could not be used to calculate the parking impact fees shown in Tables 1 and 2. Planners in several of the surveyed cities were unaware that any other cities had in-lieu fees, and only four brief published references to in-lieu fees were found:

Public Technology (1982), Higgins (1985), Weant and Levinson (1990), and Topp (1993).

4. Among the nine cities that set fees on a case-by-case basis, Culver City's fee is the assessed value of 300 square feet of land under the development. Hamilton's and Toronto's fees are half the land-and-construction cost of providing a new parking space near the development site. Johannesburg's fee is the land value of a surface parking space at the development site. Frankfurt's fee depends on the land-and-construction cost of a parking space, with a maximum fee of $16,025. San Rafael's fee is the fair market value of the land that would otherwise have been devoted to the required off-street parking, plus the cost of paving and other improvements. Montgomery County allows developers to pay a property tax surcharge instead of providing the required parking.
5. The method of setting the fees varies greatly among cities. Lake Forest's fee ($9,000 per space) is half the city's land-and-construction cost per space in surface lots. The fees in Mountain View ($13,000 per space) and Orlando ($9,883 per space) are the cities' construction cost per space in parking structures, excluding land cost. Palo Alto's fee ($17,848 per space) is the construction cost per space added by a parking structure, after deducting the number of surface spaces lost when the structure is built. Walnut Creek's fee ($16,373 per space) is 75 percent of the construction cost per space in a public parking structure, excluding land cost. The fees in Kingston upon Thames ($20,800) and Sutton ($12,800) are the land and construction cost per space in parking structures on the fringe of the town center. Port Elizabeth's fee ($1,846 per space) is the land and construction cost per space in surface lots.
6. Berkeley requires developers of lots under 30,000 square feet to pay fees instead of providing the parking. Calgary requires developers to provide half the required parking and to pay fees for the other half. Orlando requires developers to pay fees instead of providing the first required parking space per 1,000 square feet, and allows them to choose whether to provide parking or pay fees for the rest. Waltham Forest requires developers to provide the first 0.2 required parking spaces per 1,000 square feet and to pay fees for the rest. Carmel and Lake Forest require developers to pay fees in lieu of all the required parking.
7. Office buildings were chosen for Table 2 because they are the most uniformly defined land use among cities. All of the cities in Tables 2 and 3 require parking spaces in proportion to gross floor area. 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. Seventeen of the 46 surveyed cities do not appear in Tables 2 and 3 because either their in-lieu fees or their minimum parking requirements are not comparable with the other cities. Brent, Culver City, Dresden Frankfürt, Hamilton, Johannesburg, Nuremberg, San Rafael, and Toronto do not have fixed fees; instead these cities establish the fee for each specific case, usually taking into account the appraised land value at the site. Montgomery County's fee is based on the property tax. Manhattan Beach ($25,169 per space) requires parking only for the building area that exceeds a floor-area ratio of 1:1. Lafayette ($8,500 per space), Munich ($16,025 per space), Redbridge $8,624 per space), and Würzburg ($12,820 per space) require parking on the basis of net rather than gross floor area. San Francisco ($17,135 per space) does not require parking spaces in the CBD. Pasadena allows developers to pay an annual fee ($100 per parking space per year in 1992 and subsequently indexed to the Consumer Price Index) per parking space not provided.
8. The fees and parking requirements for each city are their values in 1996. Unless otherwise noted, the fees and parking requirements apply only in the downtown area of each city. Fees are converted into US$ at 1996 rates of exchange: U.S. $1 = 1.37 Canadian Dollars; 1.56 German Marks; 66.57 Icelandic Kronur; 3.84 South African Rands; and 0.60 British Pounds.
9. The British term for an in-lieu fee is "commuted payment." All the British cities in the survey are boroughs of outer London. The inner London boroughs no longer use commuted payments because then have replaced their minimum parking requirements with restrictions on the maximum number of parking spaces allowed.
10. The average impact fee has been converted to dollars of 1996 purchasing power, the year in which all the in-lieu fees were measured.
11. The impact fees in Table 2 refer to one specific land use (offices). Montgomery County, Maryland, has a unique in-lieu arrangement that is independent of land use. In one community (Bethesda), for example, developers can pay a property tax surcharge of 0.7 percent of a property's assessed value instead of providing the required parking; the revenue is used to construct and maintain public parking facilities. Montgomery County's general property tax rate to fund education, health, libraries, police, social services, and transportation is 2 percent of assessed property value. The special property tax rate for parking is thus more than one third of the general property tax rate for education, health, libraries, police, social services, and transportation.
12. See NPTS Web site at http://www.cta.ornl.gov/npts/1995/Doc/EarlyResults.shtml for the average distance to work in 1995.
13. See American Automobile Manufacturers Association (1998) for the average fuel efficiency and the average price of gasoline in 1995.
14. The r^2 for the correlation between minimum Parking requirements and impact fees is 0.60, and the r^2 for the correlation between in-lieu fees and impact fees is 0.12.
15. New restaurants in Beverly Hills are not eligible for the reduced fee. They must pay the full fee, which ranges from $15,135 to $25,225 per space, depending on the restaurant's location. The Parking requirement of one space per 45 square feet of restaurant area and the in-lieu fees are together equivalent to impact fees ranging from $336 to $561 per square foot of restaurant area.
16. As one example of high parking requirements, the North Westwood Village Specific Plan requires 3.5 parking spaces for each dwelling unit that contains more than four habitable rooms, and even kitchens count as habitable rooms (Los Angeles Ordinance 163,202).
17. "Since the payment of the $9,000 per space 'in lieu of' fee only allows for a property owner to establish a business, the fee has never been intended to cover the full cost of providing a parking space... Historically, the 'in lieu of' fee has been placed at a level that is roughly equivalent to fifty percent of the cost of providing a parking space" (Memo to Lake Forest Plan Commission, February 1, 1993, page 2).
18. In-lieu fees may underestimate the cost of complying with minimum parking requirements for another reason. Developers who pay fees merely receive permission to develop without providing the required parking. Developers who provide the

required parking not only receive permission to develop, but they also own the resulting parking spaces, a valuable asset. Developers who pay the fees instead of providing the required parking would presumably have to pay even more to provide the required parking itself. Suppose the in-lieu fee is $10,000 per space, and that each on-site parking space adds $5,000 to a development's value. In this case the developer will pay the fee only if on-site parking costs more than $15,000 per space. Therefore, payment of the fee suggests that (1) providing the required parking would cost much more, or (2) a parking space does not add much to the development's value.

19. Minimum parking requirements impose no burden if developers would voluntarily provide the required number of parking spaces. Developers would therefore presumably prefer a low parking requirement with a high in-lieu fee to a high parking requirement with a low in-lieu fee, even if the parking impact fee is the same in both cases.
20. See Planning Advisory Service (1964, 1971, 1991). These data greatly understate the growth in the number of different parking requirements. While the 1964 survey reported every parking requirement found for each of 30 land uses, and the 1971 survey reported every parking requirement found for each of 83 land uses, the 1991 survey reported only a few of the many different parking requirements found for each of 179 land uses.
21. Palm Springs requires 28.6 spaces per 1,000 square feet for a cabaret, while Vancouver requires one space per 1,000 square feet for all nonresidential uses, including cabarets.
22. For auditoriums in the CBD, Los Angeles requires a minimum of ten parking spaces per 1,000 square feet, with no maximum. San Francisco allows parking spaces equal to a maximum of 7 percent of building area (0.2 spaces per 1,000 square feet if a parking space occupies 350 square feet), with no minimum.
23. As an administrative precedent for purchasing transit passes in lieu of providing the required parking, some cities allow property owners to purchase parking permits in public garages in lieu of providing the required on-site parking. For example, Kirkland allows a property owner to pay an annual in-lieu fee of $1,020 per required parking space not provided, and the owner receives a parking pass to a public garage for each fee paid. This obligation runs with the land, and commits future property owners either to pay the annual fee or to provide the required parking.
24. This price includes a Guaranteed Ride Home Program. On any day they ride transit to work, employees are entitled to a free taxi ride home in the event of illness, emergency, or unscheduled overtime. The public transit systems in Boulder and Denver, Colorado, and Salt Lake City, Utah, offer similar Eco Pass programs.
25. There can still be adverse selection among employers. Firms with many employees who ride transit will have an incentive to buy the Eco Passes, and this will tend to increase the transit operators' cost.
26. Suppose the Eco Pass costs $80 per employee per year. If there are four employees per 1,000 square feet of office space, the Eco Passes would cost $320 per year per 1,000 square feet of office space (4 x $80), or 32 cents per year per square foot of office space ($320 ÷ 1,000).
27. If satisfying the parking requirement costs $55 per square foot of office space, and if Eco Passes reduce the parking requirement by 19 percent, the Eco Passes would reduce the capital cost of required parking by $10.45 per square foot of office space ($55 x 0.19).
28. Shoup and Breinholt (1997) found that employers in the United States provide 85 million free parking spaces for commuters.
29. Shoup (1997) presents eight case studies in which cashing out employer paid parking reduced parking demand by 11 percent. Because cashing out reduces parking demand, logically it should also reduce parking requirements. California legislation addresses this issue in the following way: "The city or county in which a commercial development will implement a parking cash-out program ... shall grant to that development an appropriate reduction in the parking requirements otherwise in effect for new commercial development" (California Health and Safety Code Section 65089).

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